Class Environmental Assessment Environmental Study Report, Denis St. Pierre Water Pollution Control Plant Expansion and Upgrades, Town of Lakeshore

Report Description

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Prepared for:

Town of Lakeshore

Prepared by:

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EXECUTIVE SUMMARY

The Town of Lakeshore is located in Essex County in the Province of Ontario. Lakeshore is bounded by Lake St. Clair to the north, the Municipality of Chatham-Kent to the east, the Town of Tecumseh to the west with the Municipalities of Leamington, Kingsville and Essex abutting the southern municipal boundary. Lakeshore was established with the amalgamation of the former Townships of Tilbury North, Tilbury West, Rochester, and Maidstone, and the former Town of Belle River.

This Environmental Study Report (ESR) is the documentation of the Class Environmental Assessment (Class EA) process of the Municipal Engineers Association (MEA) for sanitary sewage works to service the Belle River and Maidstone Communities. Figure 1.1 shows the location of these communities.

This ESR comprises Sections 1 to 8 inclusive and Appendices A to C inclusive.

SECTION 1: INTRODUCTION

This section provides background information and a description of the Class EA process. The Class EA process includes five phases. Phase 1 includes identification of the problem or opportunity and discretionary public consultation. Phase 2 includes identification and evaluation of alternative solutions to the problem, identification of environmental impacts of the alternative solutions, consultation with the public and review agencies, selection of the preferred solution and determination of the project schedule. Projects are classified as Schedule A, B or C depending on their complexity and potential for environmental impact. Phase 3 includes identification and evaluation of alternative design concepts, identification of environmental impacts and mitigating measures with respect to the design concepts, further consultation with the public and review agencies, and selection of the preferred design. Phase 4 includes the completion of the ESR and placing it on the public record, notification to the public and review agencies of completion of the Class EA and a 30-day review period providing the opportunity to request the Minister to require a proponent to comply with Part II of the EA Act (which addresses individual EAs) before proceeding with the project. The Minister determines whether this is necessary.

The Master Plan and Update were prepared in accordance with Phases 1 and 2 of the Class EA process and identified this project as Schedule C. This Class EA has been carried out in accordance with Phases 3 and 4.

SECTION 2: EXISTING WATER POLLUTION CONTROL PLANT

This section describes the existing Denis St. Pierre Water Pollution Control Plant (WPCP) providing secondary level biological treatment for municipal wastewater from the Belle River and Maidstone areas.

The Denis St. Pierre WPCP, which is located on Rourke Line Road south of County Road 22, Town of Lakeshore, has a rated capacity of 14,500 m^3/day. The treatment process consists of fine screening, grit removal, three extended aeration tanks, two final settling tanks, and UV disinfection. Waste activated sludge is aerobically digested for stabilization and the stabilized biosolids are gravity-thickened and dewatered by centrifuges. The dewatered biosolids are hauled to an offsite storage facility and ultimately land applied.

Treated effluent is discharged into Lake St. Clair through a 900-mm-diameter plant outfall sewer. The existing outfall sewer extends approximately 600 m into Lake St. Clair. Effluent discharges through nozzles at the end of the outfall to assist in dispersing the effluent.

SECTION 3: PROBLEM STATEMENT

This section provides an overview of population projections, future wastewater flows, identifies the problem statement, and establishes the project objective.

An average treated flow of 14,228 m^3/d from the Belle River and Maidstone wastewater service areas was recorded for 2018, which is approximately 98 percent of the plant's rated capacity of 14,500 m^3/d. Thus, the existing capacity of the Denis St. Pierre WPCP is not adequate to accommodate the projected future flows from the Belle River and Maidstone wastewater service area.

There are pressures for residential and industrial development in the Belle River and Maidstone areas and because of inadequate wastewater treatment capacity, developments have been restricted. Additional treatment capacity at the Denis St. Pierre WPCP is required to support the existing services areas and the anticipated future growth.

SECTION 4: WASTEWATER TREATMENT DESIGN ALTERNATIVES

This section of the report identified and evaluated seven different treatment process leading to the selection of a preferred design for this application.

The evaluation of alternative designs includes consideration of potential environmental, social and economic impacts and recognizes the need to design the facilities in such a way that they will be as unobtrusive as possible and blend in with existing treatment plant site.

The existing Denis St. Pierre WPCP was upgraded and converted from an SBR to an extended aerated activated sludge (EAAS) system in 2008. Operating experience with the EAAS system has been good and there is some merit in utilizing the same process for the Denis St. Pierre

WPCP expansion. Thus, the EAAS system is identified as the preferred treatment process for the plant expansion.

SECTION 5: BIOSOLIDS MANAGEMENT DESIGN ALTERNATIVES

This section of the report reviews various possible biosolids management approaches with the objective of selecting the preferred system for the Denis St. Pierre WPCP expansion. The EAAS treatment process produces excess solids known as waste activated sludge. Biosolids management deals with all aspects of handling the waste sludge stream including storage, dewatering or thickening, stabilization and ultimate disposal.

A number of disposal alternatives were considered including incineration, landfilling, farmland application and re-sale of the stabilized and processed biosolids product. Alternative biosolids stabilization processes that were considered include anaerobic digestion, aerobic digestion, lime stabilization, composting and pelletization. A biosolids management system consisting of aerobic digestion, sludge dewatering, sludge cake storage and seasonal application on farmland offers several advantages. It is recommended as the preferred option for the plant expansion because it is a proven process and has been used successfully at the existing Denis St. Pierre WPCP for many years.

SECTION 6: ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

This section identifies the environmental impacts of the preferred solution and describes the recommended mitigation measures.

SECTION 7: PUBLIC PARTICIPATION

This section documents agency and public consultations that occurred during this EA process. This section includes documentation of consultation with the public and review agencies. In order to complete Phase 4 of the Class EA process, this report will be made available for review and comment by the public and review agencies as a part of the consultation process.

SECTION 8: SUMMARY

This section summarizes recommendations that are made with respect to this study, and the preferred design with respect to probable capital costs.

ABBREVIATIONS

BOD	Biochemical Oxygen Demand
COA	Canada Ontario Water Quality Agreement
CPR	Canada Pacific Rail
PDWF	Peak Dry Weather Flow
EA	Environmental Assessment
EAAS	Extended Aerated Activated Sludge
ECA	Environmental Compliance Approval
ERCA	Essex Region Conservation Authority
ESR	Environmental Study Report
HGL	Hydraulic grade line
I&I	Inflow and Infiltration
kg	Kilogram
kW	Kilowatt
L	Liters
L/c/d	Liters per capita per day
m	Meter
mg	Milligrams
MECP	Ministry of the Environment, Conservation and Parks, formerly known as MOECC, MOE
Mg/L	Milligrams per litre
MIG	Million Imperial gallons
MIGD	Million Imperial gallons per day
mL	Milliliters
ML/d or MLD	Million liters or megaliters per day
mm	Millimeter
MOE	Ministry of Environment, now Known as MECP
OCWA	Ontario Clean Water Agency
PS	Pumping Station
PWWF	Peak Wet Weather Flow
RAS	Return Activated Sludge
SBR	Sequencing Batch Reactor
SOR	Surface Overflow Rate
SWD	Side Wall Depth
TAN	Total Ammonia Nitrogen
TSS	Total Suspended Solids
UV	Ultraviolet
WAS	Waste Activated Sludge
WPCP	Water Pollution Control Plant

1.0 INTRODUCTION

1.1 BACKGROUND

The Town of Lakeshore is located in Essex County in the Province of Ontario. The Town of Lakeshore is bounded by Lake St. Clair to the north, the Municipality of Chatham-Kent to the East, the Town of Tecumseh to the West with the Municipalities of Leamington, Kingsville and Essex abutting the southern municipal boundary. Lakeshore was established with the amalgamation of the former Townships of Tilbury North, Tilbury West, Rochester, and Maidstone, and the former Town of Belle River. Figure 1.1 of Appendix A shows key plan of the County of Essex.

The urbanized areas within the Town of Lakeshore which are serviced with sewage works include Belle River, Maidstone, Stoney Point, Comber and South Woodslee. Other urbanized areas that are not serviced include North Woodslee, Lighthouse Cove, Rochester Place, Belle River Road, Essex Fringe and Highway 401 Corridor. This Class EA is concerned with the Belle River and Maidstone communities, which is shown in Figure 1.2 of Appendix A.

The Town of Lakeshore adopted its first comprehensive Water and Wastewater Master Plan in November 2008, and then an update of this Master Plan was undertaken and completed in 2018 in accordance with Phases 1 and 2 of the Municipal Class Environmental Assessment (EA) process.

The Water and Wastewater Master Plan and Update identified capacity issues within the Denis St. Pierre Wastewater System. The former Belle River community and the Maidstone urban are serviced by the Denis St. Pierre Wastewater System consisting of sanitary sewers, pumping stations, the Denis St. Pierre Water Pollution Control Plant (WPCP) and an outfall discharging to Lake St. Clair.

It is outlined in the Master Plan and Update that additional treatment capacity at the Denis St. Pierre Water Pollution Control Plant (WPCP) is required to support the existing services areas and the anticipated future growth. The Master Plan and Update were prepared in accordance with Phases 1 and 2 of the Class EA process to implement the preferred solution which involves capacity expansion of the Denis St. Pierre WPCP which is located on Rourke Line.

An executive summary of the Master Plan and Update is presented in Appendix B. Further information may be obtained by viewing the Water and Wastewater Master Plan at the Town's website: www.lakeshore.ca.

The Town of Lakeshore is now undertaking Phases 3 and 4 of the Class EA process which will involve evaluation of alternative design concepts for the proposed Denis St. Pierre WPCP capacity expansion, and preparation of an Environmental Study Report documenting the activities and recommendations from the Class EA process.

1.2 CLASS ENVIRONMENTAL ASSESSMENT PROCESS

1.2.1 General

The Environmental Assessment (EA) Act was passed in 1975 by the Province of Ontario to provide a mechanism for public participation in public projects.

The EA Act provides a means for the public or interest groups to receive the needed assurances that the environment is being protected from adverse effects on any significant public project. If there are necessary adverse effects on the environment, the public also needs assurances that all essential measures are being taken to minimize these impacts. The proponent is to weigh the impacts of a number of possible alternative ways to achieve the desired objective and to select the best alternative based on a thorough examination of each.

The EA Act recognized that certain municipal undertakings occur frequently, are small in scale, have a generally predictable range of effects or have relatively minor environmental significance. To ensure that a degree of standardization in the planning process is followed throughout the Province, the EA Act contemplated the use of the 'Class EA procedure for projects which require approval under the Act but which are not considered to be major environmental works. The work undertaken in this study includes Phases 3 and 4 the EA process and follows the planning and design process of the Municipal Engineers Association (MEA) Class EA, October 2000, as amended in 2007, 2011 and 2015.

The Class EA document also serves as a statement for public use in the decision-making process under the EA Act. Municipal staff and consultants can use the Class EA in planning design and construction of projects to ensure that the requirements of the EA Act are met. As part of the Class EA procedure, the proponent is required to state how the project is to proceed and gain approval under this EA Act. There are three approval mechanisms available to the proponent under the Class EA.

- **Schedule A** projects are limited in scale, have minimal adverse environmental affects and include a number of normal or emergency municipal maintenance and operational objectives. These projects are pre-approved and can proceed directly to implementation without following the full Class EA planning process.
- **Schedule A+** projects include a new sub-class of activities introduced as part of the 2007 MEA Class EA amendments. Schedule A+ projects are also pre-approved similar to Schedule A, however, the public is to be advised prior to project implementation. Advising the public of the project implementation is a means to inform the public of what

is being undertaken in their local area. The manner in which the public is advised is to be determined by the proponent.

- **Schedule B** projects generally include improvements and minor expansions to existing facilities. In these cases, there is a potential for some adverse environmental impacts and therefore the proponent is required to proceed through a screening process including consultation with those who may be affected.
- **Schedule C** projects generally include the construction of new facilities and major expansions to existing facilities. These projects proceed through the environmental assessment planning process outlined in the Class EA and require preparation of an Environmental Study Report (ESR) to document the planning process.

The preferred solution has multiple activities identified under multiple Class EA schedules. Therefore, this project is being completed under the Municipal Class EA as a **Schedule C** activity, which is the highest identified schedule.

1.2.2 Phases in Class EA Process

The Class EA for municipal projects follows a five-phase planning process that can be summarized as follows:

Phase 1 - Identification of the problem

Phase 2 - Identification of alternative solutions to the problem, consultation with review agencies and the public, selection of the preferred solution, and identification of the project as a Schedule A, A+, B or C activity.

Phase 3 - Identification of alternative design concepts (technical alternatives) for the preferred solution, evaluation of the alternative designs and their impacts on the environment, consultation with review agencies and the public and selection of the preferred design.

Phase 4 - Preparation of an Environmental Study Report (ESR) to document the planning, design and consultation process for the project. The ESR is placed on the public registry for scrutiny by review agencies and the public.

Phase 5 - Final design, construction and commissioning of selected technical alternative. Monitoring of construction for adherence to environmental provisions and commitments.

The steps in each phase are identified in the flow diagram shown in Figure 1.3.

2.0 EXISTING WATER POLLUTION CONTROL PLANT

2.1 DESCRIPTION OF EXISTING WASTEWATER TREATMENT PLANT

2.1.1 Overview

The Denis St. Pierre WPCP is located on Rourke Line Road south of County Road 22 and provides secondary level biological treatment. The plant was commissioned in 1976 as an extended aeration plant and was later upgraded and expanded in 1999 to a sequencing batch reactor (SBR) process. The treatment plant was rated for an average daily sewage flow of 13,640 m^3/day (3.0 MIGD) and a peak flow capacity of 35,069 m^3/d (7.7 MIGD). However, various operational problems were limiting the treatment capacity of the facility. In response to these operational issues, the Town of Lakeshore implemented the upgrade improvements including converting the SBR treatment process to an Extended Aeration process including blower facilities, new final clarifiers and a new effluent pumping station in addition to improvements to the biosolids handling process involving upgrades to existing centrifuge dewatering equipment as well as various improvements to ancillary systems. The improvements and upgrades were completed in the Winter of 2008 but had no increase in the plants rated capacity.

The main treatment process consists of fine screening, grit removal, four (4) extended aeration tanks, two (2) final clarifiers, and UV disinfection. Treated effluent is discharged into Lake St. Clair though an outfall sewer. Waste activated sludge is aerobically digested for stabilization and the stabilized biosolids are gravity thickened and dewatered by centrifuges. The dewatered biosolids are hauled to an offsite storage facility and ultimately land applied.

The existing plant site includes provisions for future expansion to accommodate the ultimate design. The existing plant site has sufficient space for expansions to accommodate an ultimate design flow, which will double the existing treatment capacity.

2.1.2 Design Wastewater Flows

The most recent upgrades of the existing Denis St. Pierre WPCP were completed in 2008. The plant was originally rated for an average daily sewage flow of 13,640 m^3/day (3.0 MIGD) and a peak flow capacity of 35,069 m^3/d (7.7 MIGD), and then re-rated for an average daily sewage flow of 14,500 m^3/day (3.2 MIGD) in January 2019.

Table 2.1 summarizes the original design flows for the existing plant. The table also includes ultimate design capacities. It shall be noted that the peak wet weather flow (PWWF) is equal to the total raw sewage pumping capacity for the current design.

Table 2.1 Design Sewage Flows

Parameter	Existing Design	Ultimate Design
Average Dry Weather Flow (ADWF)	13,640 m^3/d (1)	27,280 m^3/d
Peak Dry Weather Flow (PDWF)	35,070 m^3/d	70,140 m^3/d
Peak Wet Weather Flow (PWWF)	67,855 m^3/d	102,750 m^3/d
Note (1): Re-rated for an average daily sewage flow of 14,500 m^3/day (3.2 MIGD) in January 2019		

Table 2.2 summarizes the design flows used for each unit process in evaluating plant hydraulics.

Table 2.2 Hydraulic Design Parameters

Parameter	Current Design	Ultimate Design
Inlet Channel	67,855 m^3/d	102,750 m^3/d
Preliminary Treatment (Screening & Grit)	67,855 m3/d	102,750 m3/d
Secondary Treatment	35,070 m^3/d	70,140 m^3/d
UV Disinfection	35,070 m3/d	70,140 m3/d
Storm Bypass Facility - Normal Operating Conditions	32,800 m^3/d	32,800 m^3/d
Effluent Pump Station	70, 140 m^3/d	105,210 m^3/d
Outfall Sewer	70, 140 m^3/d	105,210 m^3/d

Bypass facilities are to be designed to bypass secondary treatment at flows exceeding 35,070 m^3/d (406 L/s) in the proposed design and 70,140 m^3/d (812 L/s) in the ultimate design. These flows are to be directed to a pair of wastewater holding tanks that will release the stored contents back to the plant headworks for treatment when capacity becomes available at the plant.

2.1.3 Design Wastewater Characteristics and Loading

The raw wastewater influent to the Denis St. Pierre WPCP is primarily of domestic origin, with the exception of a few commercial sources. Table 2.3 presents a summary of the raw wastewater characteristics and loadings for the upgrades of the existing plant in 2008.

Table 2.3 Raw Wastewater Characteristics and Loadings

Parameter	Concentration(1) (mg/L)		Loading (3) (kg/d)	
	Average	Max Month(2)	Average	Max Month(2)
BOD_5	139	197	1,896	2,692
TSS	238	380	3,246	5,194
TP	4.7	6.4	64.1	85.9
TKN	20.5	25.8	280	350

Notes:
(1) Average concentration based on 2000 – September 2006 historical average.
(2) Maximum month concentration based on maximum month factors (2000 to September 2006).
(3) Loading at the plant's rated capacity of 13,640 m^3/d

2.1.4 Treatment and Compliance Requirements

The treatment plant operates under an Amended Environmental Compliance Approval (ECA) No. 1087-B7FLRU issued on January 29, 2019. A copy of the current ECA is contained in Appendix B. The current ECA outlines the effluent compliance limits and objectives for the facility, which are summarized in Table 2.4 .

Table 2.4 Effluent Objectives and Non-compliance Limits

	Non-compliance Limits		Effluent Objectives
Parameter	Monthly Average Concentration	Annual Average Loading	Concentration
$cBOD_5$	14 mg/L	203 kg/d	10 mg/L
TSS	14 mg/L	203 kg/d	10 mg/L
TP	0.8 mg/L	11.6 kg/d	0.5 mg/L
Total Ammonia			
Summer (May 1 to Nov 31)	1.4 mg/L	20.3 kg/d	1.0 mg/L
Winter(Dec 1 to April 30)	2.8 mg/L	40.6 kg/d	2.0 mg/L
E. coli(1)	200 organisms/100 mL	-	150 organisms/100 mL
pH	6.5 - 9.5 inclusive	-	6.5 - 8.5 inclusive

Notes:
(1) Monthly geometric mean density.

2.1.5 Existing Treatment Process

The Denis St. Pierre Water Pollution Control Plant provides secondary level treatment for municipal wastewater from the Belle River and Maidstone communities. The treatment plant was commissioned in 1977 as an extended aerated activated sludge (EAAS) plant, and expanded in 1999 to a Sequencing Batch Reactor (SBR) process. The plant was later upgraded back to an EAAS plant in 2008.

Major unit operations at the Denis St. Pierre WPCP include the following:

- Raw Wastewater Pumping Station
- Fine Screening
- Grit Removal
- Extended Aeration Activated Sludge with Selectors
- Final Clarification
- UV disinfection
- Effluent Pumping Station and Outfall Discharge to Lake St. Clair
- Aerobic Sludge Digestion
- Sludge Dewatering by Centrifuges

The existing plant was designed to handle a peak flow 785 L/s (67,855 m^3/d) including a peak dry weather flow of 406 L/s (35,069 m^3/d) plus a wet weather bypass flow of 379 L/s (32,786 m^3/d). Two wastewater holding tanks with a total storage volume of 1,800 m^3 were also provided to capture and store bypass flows until they can be returned to the plant inlet works after the storm event when plant capacity become available. The upgrades were also designed to easily accommodate future expansions to an ultimate plant capacity of 1,189 L/s (102,750 m^3/d).

A schematic of the existing plant is shown in Figure 2.1of Appendix A.

Major unit process data are summarized in Table 2.5.

Table 2.5 Denis St. Pierre WPCP Major Unit Process Description

Unit Process	Process Description
Belle River Pumping Station No.2: Number and Type of Pumps: No. in Standby: hp each Firm Capacity: Total capacity:	 three pumps, 2-duty and 1-standby, each 80 L/s at 26 m TDH 1 50 13,820 m^3/d 20,735 m^3/d
Maidstone Pumping Station No.8: Number and Type of Pumps: No. in Standby: hp each Firm Capacity: Total capacity:	 two-stage screw pump station; each stage with two (2) screw pumps 1 per stage 50 23,560 m^3/d 47,120 m^3/d
Screening: No. of Units: Type: Peak Flow each (MLD)	 2 One automatic perforated fine screen with 6 mm opening, having a peak capacity of 67,750 m^3/d. One 12 mm bar screen, manually cleaned as standby
Grit Removal: Type: Diameter: No. of Vortex Separator Units: Vortex Tank Capacity – Treatment Vortex Tank Capacity – Hydraulic No. of Classifiers Grit Classifier Capacity	 One vortex separator, one grit classifier with cyclone 4.2 m 2 51,400 m^3/d 67,855 m^3/d 1 grit loading of 1.8 dry tons per hour
Selector: No. of Selector: No. of Chamber per Selector: Chamber Dimensions and Volume: Mixer Type Aeration Diffuser Type: Aeration Blowers:	 1 3 First Chamber A: 5.16mx2.45m by 4.7m SWD, 59 m^3 First Chamber B: 6.74mx4.45m by 4.7m SWD, 141 m^3 Second Chamber: 10.1mx3.2m by 4.7m SWD, 152 m^3 Third Chamber: 12.3mx5.25m by 4.7m SWD, 304 m^3 Submersible, operation in anoxic mode First Chamber A: 2.5 HP First Chamber B: 2.5 HP Second Chamber: 4 HP Third Chamber: 8.3 HP Fine pore, membrane disk, operation in aerobic mode One at 25 HP, PD type, rated 232 L/s at 7.5 psi discharge pressure
Aeration Tank: No. of Tanks: Cells per Tank: Tank Dimensions: Tank Volume – each Diffuser Type: Blowers:	 3 2 in parallel, divided by baffle wall 15.05 m x 43.5 m by 4.23 m SWD 2769 m^3 Fine pore, membrane disk, Sanitaire Four (3 duty, 1 standby) at 125 HP each, centrifugal type, each at 1000 L/sec at 7.5 psi discharge pressure

Table 2.5 Denis St. Pierre WPCP Major Unit Process Description

Unit Process	Process Description
Phosphorous Removal: Chemical: Storage: Chemical Feed Pumps:	 Alum one tank, 46,000 L Two (1 duty, 1 standby), each 108 L/hr Lines to dosing point at the final clarifier distribution chamber
Final Clarifier: No. of Units: Type: Total Volume m3: Surface Area – each: Dimensions - each:	 2 Circular, center drive clarifier mechanism 3,016 754 m^2 30.3 m diameter by 4 m SWD
Scum Pumps: No. of Units: Type & Size: Capacity - each:	 1 Wemco Hydrostal Torque Flow Pump, 3 HP 5.0 L/s at 5.9 m TDH
Return Sludge Pumps: No. of Units: Type & Size: Capacity - each:	 3 Wemco Hydrostal Torque Flow Pump, 16.7 HP 160 L/sec at 6 m TDH
Waste Sludge Pumps: No. of Units: Type: Capacity - each (L/sec):	 2 Wemco Hydrostal Torque Flow Pump, 2.9 HP 20 L/sec at 5.8 m TDH
UV Disinfection: No. of banks: Type: Rated Capacity	 2, each can handle flow of 17,534 m^3/d Ultra Violet, Trojan UV3000 35,069 m^3/d
Effluent Pumping Station: No. of Pumps: Type: hp each Flow Capacity - each:	 3 (2 duty,1 standby) Submersible centrifugal; fixed speed 45 406 L/sec at 3.3 m TDH
Outfall Sewer: Size (mm diameter): Type:	 900 Gravity flow, surcharged when effluent pumping station is on
Aerobic Digesters: No. of digesters: Dimensions and Volume: Aeration and Mixing Type:	 3 1st Digester: 21.5 m x 29.9 m by 4.1 m SWD, 2,620 m^3 2nd Digester: 6.8 m x 28.5 m by 4.5 m SWD, 870 m^3 3rd Digester: 5.8 m x 29.0 m by 4.5 m SWD, 760 m^3 1st Digester: Jet Aeration, 3 jet pumps, 20 HP each, 515 L/s air 2nd Digester: coarse bubble with 150 Flexcap Diffuser, 795 L/s air 3rd Digester: coarse bubble with 168 Flexcap Diffuser, 690 L/s air
Sludge Dewatering: Sludge feed pumps No. of Centrifuges: Centrifuge Capacity - each: Polymer Feed Pump	 One duty 6 L/s (actual 5.4 L/s), one standby 3 L/s Two dewatering centrifuges 2.8 L/s (maximum allowable hydraulic loading) 140 Kg/hr (maximum allowable solids loading) One with VFD, flow range 5.0 – 35 L/s

Table 2.5 Denis St. Pierre WPCP Major Unit Process Description

Unit Process	Process Description
Wastewater Holding Tanks: No. of Units: Type: Total Volume (m3):	 2 Circular, above surface 1,800
Standby Power: No. of Units and Capacity:	 Two, one 350 kW located adjacent to Selector & Blower Building, 460 KW generator in Sludge Management Building

2.2 PLANT INFLUENT AND EFFLUENT CHARACTERISTICS

2.2.1 Influent Flows

Historical annual wastewater flows to the Denis St. Pierre WPCP from 2009 to 2018 are summarized in Table 2.6. With the exception of an extremely wet weather year in 2011 with an annual precipitation of 1,568 mm, annual average daily wastewater flows were relatively constant over the period 2009 to 2013, ranging from 8,089 m^3/d to 9,766 m^3/d. However, over the period 2013 to 2018 with relatively constant annual precipitation ranging from 945 mm to 1,148 mm, annual average daily wastewater flows have shown a relatively constant on an upward trend, increasing from 9,646 m^3/d to 14,228 m^3/d.

Table 2.6 Historical Annual Wastewater Flows to Denis St. Pierre WPCP (2009-2018)

Year	Daily Average Flow (m^3/d)	Daily Max Flow (m^3/d)	Peak Factor	Annual Precipitation (mm)
2018	14,228	37,657	2.65	935
2017	13,332	35,872	2.69	1,014
2016	12,399	36,650	2.96	1,020
2015	11,887	-	-	981
2014	11,302	33,579	2.97	1,053
2013	9,646	25,677	2.66	1,148
2012	8,089	25,677	3.12	782
2011	13,819	33,966	2.46	1,568
2010	9,766	-	-	904
2009	9,586	-	-	948

According to the Certificate of Approval Number 1087-B7FLRU (January 29, 2019), the Denis St. Pierre WPCP has a rated plant capacity of 14,500 m^3/d with a peak flow capacity of 35,069 m^3/d. Average day flow (based on the 2018 data reviewed) is approximately 14,228 m^3/d, representing approximately 98 percent of the rated plant capacity (14,500 m^3/d). The most recent three-year annual average day flow (based on 2016 to 2018 data) is 13, 320 m^3/d, representing approximately 92 percent of the rated plant capacity.

The Belle River-Maidstone collection system is a separate sanitary sewer system that was designed to carry domestic wastewater to the treatment plant. However, extraneous flows into the sewer system result in significant flow increases during storm events. Peak flows vary significantly due to the significant contribution of wet weather inflow and infiltration into the Town's aging sanitary sewers.

The plant frequently experiences periods of high flows for extended durations that are typically associated with snow melt and wet weather events. Figure 2.2 of Appendix A shows flow into the plant during a storm event on November 2, 2018.

Based on the 2018 average day flow of 14,228 m^3/day and maximum day flow of approximately 37,657 m^3/d, the maximum day flow factor is 2.65, suggesting a high level of extraneous flow (infiltration and/or inflow, I/I) entering the collection system. Excess flows resulting from storm events are bypassed into a wastewater holding tank. If the capacity of the wastewater holding tank is not exceeded, following the storm event, the tank contents are pumped back into the inlet facilities for treatment when treatment capacity becomes available at the plant. If the capacity of the wastewater holding tank is exceeded, then the settled overflow bypasses secondary treatment and is discharged together with plant effluent into the outfall sewer. There is no provision for disinfection of bypass flows.

In an attempt to minimize wet weather flows at the plant, the Town implemented a 10-year infiltration and inflow reduction program in 2010. The historical flow records indicate there has been no significant reduction in infiltration and inflow. This doesn’t mean that I/I reduction program has not achieved some benefits but rather illustrates the overall magnitude of the I/I problem.

2.2.2 Influent and Effluent Characteristics

The influent/effluent wastewater characteristics for the review period are summarized in Table 2.7. Influent concentrations are generally consistent with typical medium-strength domestic wastewater characteristics as indicated in MECP Design Guidelines (170 mg/L BOD total, 200 mg/L SS, and 7 mg/L TP) and Metcalf & Eddy (190 mg/L BOD, 210 mg/L SS, and 7 mg/L TP).

As shown in Table 2.8, lower monthly flows generally coincide with higher influent concentrations (except TSS in 2018) in comparison to influent concentrations in maximum flow months.

Table 2.7 Summary of Influent and Effluent Characteristics (2018)

Parameter	Influent (mg/L)	Final Effluent (mg/L)	Removal Rate (%)
$cBOD_5$	107	2.3	97.9
TSS	190	3.1	98.4
TP	2.1	0.21	90.0
TAN	1.9	0.13	93.1

Table 2.8 Summary of Influent Characteristics (Min and Max Flow Months)

Influent Parameter(1)	Year					
	2018		2017		2016	
	Max Flow Month	Min Flow Month	Max Flow Month	Min Flow Month	Max Flow Month	Min Flow Month
Monthly Mean Flow (m^3/d)	17,587	11,725	16,277	10,485	17,505	9,940
$cBOD_5$ (mg/L)	42	62	25	140	46	162
TSS (mg/L)	178	85	108	250	80	543
TP (mg/L)	0.91	1.18	0.61	2.79	1.08	3.44
TKN (mg/L)	16.4	19.9	9.7	22.3	13.7	27

Notes:
(1) Influent flow and concentrations based on values reported in monthly (plant) data sheets

The Denis St. Pierre WPCP has consistently produced a high-quality effluent. As shown in Table 2.9, over the 2018 period reviewed, the plant achieves its effluent compliance requirements with concentrations of 2.3 mg/L, 3.1 mg/L, 0.21 mg/L and 0.13 for $CBOD_5$, TSS, and TP, TAN respectively. The plant has continued to consistently achieve a high-quality effluent and has consistently met its effluent compliance requirements.

Table 2.9 Summary of Denis St. Pierre WPCP Effluent Quality

Parameter		2011	2012	2013	2014	2015	2016	2017	2018
cBOD5 (mg/L)		2.23	2.12	2.06	2.04	2.14	2.06	2.35	2.29
TSS (mg/L)		5.38	3.47	4.13	2.83	3.18	2.86	3.66	3.10
Total Ammonia Nitrogen (mg/L)	Spring-Fall(1)	0.10	0.15	0.10	0.11	0.10	0.11	0.12	0.10
	Winter(2)	0.11	0.11	0.11	0.82	0.15	0.16	0.61	0.19
Total Phosphorous (mg/L)		0.20	0.20	0.19	0.10	0.12	0.11	0.16	0.21
E. coli (Organisms/100mL)		5.98	5.85	10.33	9.54	6.12	4.95	10.24	13.10

Note:
(1) Spring-Fall period: May 1 - Nov 3
(2) Winter period: Dec 1 - April 30

2.3 REVIEW OF EXISTING UNIT PROCESS PARAMETERS

2.3.1 General Unit Process Evaluation

The objective of the existing WPCP process evaluation and performance (liquid treatment train and solids handling) was to define the status of the existing Denis St. Pierre WPCP, in terms of flows, loadings, process capacity, bottlenecks, and opportunities. Key components of the process performance evaluation include:

- Review and summarize unit process parameters, including flows and loadings for the liquid treatment and sludge handling processes under current conditions and at the rated plant capacity;
- Review the impact of peak flow conditions on existing unit process parameters;
- Review of sludge accountability analysis and prediction of sludge generation at the rated plant capacity;
- Identification of process limitations and opportunities to maximize existing unit process capacities; and,
- Obtain a strong unit process understanding of the plant to serve as the design basis to effectively address plant unit process modifications required for a plant expansion

A review of historical operating and performance data was undertaken to establish and define the performance status of the overall plant and the individual unit processes. Historical operation records over the period January 2018 to December 2018 were compiled for analysis, including plant unit process parameters and sludge generation rates. Monthly average data values were used to simplify data compilation, although daily records were reviewed as applicable.

Process parameters are compared to MECP Design Guidelines for Sewage Works (July 2008) and other current literature values (Metcalf and Eddy, 2003). The MECP Design Guidelines are intended to facilitate the proper design of sewage works in Ontario and provide satisfactory guidance for the review and approval of sewage works by the Ministry through the Certificate of Approval (C of A) process. For the purposes of this process evaluation, the MECP Design Guidelines (2008) were used.

A detailed description of key unit process performance parameters based on the data reviewed (January 2018 to December 2018) is presented the following sections. The process parameters define the status of the existing plant and its anticipated condition at the current rated plant capacity (14,500 m^3/d). The definition of the plant process parameters will provide the basis for subsequent determination of design loadings for the plant capacity increase and evaluation of alternatives.

2.3.2 Influent Pumping Stations

The Belle River and Maidstone areas of the Town are serviced by a gravity sewer collection system complete with a series of lift pumping stations.

The Belle River collection system conveys sewage to Pumping Station No. 2. This pumping station is equipped with 3 pumps (2 duty, 1 standby) each having a rated capacity of 80 L/s. Firm capacity rating is 13,820 m^3/d (3.0 MIGD) or 160 L/s and total pumping capacity rating is 20,735 m^3/d (4.56 MIGD) or 240 L/s.

Pumping Station No. 2 pumps sewage directly to the inlet works at the Denis St. Pierre WPCP via two 300mm diameter forcemains approximately 1,220 meters long. The forcemains change lead and lag every 6 hours to minimize the buildup of H_2S entering the treatment plant inlet channel.

The Maidstone sewage collection system conveys sewage directly to Pumping Station No.8 located at the Denis St. Pierre WPCP site. Pumping Station No. 8 is a 2-stage screw pump station with two screw pumps per stage each having a capacity of 23,560 m^3/d (5.2 MIGD) or 272 L/s. The station is currently fitted with two stages with provisions for a future third stage. Firm capacity rating is 23,560 m^3/d (5.2 MIGD) or 272 L/s and total pumping capacity rating is 47,120 m^3/d (10.36 MIGD) or 545 L/s.

The pump station lifts sewage to an elevated concrete channel where it is conveyed into the inlet works of the treatment plant.

A summary of existing raw sewage pumping capacity is provided in Table 2.10.

Table 2.10 Existing Raw Sewage Pumping Capacity

Description	Current Design
Firm Raw Sewage Pumping Capacity (PS 2 and 8)	37,380 m^3/d (8.2 MIGD)
Total Raw Sewage Pumping Capacity (PS 2 and 8)	67,855 m^3/d (14.92 MIGD)

2.3.3 Preliminary Treatment

The preliminary treatment process consists of screening, screening dewatering and compaction, grit removal, grit washing and dewatering, wet weather storm water bypass and flow measurement facilities followed by distribution to the secondary treatment process.

The following sections provide a detailed description of the individual processes making up the preliminary treatment in the plant headworks.

2.3.3.1 Fine Screen

Mechanical fine screens are provided as the first stage of preliminary treatment. These screens typically remove rags, sticks and coarse debris from the incoming raw sewage flow to protect downstream plant equipment against reduced operating efficiency, blockage or physical damage. A manual fixed bar screen is also provided as an emergency standby to the mechanical fine screens.

A summary of existing raw sewage pumping capacity is provided in Table 2.11.

Table 2.11 Description of Existing Fine Screen

Screen Channels	Three, one for mechanical fine screen, one for manual screen, and one for future
Mechanical fine screen	Stainless steel perforated fine screen with 6 mm openings, Rated capacity 67,855 m^3/d
Manual Screen	Dimensions 914 mm W x 1750 mm H, 50 x 9 mm flat bars mounted vertical to flow with 12 mm openings

2.3.3.2 Grit Removal

Following the screening process, raw sewage passes through a grit removal system which removes sand and grit. Grit removal is required in advance of secondary treatment to prevent undue wear of machinery and the unwanted accumulation of solids in channels, tanks and digesters.

Screened wastewater enters and exits the grit removal chamber tangentially. Sand and grit are removed from the wastewater by the centrifugal force created inside the grit tank in one revolution as a result of the vortex flow pattern. The shape of the tank is conical to facilitate tangential movement of flow and spinning out of grit. Sand and grit settle and collect at the bottom of the tank by gravity.

Collected grit is periodically pumped out from the bottom of the tank using a recessed impeller vortex type grit slurry pump and a positive displacement air scour blower to loosen the compacted debris prior to pumping. The pumped grit is discharged into a grit classifier and cyclone where the inorganic grit and sand is washed and separated from the light organic solids. The dewatered grit and sand is discharged to the same collection bin as the screenings while the excess water and light organic solids are returned to the plant inlet via the plant sewer.

A summary of existing raw sewage pumping capacity is provided in Table 2.12.

Table 2.12 Description of Existing Grit Removal

Equipment	Description
Vortex Grit Tank	Stainless steel grit tank with an agitator drive system complete with a propeller made up of four (4) stainless steel agitating paddles. Rated treatment capacity 51,400 m^3/d
Grit Air Scour Blower	Rated capacity 62 cfm @ 6.0 psi
Grit Pump	Rated capacity 5.7 L/s @ 9 m TDH
Grit Cyclone	Rated capacity 20 m^3/hr
Grit Classifier	Rated capacity 0.859 m^3/hr

2.3.3.3 Plant Influent Flow Measurement and Wet Weather Flow Bypass

Following the grit removal process, wastewater passes through a elevated effluent channel fitted with both a flow measuring and bypass flow facility prior to entering the secondary treatment influent distribution chamber.

Primary flow measurement is provided to properly monitor plant operation and control raw sewage flows to the secondary treatment process using a bypass flow arrangement. The bypass flow facilities are also provided in the event that unusually high storm flows are received at the plant, which in combination with the raw sewage flows, exceed the plant's secondary treatment capacity to provide proper treatment.

2.3.3.4 Wastewater Holding Tanks

Wastewater from the bypass facility being provided as part of the existing preliminary treatment works is discharge into existing wastewater holding tanks. In order to mitigate the potential for partially treated sewage bypasses into the Lake, two existing wastewater holding tanks with a total storage volume of approximately 1,800 m^3 are utilized to capture and store the bypass flow from the downstream of vortex grit removal tank.

After a wet weather or overflow event when the plant secondary treatment has spare capacity, wastewater from the holding tanks is pumped to the plant headworks for treatment.

2.3.4 Secondary Biological Treatment

The existing secondary treatment process is comprised of one three compartment selector tank, three extended aeration tanks and aeration blowers, two circular secondary clarifiers, one new alum storage & feed building and one return activated sludge (RAS) and waste activated sludge (WAS) chamber and submersible pumping systems.

Space has been provided for a duplicate secondary treatment train on the east side of the plant site for the next planned future capacity expansion in the ultimate design.

2.3.4.1 Selector and Flow Distribution Chamber

Wastewater from the headworks primary effluent distribution chamber flows into a three-zone selector tank that acts as a selector against filamentous organisms to improve settleability and process efficiency. The selector is designed to allow operation in either aerobic or anoxic mode at the choice of the operator.

The selector is comprised of three chambers with the third chamber having twice the volume of chambers one and two. The selector zones have a total volume of approximately 600 m^3. The selector chambers are also baffled using concrete walls with opening to provide plug flow conditions.

Return activated sludge withdrawn from the bottom of the final settling tanks and conveyed to a return activated sludge chamber via an underground pipeline is pumped into the selector and mixed with the incoming raw sewage using a mechanical mixer.

A summary of the existing selector compartments is provided in Table 2.13.

Table 2.13 Existing Selectors

Parameters	Current (2018)	MECP Guideline (2019)
Total Volume of Selector	597 m^3	-
Volume of First Chamber B	141 m^3	-
Volume of Second Chamber	152 m^3	-
Volume of Third Chamber	304 m^3	-
MLSS	3,500 mg/L	-
Average Daily Flow	14,228 m^3/d	-
Maximum Daily Flow	37,657 m^3/d	-
HRT (Based on Q Avg.)	1.0 h	-
BOD_5 Load (1)	1892 kg/d (a)	-
F/Mv – 1st Chamber	5.1 d^{-1}	12 d^{-1} (anoxic)
F/Mv – 2nd Chamber	4.9 d^{-1}	6 d^{-1} (anoxic)
F/Mv – 3rd Chamber	2.4 d^{-1}	3 d^{-1} (anoxic)

Notes:
(1) Calculated based on influent BOD_5 of 133 mg/L (2012-2018 average), influent flow 14,228 m^3/d, and MLSS of 3,500 mg/L with 74 percent volatile solids.

2.3.4.2 Extended Aeration Tanks

A mixture of raw sewage and RAS flows from the selector effluent distribution chamber to each of the three extended aeration tanks. Each aeration tank has a baffle wall to provide a plug flow pattern. The baffle wall in each bioreactor runs along the long dimension of the tank in order to provide two passes per tank.

A summary of the existing extended aeration tanks is provided in Table 2.14.

Table 2.14 Existing Extended Aeration Tanks

Parameters	Current (2018)	MECP Guideline (2019)
Number of Tanks	3	-
Tank Dimensions	15.05 m x 43.5 m by 4.23 m SWD	-
Total Volume	Each 2,769 m^3	-
Average Daily Flow	14,228 m^3/d	-
Maximum Daily Flow	37,657 m^3/d	-
BOD_5 Load	1892 kg/d **(1)**	-
HRT (Based on Q Avg.)	14 h	15 h
Organic Loading Rate	0.23 kg-BOD_5/m^3·d **(2)**	0.17 - 0.24 kg-BOD_5/m^3·d
MLSS Concentration (mg/L)	3500	3000-5000
Return Sludge Rate (% Q average)	100%	50-200%
F/Mv	0.088 d^{-1}	0.05 - 0.15 d^{-1}
SRT	17 d **(2)**	>15 d

Notes:

(1) Calculated based on influent BOD_5 of 133 mg/L (2012-2018 average) and influent flow 14,228 m^3/d.

(2) Calculated based on typical waste sludge 120 g per m^3 raw sewage treated, effluent TSS of 3.1 mg/L (2018) and influent flow of 14,228 m^3/d (2018).

The aeration basin loading and operating parameters were within the MECP Design Guidelines for an extended aeration system. Using the current average influent cBOD5 concentration (133 mg/L), the volumetric loading rate was 0.23 kg/m^3·d at the influent flow of 14,228 m^3/d, which is within MECP Design Guidelines (2019). The activated sludge system was operated at an average F/Mv ratio of 0.065 d^{-1} based on an average MLSS concentration of 3,500 mg/L and 74 percent volatile solids.

The MECP Design Guidelines (2019) recommend a solids retention time (SRT) of 15 days or higher for an extended aeration treatment process. Based on the average parameters, the SRT at the Denis St. Pierre WPCP was 17 days.

The existing aeration system consists of Sanitaire fine bubble diffusers with four (4) Gardner-Denver centrifugal blowers (3 duty, 1 standby, 100 hp each). According to the design brief (Sanitaire #08-7028S, January 2009), the system was designed for an average day oxygen requirement of 11,466 kg/d (each aeration tank 3,822 kg/d). Current estimates of the average and peak month oxygen requirements for carbonaceous oxidation and nitrification are presented in Table 2.15.

The design oxygen supply (11,466 kg/d) exceeds the total oxygen requirements estimated for current peak conditions, including complete nitrification. The existing aeration system has sufficient capacity for both BOD_5 oxidation and nitrification.

Table 2.15 Oxygen Requirement Estimates at Current (2018) Flow Capacity

Oxygen Requirements	2018 Average Flow (14,220 m^3/d)	
	Average	Peak Month
BOD Oxidation(1) (kg/d)	2282	5397
Nitrification(2) (kg/d)	1099	2008
Total (kg/d)	3381	7405

Notes:
(1) BOD oxidation based on 2018 influent BOD_5 concentration of 107 mg/L and 253 mg/L for average and peak months, respectively
(2) Nitrification based on 2018 influent TKN concentration of 17 mg/L and 31 mg/L for average and peak months, respectively.

A summary of air requirements in existing extended aeration tanks is provided in Table 2.16. At the 2018 daily average flow of 14,220 m^3/d, the estimated air requirement is 3,233 L/s for a peak influent BOD_5 concentration of 253 mg/L and a peak TKN concentration of 31 mg/L. The existing aeration system consists of four (4) centrifugal blowers, each with a capacity of 1,000 L/s, to supply air to the extended aeration tanks. The existing blowers have adequate capacity to meet aeration requirements.

Table 2.16 Air Requirement Estimates at Current (2018) Flow Capacity

Air Requirements	Air Requirements to Meet Oxygen Demand (L/s) based on 2018 Average Flow (14,220 m^3/d)	
	Average Loading	Peak Loading
Extended Aeration Tanks	1476	3233

2.3.4.3 Secondary Clarification

Mixed liquor effluent from aeration tanks is directed to an influent/effluent chamber via underground piping prior to being discharged into the secondary clarifiers followed by the UV disinfection facility.

Two existing secondary clarifiers are provided to separate MLSS from the treated sewage before being disinfected and discharged to the Lake. The total surface area of the clarifiers is1,440 m^2 (720 m^2 each). The mixed liquor is split between the two clarifiers using equal fixed length weirs located along the effluent launders in each clarifier. Each secondary clarifier has a 30.3 m diameter by 4.0 m SWD and is fitted with a stainless steel sludge scraping and activated sludge return mechanism complete with skimmers, scum baffles and scum collection boxes along with effluent weirs, anti-rotational baffles and launder brush cleaning system.

Floating matter is skimmed and discharged into a common scum sump or chamber. Two vortex type submersible scum pumps; one installed in the scum chamber and the other stored on the shelf for standby duty, are utilized to pump the scum to the aerobic digesters. Each scum pump has a capacity of 5.0 L/s.

Settled sludge from the bottom of the clarifier is withdrawn using a series of sludge collection piping and routed to a return sludge well within the clarifier mechanism followed by conveyance back to the RAS/WAS chamber by gravity via underground piping.

A summary of the existing final clarifier is provided in Table 2.17.

Table 2.17 Existing Final Clarifier Loading Rates

Parameters	Current (2018)	MECP Guideline (2019)
Number of Tanks	2	-
Diameter	30.3 m	-
Total Surface Area	1440 m^2, each 720 m^2	-
Side Water Depth	4.0 m	-
MLSS	3,500 mg/L	-
Average Daily Flow	14,228 m^3/d	-
Maximum Daily Flow	37,657 m^3/d	-
Surface Overflow Rate at Peak Flow	26 $m^3/(m^2 \cdot d)$ (1)	40 $m^3/(m^2 \cdot d)$
Peak Solids Loading Rate	160 $kg/(m^2 \cdot d)$ (2)	170 $kg/(m^2 \cdot d)$

Notes:

(1) Calculated based on peak influent flow 37,657 m^3/d.

(2) Calculated based on the peak daily flow 37,657 m^3/d plus the design maximum return sludge flow rate (200% average daily flow) and the design MLSS (3,500 mg/L) under aeration.

The final clarifier surface overflow rate (SOR) under peak flow conditions is within the MECP Design Guideline (2019) value of 40 $m^3/(m^2 \cdot d)$ for extended aeration system. The peak solids loading rate is 160 $kg/(m^2 \cdot d)$ just within the MECP Design Guideline (2019). A peak value of 170 $kg/(m^2 \cdot d)$ is specified in the MECP Design Guidelines for an extended aeration system.

2.3.5 Chemical Feed for Total Phosphorus Removal

The Denis St. Pierre WPCP uses alum addition to the mixed liquor for phosphorus precipitation and removal. Phosphorus removal is accomplished through chemical addition immediately following the extended aeration tanks.

The existing alum feed system consists of two metering pumps (one duty, one standby), each with an operating feed range of 20 to 108 L/hr. Alum dosage is automatically controlled by flow pacing in direct proportion to plant flow measured at the UV effluent Parshall flume. The existing fiberglass alum storage tank has a storage capacity of 46 m^3 to provide 30-day storage at the average alum feed rate. The tank is located within a reinforced concrete retention well accessible by ladder and fitted with an ultrasonic level sensor for monitoring levels and recording volumes pumped.

Table 2.18 summarizes the historical alum dosage and volumes used for phosphorus removal from January to December 2018. Based on the year 2018 data reviewed, the raw sewage has a monthly TP concentration in the range of 0.6 mg/L to 5.11 mg/L, and the amount of liquid alum added to precipitate phosphorus is in the range of 38 mg/L to 58 mg/L as liquid alum.

Table 2.18 Effluent Flow and Alum Dosage (2018)

Date	Effluent Flow (m^3/d)	Monthly Alum Usage (L/d)	Monthly Alum Usage(1)		T-P (mg/L)		Al:P weight ratio
			mL/m^3	mg/L	Influent	Effluent	
01/2018	12,766	-	-	-	3.23	0.19	
02/2018	17,176	534	31	41	5.11	0.17	0.47
03/2018	14,847	504	34	45	0.6	0.14	4.4
04/2018	16,689	503	30	40	0.71	0.12	3.2
05/2018	17,587	504	29	38	0.91	0.12	2.4
06/2018	14,560	505	35	46	1.22	0.13	2.2
07/2018	12,019	522	43	58	1.76	0.17	1.9
08/2018	12,114	470	39	52	2.46	0.26	1.2
09/2018	15,365	412	27	36	3.48	0.31	0.6
10/2018	12,869	437	34	45	2.65	0.34	1.0
11/2018	15,533	518	33	45	1.95	0.26	1.3
12/2018	11,725	475	41	54	1.18	0.28	2.6
Average	14,403	489	34	45	2.11	0.21	1.2

Notes:
(1) Usage expressed as 48% commercial grade liquid alum with density of 1,335 kg/m^3

Theoretically, aluminum precipitates soluble phosphorus at a 1:1 molar ratio, although a higher molar ratio is required in practice to ensure phosphorus precipitation. The 1:1 molar ratio is equivalent to a Al:P weight ratio of 0.87:1. Based on the literature, typical aluminum to phosphorus (Al:P) ratios to achieve an 85 percent phosphorus reduction is in the range of 1.5:1 (WEF, 2010). In 2018, the Denis St. Pierre WPCP applied alum to the aeration tank effluent at an annual average weight Al:P ratio of 1.2:1, which is slightly less than the suggested application rate, but higher than theorical weight ratio of 0.87.

With higher influent T-P concentration in February and September 2018, Al:P weight ratio is in the range of 0.6, which is less than theorical weight ratio of 0.87. It is considered that a portion of phosphorous is removed by the biological treatment process prior to the chemical precipitation process. The MECP Design Guidelines (2008) noted that, with secondary treatment plants, the chemical dosage requirements for either alum or ferric chloride have been found to be least when the addition of chemical is made to the aeration tank effluent. Dosing to the aeration tank influent requires as much as 35 percent higher dosage rates.

Table 2.19 shows design parameters for alum addition based on the theorical Al:P ratio of 0.87. A maximum monthly TP concentration of 6.6 mg/L (Feb 2016) is used to size a chemical feed system required for phosphorus removal.

Table 2.19 Description of Existing Alum Feed and Storage System

Parameter	Value
Chemical Metering Pumps	2 (1 duty, 1 standby) each with operating feed range of 20 to 108 L/hr
Theorical Al:P weight ratio	0.87:1
Required Alum Dosage[(a)]	14.9 L Alum/kg P
Required Alum Dosage (as 48% commercial grade alum) [(b)]	99 mg/L (74 mL liquid alum per m^3 wastewater flow)
Maximum Daily Flow that can be fed by one existing chemical metering pump[(b)]	34,380 m^3/d
Existing Chemical Storage Capacity	46 m^3

Notes:

a) Estimated based on 48% alum solution with density of 1,335 kg/m^3.

b) Estimated based on a maximum month raw wastewater concentration of 6.6 mg/L (Feb 2016)

c) Estimated based on maximum chemical metering pump capacity of 108 L/hr.

2.3.6 UV Disinfection

The UV system is a Trojan System UV3000 for a peak flow of 35,070 m^3/d (406 L/s). The existing UV disinfection system, which uses low pressure, low intensity lamps, was designed based on a UVT of 65%.

It is noted that the Trojan System UV3000 at the Denis St. Pierre WPCP has a design operating parameters to disinfect to the limits of <150/100 mL fecal coliform (based on a 30 day geometric mean) up to a peak flow of 35,070 m^3/d with 30 day average suspended solids less than 10 mg/L and a UV transmission of more than 65 percent.

The design parameters of the existing UV system are provided in Table 2.20.

Table 2.20 UV System Design Parameters

Parameter	Value
Design Peak Flow	35,070 m^3/d
UVT	65%
Number of Channels	one, 8.8 m L x 0.99 m W x 0.673 m D
Total Number of Banks	2
Number of Modules per Bank	13
Number of Lamps per Module	8
Total Number of UV Lamps:	208

2.3.7 Effluent Pumping Station and Outfall

Effluent from the UV disinfection facility is conveyed into the effluent pumping station prior to being discharged through the existing outfall sewer to Lake St. Clair. Under normal conditions, the effluent flows through the plant processes and outfall sewer by gravity to Lake St. Clair. The effluent pumping station operates only when the water levels in the existing chlorine contact chamber reaches the maximum allowable water level of 177.39 m during specific high lake level and high flow conditions.

The proposed effluent pumping station would be sized to accommodate both the proposed design peak wet weather flow (PWWF) of 67,855 m^3/d as well as the ultimate design PWWF of 102,750 m^3/d.

The design parameters for the effluent pumping station are presented in Table 2.21:

Table 2.21 Effluent Pumping Station Design Parameters

Parameter	Present Design
Peak Wet Weather Flow	67,855 m^3/d
Effluent Pumping Station Dimensions	10 m wide x 9.6m long x 8.33m deep
Pump Type	submersible non-clog centrifugal pumps
Pump Number	3 (2 duty, 1 standby)
Pump Capacity	35,070 m^3/d, each
Pump Firm Capacity	70,140 m^3/d

Effluent from the existing plant is discharged from the plant site to a point approximately 600 meters offshore in Lake St. Clair. Effluent discharges through nozzles in the end section of the outfall to assist in dispersing the effluent.

The details of the outfall are presented in Table 2.22 below:

Table 2.22 Existing Outfall Details

Parameter	Land Portion	Lake Portion
Diameter	900 mm	900 mm
Length	720 m	630 m
Material	Reinforced concrete pipe	Polyethylene pipe
Depth	1.8 m below grade	1.8 m below lake bottom
Diffusers	-	16 – 10” x 5” nozzles 2.1 m below low lake water level

2.3.8 Biosolids Stabilization

2.3.8.1 Biosolids Production

An estimate of sludge generation was developed as a basis for predicting unit process parameters for aerobic digestion and centrifuge dewatering. It is assumed that total sludge is comprised of suspended solids removed and biological solids produced in aeration by BOD removal, chemical solids produced by alum addition for phosphorus precipitation, and suspended solids removed in the final clarifiers. Sludge production based on current conditions was also determined to verify the accuracy of the predictive approach in comparison to reported values.

The historical sludge production, in terms of raw sewage flow and sludge hauled, is shown in Table 2.23. Based on the historical data, the average total sludge production at the Denis St.

Pierre WPCP was about 134 g TS/m^3 of treated wastewater. This is approximately 12 percent higher compared to the MECP Guideline (2019) value of 120 g TS/m^3 for an extended aeration plant with chemical addition for phosphorus removal.

Historically, the average sludge production from the plant was approximately 0.9 kg VS/kg BOD_5 loading. The sludge production in terms of BOD removal is relatively high when compared to a published value of 0.77 kg VS/kg BOD_5 for this type of treatment process operated at 15-day SRT (WEF, 1998). This published value does not include chemical solids production, which will account for some of the discrepancy between the published and historical sludge production values. The 2017 and 2018 sludge production figures are presented in Table 2.23.

Table 2.23 Historical Sludge Production

Parameter	2018	2017
Annual Daily Average Flow (m^3/day)	14,228	13,526
BOD_5 (mg/L)	107	106
Volume of sludge cake hauled (m^3/yr)	2,882	2,890
Annual average TSS in sludge cake hauled (mg/L)	168,800	160,750
Daily average TSS in sludge cake/digested sludge (dry kg/d)	1,333	1,273
Daily average TSS in WAS sludge (dry kg/d) (1)	1,905	1,819
Biosolids Production (g TSS/m^3 raw sewage)	134	134
Volatile Solids Production (g VSS/kg BOD_5)	0.9	0.9

Notes:
(1) It was assumed that waste activated sludge contains 70% volatile solids and the volatile solids are reduced by 38 percent across the conventional aerobic digestion process (Metcalf and Eddy, 2003).

2.3.8.2 Aerobic Digestion

Unthickened WAS is wasted continuously to the aerobic digesters. The existing plant has three aerobic digestors operating in series. The first stage of the digester has one digester with a volume of 2,620 m^3 and the second stage has two aerobic digesters with a volume of 810 m^3 and 935 m^3, respectively, providing a total volume of about 1,745 m^3. The digested biosolids is subsequently conditioned with polymer and dewatered by centrifuges.

The 2018 flows and solids loading to the digester are shown in Table 2.24. Table 2.25 presents a summary of typical operating parameters for aerobic digestion and a comparison with MECP Guidelines.

Based on the total primary digester volume and the WAS flow to the digesters, the primary digester volatile solids loading rate was 509 g TVS/m^3·d. The MECP Design Guidelines (2019) recommend a volatile solids loading rate of no more than 1600 g TVS/m^3·d to the primary digester. The Guidelines indicate a minimum sludge retention time of 45 days. Based on the total combined aeration and digester volumes, the average SRT was 54 days.

Table 2.24 Sludge Flow and Loading Parameters (2018)

Parameter	WAS	Digested Sludge
Mass (kg/day)	1,905	1,333 (1)
% Total Solids	0.60	1.2(2)
Sludge Flow (m^3/day)	318	111

Notes:

(1) It was assumed that the volatile solids are reduced by 38 percent across the conventional aerobic digestion process (Metcalf and Eddy, 2003).

(2) Based on 2004-2006 historical solids concentration achieved in the digesters. Assumed decanting capability in all digesters.

Table 2.25 Comparison of Biosolids Stabilization Assessment - WAS

Parameter	At 2018 ADWF	MECP Guidelines
Combined Sludge Age in Aeration and Digesters	54 days(1)	>45 days
Stage 1 Digester VS Loading (3)	509 g VS/m^3/d (2)	< 1,600 g VS/m^3/d

Notes:

(1) For an extended aeration plant SRT of 15 days.

(2) Based on historical average digested sludge volume and volume of first digester (new tank) and VSS/TSS = 70%.

(3) Based on the volume of Stage 1 Digester of 2,620 m^3.

2.3.9 Centrifugal Dewatering

2.3.9.1 Polymer Feed

Polymer is currently added to the digested sludge entering the centrifuges to improve liquid/solid separation. The existing polymer mixing, and feed system is used for conditioning the digested sludge prior to dewatering. Table 2.26 summarizes the polymer dosages used at the Denis St. Pierre WPCP based on the 2018 sludge production records at the plant.

Based on the sludge thickening pilot study conducted by Hydro-Logic Environmental on January 28, 2004, the estimated polymer dosage for dewatering is in the range of 70 to 110 mg/L or 8 to 12 g/kg. Based on the current operation of the polymer system, the historic active polymer dose is around 11.5 g/kg. This is higher than typical values for centrifuge sludge dewatering. The MECP Design Guidelines (2019) recommend a polymer feed range 0 to 6.0 g/kg of dry solids for centrifuge dewatering.

According to the polymer supplier, the maximum dilution recommended is one percent. As shown in Table 2.26, The peak polymer feed rate is calculated to be 0.165 L/s. It has been assumed that the dewatering centrifuges would be operated a maximum of 24 hours per week (6 hours per day, 4 days per week) on a normal basis. The existing polymer system consists of a 2,500 L mixing tank and one polymer metering pump with a capacity range of 0.08 - 0.58 L/s. The existing polymer solution feed pump has adequate capacity to meet the required feed rate with the use of an emulsion type polymer.

Table 2.26 Sludge Flow and Polymer Dosage (2018)

Parameter	Digested Sludge	
	Average Daily	Hourly Sludge Flow
Daily Average Mass	1,333 (kg/day)	310 (kg/hr) (1)
% Total Solids	1.2%	1.2%
Sludge Flow	111 m^3/day	25.9 m^3/hr
Active Polymer Addition	-	3,580 g/hr(2)
Polymer Addition	-	7,160 g/hr(3)
Polymer solution feed to centrifuge	-	0.36 m^3/hr (0.098 L/s) at 1.0% diluted polymer

Notes:
(1) It was assumed based on operating centrifuge 24 hours per week (6 hours per day, 4 days per week)
(2) Based on polymer feed 6.0 g/kg of dry solids
(3) The polymer used is Zetag 7878 FS40. Active component of polymer emulsions is 50 percent (CIBA supplier info)

2.3.9.2 Dewatering Centrifuge

Digested sludge is conditioned with polymer and pumped to the dewatering centrifuges. The existing plant has two (2) centrifuges, each with a solids loading rate of 140 kg/h and a hydraulic loading rate of 2.8 L/s based on a sludge concentration of 1.4%.

The 2018 parameters for the dewatering centrifuges are summarized in Table 2.27. It has been assumed that the dewatering centrifuges would be operated a maximum of 24 hours per week (6 hours per day, 4 days per week) on a normal basis. As shown in Table 2.6, as 2018 plant flow (14,228 m^3/d) approach the rated flow capacity of 14,500 m^3/d, one dewatering centrifuge operated 30 hours per week if a solids concentration of 2.5% was achieved. However, if a solids concentration is 1.2%, two centrifuges need to run at longer operation time.

Table 2.27 Dewatering Centrifuge Operation Parameters (2018)

Parameter	2018 Daily Flow	
Daily Average Mass	1,333 (kg/day) (1)	1,333 (kg/day) (2)
% Total Solids	1.2%	2.5 %
Sludge Flow	7.2 L/s	2.8 L/s

Notes:

(1) Present design based on operating centrifuge 24 hours per week (6 hours per day, 4 days per week) without factoring in the solids loading limitations of the existing centrifuges

(2) Present design based on operating centrifuge 30 hours per week (6 hours per day, 5 days per week) factoring in the solids loading limitations of the existing centrifuges

2.3.10 Summary of Denis St. Pierre WPCP Process Evaluation

This review of historical operating and performance data (2011 to October 2018) has been used to define the status of the overall plant and the individual unit processes. Overall, the plant is operating at an average flow of 14,228 m^3/d, representing approximately 98 percent of the rated plant capacity.

The loading and operating parameters for each unit process are adequate in comparison to the MECP Design Guideline (2008) values.

The Denis St. Pierre WPCP has consistently produced a high-quality effluent with average concentrations of 2.3 mg/L, 3.1 mg/L, 0.21 mg/L and 0.13 for $CBOD_5$, TSS, and TP, TAN, respectively, over the 2018 period reviewed.

3.0 PROBLEM STATEMENT OR OPPORTUNITY

3.1 PROBLEM STATEMENT/OPPORTUNITY

Historical sewage flows to the treatment plant from the Belle River and Maidstone wastewater service area are given in Table 2.6. The table shows that an average treated flow of 14,228 m^3/d was recorded for 2018, which is approximately 98 percent of the plant's rated capacity of 14,500 m^3/d. Thus, the existing capacity of the Denis St. Pierre WPCP is not adequate to accommodate the projected future flows from the Belle River/Maidstone wastewater service area. Additional treatment capacity at the Denis St. Pierre WPCP is required to support the existing services areas and the anticipated future growth.

There are pressures for residential and industrial development in the Belle River and Maidstone areas and because of inadequate wastewater treatment capacity, developments have been restricted.

3.2 POPULATION PROJECTIONS

The growth projections for the wastewater service area form the basis for establishing wastewater flow rate assumptions and ultimately the future servicing plans. Figure 3.1 can be found in Appendix A.

Figure 3.1 shows the growth projections for the Maidstone and Belle River area serviced by Denis St. Pierre WPCP as obtained from

- Growth Study prepared by Watson & Associates Economists Ltd. for the Town of Lakeshore, November 2005;
- Lakeshore Growth Analysis Study by Watson & Associates Economists, Ltd., November 2015;
- Population projections prepared by Lapointe Consulting for the City of Windsor and County of Essex, January 2008; and,
- Statistics Canada, 2016.

The population projections in Figure 3.1 are based on the assumption that 65% of the entire town's population is in the Maidstone and Belle River Area. As shown on Figure 3.1, Watson's 2005 projections are significantly higher than Lapointe's 2008 projections. Lapointe's projection and Watson's 2015 growth analysis is consistent with population forecast by Statics Canada and Ontario Ministry of Finance. The population forecast presented in the Water and Wastewater Master Plan was obtained from the Watson's report (November 2005).

To provide flexibility for changes in case actual growth is lower or higher than population projection, Table 3.1 shows the population projections for the Denis St. Pierre Wastewater Servicing area as provided in the Watson's 2005 Growth Study and Lapointe's 2008 population projections.

Table 3.1 Population Projections from Denis St. Pierre Wastewater Servicing Area

Population Projection Method	Existing (2019)	10-Year (2029)	20-Year (2039)
Watson's 2005 Growth Study - HIGH	32,768	39,986	48,611
Lapointe's 2008 population projections	25,067	27,719	30,111

3.3 DENIS ST. PIERRE WPCP PLANT FLOW PROJECTIONS

Sewage consists of wastewater generated by residential, commercial and industrial development in the community plus extraneous flows. Extraneous flow includes inflow and infiltration (I/I). Infiltration is water entering a sewer system and service connections from the ground through such means as defective pipes, pipe joints, connections and manholes. Inflow is water discharged into a sewer system and service connections from such sources as roof leaders, yard and area drains, foundation drains, cooling water discharges, drains from springs and swampy areas, manhole covers, cross connections from storm sewers and combined sewers, catch basins, storm water, surface run-off and street washing or drainage. In general, inflow increases with the amount of precipitation. Increases in inflow have also been observed during winter thaws that produce runoff from melting of accumulated snow cover.

The MECP Guidelines for Design of Sanitary Sewage Works (2008) recommends a design value for average daily domestic flow ranging from 315 Liters per capita per day (Lpcd) to 540 Lpcd including an average extraneous flow allowance of 90 Lpcd. The MECP Guidelines also recommend an allowance of 227 Lpcd for peak extraneous flow and determination of the peak domestic component of sewage flow using the Harmon Formula.

Sewage flow data from the Denis St. Pierre system for the years 2009 to 2018 were analyzed and the average, maximum and minimum total daily flows expressed as cubic meters/day (m^3/d) and the per capita daily flows expressed as Liters per capita per day (Lpcd) are shown in Table 3.2.

For the Denis St. Pierre system, the average and maximum daily per capita sewage flow including extraneous flows for the corresponding serviced population was estimated to be 489 Lpcd and 576 Lpcd, respectively. A projected average flow of 550 Lcpd for future development was selected in anticipation of wastewater resulting from increased inflow and extraneous flows that may result from climate changes. By applying these average sewage flow rates to the populations projected by Lapointe's 2008 projection as well as Watson's 2015 projections, the projected average daily sewage flow in the year 2029 is 15,245 m^3/d and in the year 2039 is 16,561 m^3/d, respectively. The higher populations projected by the Watson's 2005 study projections are also used to estimate the projected average daily sewage flow in the year 2029 and 2039, which are 21,992 m^3/d and 26,736 m^3/d, respectively.

Table 3.2 Denis St. Pierre WPCP Wastewater Flows 2009-2018

	Average	Maximum	Minimum
Average Daily Flow, m^3/d	11,405	14,228 (2018)	8,089 (2012)
Maximum Daily Flow, m^3/d	32,725	37,657 (2018)	25,677 (2012)
Peaking factor	2.87	2.65	3.17
Average Daily Per Capita Flow, Lpcd	489	576	355
Maximum Daily Per Capita Flow, Lpcd	1,389	1,523	1,113

Table 3.3 shows projected lower and higher daily sewage flows based on the projected populations for each community for both high growth (Watson's 2005 study) and low growth (Lapointe's 2008 study) scenarios. The high growth scenario is approximately 20% higher than the projected average and the low growth scenario is approximately 20% lower.

Table 3.3 Denis St. Pierre WPCP Projected Wastewater Flows

Daily Flow	Year 2029	Year 2039
Lower Prediction Daily Flow, m^3/d (Lapointe)	15,245	16,561
Higher Prediction Daily Flow, m^3/d (Watson)	21,992	26,736
Average of Higher and Lower Daily Flow, m^3/d	18,619	21,649

3.4 APPROACH FOR TREATMENT CAPACITY EXPANSION

Population projections serve as a basis for determining future sewage flows. Accordingly, for design purposes, population projections are developed with a view to minimizing capital investment by designing and constructing specific facilities on the basis of shorter design periods if the facilities lend themselves to economic expansion in short term stages. The decision regarding the selected initial design period is based upon anticipated growth rates, financing costs, economies of scale and other relevant factors.

The existing Denis St. Pierre WPCP site, which is located on Rourke Line Road south of County Road 22, can physically accommodate future treatment plant expansions. The most recent upgrades of the existing treatment plant were completed in 2008. The plant was rated for an average daily sewage flow of 13,640 m^3/day (3.0 MIGD) and a peak flow capacity of 35,069 m^3/d (7.7 MIGD), and then re-rated for an average daily sewage flow of 14,500 m^3/day (3.2

MIGD) in January 2019. The existing plant site has sufficient space for expansions to accommodate an ultimate design flow, which will double the existing treatment capacity.

During the last plant upgrades in 2008, the layout and hydraulic sizing of channels and plant piping made provisions for additional treatment units to be added and potential increases in loading rates. The location of existing buildings and final settling clarifiers also allow for the location of the next stages of expansion. Within the existing screening and grit removal building, space has been provided for the addition of equipment for expansions. Provision has been made in sizing effluent pumping station to accommodate ultimate plant capacity.

To provide flexibility for process design and changes in case actual growth is lower or higher than population projection, the proposed approaches presented in Table 3.4 will be used for the design of wastewater treatment facilities servicing Maidstone and Belle River area.

- The expansion of the treatment plant for the 20-year design flow, which services the average growth requirements to the year 2040 with an average daily flow of 25,000 m^3/d and a maximum dry weather daily flow of 64,000 m^3/d.
- If high growth is experienced in the service area, the ultimate plant expansion would be required before Year 2040 to 30,000 m^3/d average and 77,000 m^3/d maximum dry weather daily flows.

Table 3.4 Phasing for Denis St. Pierre WPCP Expansions

Daily Flow	Existing	20 Years Design	Ultimate Design
Average Daily Flow, m^3/d	14,500	25,000	30,000
Maximum Dry Weather Flow, m^3/d	37,300	64,000	77,000
Maximum Wet Weather Flow, m^3/d	72,100	90,000	108,000

4.0 WASTEWATER TREATMENT DESIGN ALTERNATIVES

4.1 GENERAL REQUIREMENTS

The primary technical considerations when evaluating alternative treatment processes include the ability of a system to consistently meet the established discharge criteria, the feasibility of locating a suitable site for the process and of expanding the process to the ultimate capacity, the ability of the process to handle variations in hydraulic and organic loadings, requirements for sludge handling and disposal, and capital and operating costs. The following sections describe several wastewater treatment processes that might be considered for the Denis St. Pierre WPCP expansion.

4.1.1 Site Selection

The east side of the existing Denis St. Pierre WPCP site was originally purchased and reserved to accommodate an expansion of the plant. This site offers the following advantages for locating a common area treatment facility.

- The site is more than adequate in size to accommodate the projected footprint of a treatment system to meet the servicing needs;
- The site utilizes an existing plant site in lieu of establishing a new site;
- The property is already owned by the Town of Lakeshore; and,
- The site is adequately separated from existing development in accordance with MECP buffer zone requirements.

In view of the numerous and distinct advantages offered by this site, no further review of alternative sites was carried out as part of preparation of this ESR. Accordingly, it is proposed to expand the wastewater treatment facilities on the existing Denis St. Pierre WPCP site, which is shown in Figure 4.1 of Appendix A.

4.1.2 Effluent Objectives and Non-Compliance Limits

The existing Denis St. Pierre WPCP operates under an Amended Environmental Compliance Approval (ECA) No. 1087-B7FLRU issued on January 29, 2019. The expanded Denis St. Pierre WPCP is to meet effluent compliance limits and objectives outlined in the current ECA.

Table 4.1 summarizes the current ECA effluent objectives and non-compliance limits for the Denis St. Pierre WPCP.

Table 4.1 Existing Effluent Objectives and Non-Compliance Limits

	Non-compliance Limits		Effluent Objectives
Parameter	**Monthly Average Concentration**	**Annual Average Loading**	**Concentration**
$cBOD_5$	14 mg/L	203 kg/d	10 mg/L
TSS	14 mg/L	203 kg/d	10 mg/L
TP	0.8 mg/L	11.6 kg/d	0.5 mg/L
Total Ammonia			
Summer (May 1 to Nov 31)	1.4 mg/L	20.3 kg/d	1.0 mg/L
Winter(Dec 1 to April 30)	2.8 mg/L	40.6 kg/d	2.0 mg/L
E. coli(1)	200 organisms/100 mL	-	150 organisms/100 mL
pH	6.5 - 9.5 inclusive	-	6.5 - 8.5 inclusive

Notes:
(2) Monthly geometric mean density.

The recommended effluent limits and objectives for the Denis St. Pierre WPCP expansion are outlined in Table 4.2 below:

Table 4.2 Recommeded Effluent Objectives and Non-Compliance Limits

	Non-compliance Limits		Effluent Objectives
Parameter	**Monthly Average Concentration**	**Annual Average Loading**	**Concentration**
$cBOD_5$	14 mg/L	203 kg/d	10 mg/L
TSS	14 mg/L	203 kg/d	10 mg/L
TP	0.5 mg/L	11.6 kg/d	0.4 mg/L
Total Ammonia			
Summer (May 1 to Nov 31)	1.4 mg/L	20.3 kg/d	1.0 mg/L
Winter(Dec 1 to April 30)	2.8 mg/L	40.6 kg/d	2.0 mg/L
E. coli(1)	200 organisms/100 mL	-	150 organisms/100 mL
pH	6.5 - 9.5 inclusive	-	6.5 - 8.5 inclusive

Notes:
(3) Monthly geometric mean density.

An assimilative capacity study was completed on Lake St. Claire to evaluate the lake's ability to handle the projected future effluent flows and contaminant concentrations (a copy of this study can be found in Appendix C). The new effluent limits were based on the Ultimate Design Average Flow of 30,000 m^3/d. Results from the study helped to guide the recommended effluent discharge criteria that were reviewed by the MECP for the upgraded Denis St. Pierre Water Pollution Control Plant.

On January 7, 2020, the draft ESR and Assimilated Capacity Study were sent to the MECP for review. The MECP responded on January 28, 2020 noting that the initial proposed effluent limits for TP in the draft ESR of 0.6 mg/L for monthly average concentration and 0.5 mg/L for the effluent objective, were not acceptable. These limits did not comply with the Canada Ontario Water Quality Agreement (COA) for the maximum discharge limit into Lake Erie which is set at 0.5 mg/L. Although the Denis St. Pierre WPCP does not discharge into Lake Erie, the MECP did note that Lake St. Clair does face similar challenges with cyanobacteria blooms and therefore preferred the maximum proposed effluent limit be in keeping with the COA agreement.

After the MECP reviewed the existing treatment plant's operational records, it was also noted that the plant consistently treats the effluent to, at, or below 0.4 mg/L. The newly expanded plant should have the same efficiency and it is reasonable to expect similar effluent characteristics. The accepted TP monthly average concentration of 0.5 mg/L and an effluent objective of 0.4 mg/L were accepted by the MECP.

As shown in Table 4.2, the new discharge criteria are more stringent, particularly in terms of total phosphorous (TP) monthly average concentration, which was reduced from 0.8 mg/L to 0.5 mg/L with effluent objective of 0.4 mg/L. All other monthly average concentrations and effluent objectives remained the same as previously accepted. Email correspondence detailing the effluent limits and objections acceptance can be found in Appendix F.

The limits proposed are valid for the initial build out or an effluent daily average capacity of 30,000 m^3/day. These effluent limits should be verified and revised as needed upon introduction of additional plant capacity that increases effluent flow rates. Further monitoring of the receiving environment should be undertaken to support adoption of the effluent criteria proposed and to determine the need for any alterations to the criteria.

The plant has continued to consistently achieve a high-quality effluent as shown in Table 2.9. Over the 2018 period reviewed, the plant achieves its effluent compliance requirements with concentrations of $CBOD_5$, TSS, and TP, TAN, which are even well below the effluent objectives. Therefore, the loading limits for the proposed expansion are anticipated to be in keeping with previously approved loading from the existing plant.

Provision shall be considered in the detailed design for future addition of tertiary treatment (i.e. filtration) in case that the expanded plant is required to meet more stringent effluent quality requirements than associated with secondary treatment, or the expanded plant cannot maintain the existing high effluent quality due to influent characteristics changes.

The site of the demolished arena on the southside of existing Final Settling Tank No.1 and No.2 is a possible location of future tertiary treatment facility.

4.2 WASTEWATER TREATMENT TECHNOLOGY ALTERNATIVES

4.2.1 Overview

Treatment technology and plant sizing should consider both current and future needs of the service area. This is to ensure that the initial capital investment in a treatment plant is not a “throw away” cost if the next expansion phase deems components of it to be either redundant or undersized.

It is imperative that treatment technology be properly evaluated. Items considered during evaluation included, but were not limited to:

- Ability for logical and cost-effective plant expansion;
- Ability to meet effluent limits and objectives;
- Operational and maintenance costs;
- Life cycle costs; and
- Proven technology, proof of successful installations within Canada and Southwestern Ontario (similar climate) within the last 20 years.

A brief overview of the following technologies is provided in subsequent sections:

- Extended Aeration (EA);
- Sequencing Batch Reactor (SBR); and
- Membrane Bioreactor (MBR).

All of the treatment systems described in the following sections will require pretreatment in the form of screening and grit removal facilities to remove rags, debris, floating material, stones and grit from the raw sewage flow. These pretreatment facilities are required to protect downstream equipment and processes from pluggage and abrasion problems. Since screening and grit removal requirements are common for all of the potential treatment processes they are not a determining factor in evaluating and selecting the preferred treatment process.

4.2.2 Activated Sludge Treatment Systems

In the activated sludge process, an environment is created where micro-organisms (activated sludge) can oxidize organic matter in the wastewater under controlled aerobic conditions. The process normally occurs in a tank (aeration tank) in which air is introduced to mix the contents and provide a source of oxygen for the micro-organisms. The micro-organisms consume the organic matter in the wastewater and in so doing produce new cell mass. The micro-organisms and the wastewater are mixed for a period of time after which the mixture of new and old cells flows to a settling tank where the micro-organisms are settled and separated from the treated wastewater. A portion of the settled micro-organisms is re-cycled back to the aeration tank (return activated sludge) to maintain a desired concentration of micro-organisms and a portion of the settled sludge is wasted for disposal.

There are several variations of the activated sludge process described as follows;

Conventional Activated Sludge (CAS)

In the CAS process raw wastewater undergoes primary treatment through settling tanks, with or without chemical addition for phosphorous removal, prior to entering the activated sludge aeration tank. The main components in the treatment process include primary settling tanks, aeration tanks, air blowers, secondary settling tanks and activated sludge return pumps. The primary settling tanks (clarifiers) reduce organic and suspended solids loading on the activated sludge process thereby reducing aeration requirements and saving capital and operating costs. The advantages of primary treatment and the savings in aeration requirements generally apply to treatment plants with design capacities greater than 4,500 m^3/d (1.0 MIGD). For smaller plants the savings in aeration tankage and operating costs are generally more than off-set by the extra costs for construction of the primary settling tanks and for primary sludge treatment and disposal.

Extended Aeration Activated Sludge (EAAS)

The extended aeration activated sludge process is a modification of the conventional activated sludge process in which primary settling tanks are omitted. Raw wastewater is introduced directly to the aeration tank. Longer aeration times of 18 to 24 hours and lower organic loadings are normally required to obtain acceptable effluent quality. As with the conventional activated sludge process, effluent from the aeration chamber flows to a settling tank where the suspended micro-organisms are separated from the treated wastewater. A high concentration of micro-organisms is maintained in the extended aeration process by re-circulating the majority of the solids from the settling tank back to the aeration tank.

The extended aeration process normally provides good treatment including nitrification and is well suited to small communities with primarily domestic wastewater. The EAAS process is capable of accommodating variations in hydraulic loadings that are typical for small communities and produces less sludge than a conventional activated sludge plant. The extended aeration process is often considered to be more expensive for large treatment plants both in terms of capital cost for aeration tankage and operating costs for supplying air to the system.

Sequencing Batch Reactor (SBR)

The sequencing batch reactor process is a modification of the extended aeration process in which the final settling tanks are omitted. As in the EAAS process the raw wastewater flows directly into the aeration tank. While in the aeration tank, the wastewater is aerated over a number of "air-on/air-off" cycles. The solids-liquid separation (i.e. final clarification) occurs during the air-off part of the cycle. During the latter part of the air-off cycle, treated effluent is decanted or withdrawn from the liquid surface. The SBR process can maintain a continuous wastewater inflow allowing flow equalization, biological oxidation, nitrification and final clarification to be carried out in one tank.

4.2.3 Attached Growth Systems

Trickling Filter/Solids Contact (TF/SC)

The trickling filter/solids contact (TF/SC) process makes use of both attached growth and suspended growth types of biological treatment. The trickling filter is an attached growth type of biological wastewater treatment system. In this process, wastewater is passed over a media to which micro-organisms attach themselves. Through aerobic cell metabolism the organic matter in the wastewater is consumed. The trickling filter consists of a bed of porous media with wastewater added at the top and allowed to cascade or trickle through its depth. A bacteriological slime attaches itself to the media and absorbs the organic matter in the wastewater. The media support system is designed in a manner which allows natural air circulation up through the filter to maintain aerobic conditions.

Effluent from the trickling filter flows to a solids contact unit. The solids contact unit consists of aeration tank facilities similar to a small activated sludge system but with only 15 to 30 minutes retention time in the aeration tank. The solids contact unit conditions the sludge to enhance settling characteristics and provides some additional nitrification and BOD_5 removal. Effluent from the solids contact unit flows to settling tanks where solids are separated from the treated wastewater. A portion of the settled solids is returned to the solids contact unit and the remainder is wasted for further sludge processing.

Sludge production from a TF/SC process is reported to be less than that from an activated sludge process and is generally easier to settle and dewater. As well, there is an operating cost advantage with the TF/SC system since natural air circulation is used to aerate the trickling filter.

Primary sedimentation is required in advance of the TF/SC process to reduce solids and organic loading and to remove larger solids and grease. This introduces the requirement for primary sludge stabilization, handling and disposal.

To our knowledge there are currently no TF/SC systems in operation in Ontario although these systems are quite common in the mid-west and western United States.

In colder climates treatment efficiency in small TF/SC plants may suffer due to heat loss in the trickling filter during very cold weather conditions.

Rotating Biological Contactor (RBC)

The rotating biological contactor is another form of attached growth biological wastewater treatment system in which aerobic micro-organisms attached to the surface of rotating discs partially submerged in wastewater. Each RBC consists of a number of circular discs mounted on a horizontal shaft with approximately 40% of the disc diameter submerged in a contoured channel. As the discs rotate, a thin film of wastewater coats each disc and a bacteriological slim is formed. During rotation, the film is exposed to the atmosphere maintaining aerobic conditions. As with a trickling filter, excess bacteriological growth sloughs off and is carried with the effluent from the RBC treatment unit to a final settling tank where solids are separated from the treated wastewater.

Nitrification can be obtained by installing RBC units in series. The organic matter is consumed by the first set of RBC's and nitrifying bacteria form on the latter RBC's to convert ammonia to nitrate.

Primary sedimentation is required in advance of the RBC process to provide the necessary reduction in solids and organic loading together with removal of larger solids and grease. RBC's are normally installed outdoors with insulated covers and have proven to operate successfully in northern climates.

Biological Aerated Filter (BAF)

The biological aerated filter is another form of attached growth biological wastewater treatment process. The process is similar to that in a trickling filter but the media in this case is much smaller with a grain size similar to that in a sand filter. BAF units can be of the downward or upward flow type with upward flow units seeming to gain favour in recent years. Wastewater pre-treatment by primary sedimentation and very fine screening is required in advance of the BAF treatment units. The pre-treated wastewater is added to the bottom of the filter tank along with compressed air to maintain aerobic conditions throughout the tank. The wastewater and air flow up through the media in the tank with aerobic micro-organisms removing organic carbon in the lower and middle areas of the tank and nitrifying bacteria converting ammonia to nitrate in the upper reaches of the tank. In contrast to the trickling filter, excess biomass is not sloughed off but is maintained in the filter bed. Effluent from the BAF unit is very low in suspended solids and is acceptable for discharge without the need for final settling tanks. Excess biomass which accumulates within the filter must be removed by periodic backwashing of the filter units. Backwash water is usually re-circulated back to the front of the treatment works to co-settle with the raw wastewater in the primary settling tanks. Effluent water storage and backwash pumps are required for backwashing of the filter units.

The BAF treatment process has been in operation in Europe for many years and there are several installations operating in the Province of Quebec. In recent years, two large BAF treatment systems have been installed in Windsor and Thunder Bay, Ontario.

Primary sedimentation and fine screening are required ahead of the BAF process and this introduces the requirement for primary sludge handling facilities. A distinct advantage is that the BAF process does not require final clarification.

4.2.4 Membrane Bioreactor

Membrane bioreactor (MBR) technology is similar to the EAAS process except that solids/liquid separation is achieved through the use of immersed ultra-filtration membranes that operate under vacuum pressure. The MBR represents the current state of the art for wastewater treatment and is finding niche applications where space is limited, where stringent effluent limits must be met, and/or where retrofits of existing facilities is proving cost competitive with more traditional expansions.

As MBRs can operate at much higher mixed liquor concentrations compared to extended aeration, this leads to better degradation in a given time span or to smaller required reactor volumes. The MBR process combines the unit operations of aeration, secondary clarification and tertiary filtration into a single process.

Advantages of MBR treatment technology include:

- Achieve very high-quality effluent, low in particulate;
- Smaller footprint (when compared to extended aeration); and
- Does not require a tertiary filtration system.

Disadvantages of MBR treatment technology include:

- Higher life-cycle cost due to power costs and costs associated with the replacement of membrane modules.

4.3 COMPARISON OF TREATMENT PROCESS ALTERNATIVES

Table 4.3 provides a comparison of the relative merits of the potential treatment processes.

All the potential treatment processes are able to meet the effluent guidelines set out by the MECP.

All the processes are very similar and relatively benign in terms of odor and environmental impacts.

While all the processes could potentially be used to meet the needs of the Belle River and Maidstone area, land area requirements for the different processes vary significantly. The existing site has difficulty accommodating any of alternatives that require primary settling tanks. Given the area available at the plant site, land area requirement is a significant factor in selecting the preferred process.

The EAAS and SBR treatment systems have been commonly used in Ontario for smaller plants treating mainly domestic wastewater from residential service areas. The two treatment systems that do not require primary settling tanks are particularly well suited to the existing site.

Table 4.3 Comparison of Potential Treatment Processes

Item \ Process	CAS	EAAS	SBR	TF/SC	RBC	BAF	MBR
Able to meet MECP effluent criteria	yes	yes	yes	yes	yes	yes	yes
Odor and environmental impacts	minimal	minimal	minimal	minimal	minimal	minimal	minimal
Land area requirements	more	fair	fair	more	fair	less	less
Primary settling tankage required	yes	no	no	yes	yes	yes	yes
Modular capacity expansion	yes	yes	yes	yes	yes	yes	yes
Sludge handling and disposal(1)	Primary + WBS	WBS only	WBS only	Primary + WBS	Primary + WBS	Primary + WBS	Primary + WBS
Suitability for small treatment plant	possible	yes	yes	possible	yes	possible	possible
Ability to accommodate peak hydraulic loads	good	good	fair	good	fair	good	good

Note
(1) WBS = Waste biological sludge (known as waste activated sludge “WAS” for the CAS, EAAS, and SBR processes)

Sludge processing and disposal considerations are a significant factor in selecting a suitable treatment process. All of the potential treatment systems produce waste biological sludge. Since handling and disposal of waste biological sludge is a common requirement for all of the treatment options it will not be a determining factor in evaluating and selecting the preferred process. The EAAS and SBR processes are the only two potential treatment systems that do not require primary settling tanks and therefore do not produce any raw sewage sludge. Eliminating the need to handle, process and dispose of raw sewage sludge is an important benefit providing both capital and operating cost savings.

It is noted that the Town of Lakeshore has experience with both the EAAS and SBR treatment processes. The Denis St. Pierre WPCP was upgraded in 2008 and, at the same time, the treatment process was converted from a SBR system to an EAAS system. To date, operating experience with the EAAS system has been good and there is definite merit in utilizing the same process for the plant expansion. By using the same treatment process at the existing plant, operator training would be confined to a single treatment process and assignment of operating staff to any one of the Town's treatment facilities would be simplified.

Based on the foregoing evaluation, the EAAS is identified as the preferred treatment process for the Denis St. Pierre WPCP expansion.

4.4 PREFERRED EAAS TREATMENT PROCESS

4.4.1 Treatment Plant Size and Staging

As noted in section 3.4 of this report, expansion of the Denis St. Pierre WPCP to an average daily flow of 25,000 m^3/d, a peak dry weather flow of 64,000 m^3/d, and a peak wet weather daily flow of 90,000 m^3/d would serve the growth requirements of the Belle River and Maidstone area to the year 2040. If the high growth is experienced in the service area, plant expansion would be required before year 2040 to 30,000 m^3/d average, 77,000 m^3/d peak dry weather and 108,000 m^3/d wet weather daily flows.

In this section tankage sizing and configurations are presented for the EAAS treatment process. The plant layouts are based on the ultimate design capacity requirement of 30,000 m^3/d with a peak wet weather flow (PWWF) capacity of 108,000 m^3/d. The components that would have to be put in place for the plant expansion and the ultimate expansion are shown as part of the larger plant layout.

4.4.2 Preferred Design Approach

The plant design and layout take into account the need for equipment and process redundancy to provide continuing treatment capability during maintenance and repair activities. The MECP publication "Design Guidelines for Sewage Works 2019" states that standby or redundant capabilities need to be provided for satisfactory operation of the sewage works during power failures, flooding, peak loads, equipment failure and maintenance shutdowns. Generally, sewage pumping stations and treatment works should be designed so that with the largest flow capacity unit out-of-service the hydraulic capacity of the remaining units can handle the design peak instantaneous flow. The design of a sewage treatment plant, since it has an effluent discharge into the environment, should be based on the premise that the failure of any single component should not prevent the sewage works from meeting the required effluent quality and quantity criteria, while operating at design flows (i.e. minimum to maximum design flows).

4.4.2.1 Pumping Station

Existing Pumping Station No. 8 is a 2-stage screw pump station with two screw pumps per stage each having a capacity of 23,560 m^3/d or 272 L/s. Pumping Station No. 8 is currently fitted with two stages with provisions for a future third stage.

As part of the plant expansion, the third screw pump set should be installed so firm and total capacities of the pumping station increase to 47,120 m^3/d or 545 L/s and 70,680 m^3/d or 817 L/s, respectively. Alternatively, a submersible pump can be installed instead of addition of the third screw pump set. These alternatives will be investigated in detail during final design in order to determine the preferred option.

4.4.2.2 Preliminary Treatment

A schematic diagram of the proposed preliminary treatment facilities including expansion phasing information is shown in Figure 4.2.

Fine Screening

Screens are provided as part of preliminary treatment to remove rags, sticks and other oversized debris from the incoming raw sewage flow. This is done to protect downstream equipment and processes from reduced operating efficiency, increased maintenance, blockage or damage.

The existing screening facility is comprised of the three inlet screening channels. The 2008 plant upgrades constructed one duty channel and one bypass channel with “knock out” provision for the addition of a third channel. The existing duty channel with a fine screen has a capacity of 70,200 m^3/d. The bypass channel is equipped with a manually cleaned bar screen to accommodate the ultimate PWWF. The mechanically cleaned screen provides “fine” screening with clear openings in the range of 7 to 10 mm whereas the manually cleaned screen consists of a bar screen with clear openings of 12 to 15 mm.

Phasing for installation of the screening facilities is proposed as follows:

20 Year Design Phase

- Add fine screen equipment in third screening channel with a capacity of 67,855 m3/d so that the combined capacity of the two channels will exceed the ultimate peak wet weather flow (PWWF) of 108,000 m3/d. The fine screens will include a spray wash system and screenings compactor.

Ultimate Design Phase

- No changes needed

Grit Removal

Grit removal is provided in advance of secondary treatment to remove stones, sand and other abrasive material to prevent undue wear of machinery and the unwanted accumulation of solids in channels and tanks.

The existing grit removal system is comprised of one vortex type grit removal tank and associated pump, cyclones and classifiers designed to accommodate the ultimate PDWF of 35,070 m^3/d while providing removal of grit particles as fine as 150 microns. The grit removal facilities will also be capable of accepting the ultimate PWWF of 67,855 m^3/d at a reduced removal efficiency.

Phasing for installation of the grit removal facilities is proposed as follows;

20 Year Design Phase

- Install a second grit removal system of the same size as existing

Ultimate Design Phase

- No changes needed

Flow Measurement

Flow measurement is required for compliance reporting purposes and to properly monitor and control plant operations. The existing design is comprised of a “nesting” type of Parshall Flume downstream of the screening and grit removal facilities. The flume measures total flow through the treatment plant.

The custom designed fibreglass reinforced plastic Parshall Flume is comprised of a 305 mm Parshall nested in a 610 mm flume for measuring raw sewage flows ranging from 900 m^3/d to 80,000 m^3/d. The inner flume is to be removed when the plant is upgraded to treat a peak flow of 64,000 m^3/d and ultimate flow of 77,000 m^3/d.

Flows from the individual service areas can be separately measured and recorded using existing magnetic flow meters at the pumping stations serving the individual communities.

Emergency Plant Bypass

The existing plant has an automatically controlled, downward opening stainless steel weir gate for control of bypass flows to the existing wastewater holding tanks. The gate is located immediately downstream of the screening and grit removal facilities and mounted on one side of the effluent channel.

No changes to this plant bypass are needed.

Primary Effluent Distribution

Following the bypass flow and flow measurement process, wastewater enters an elevated primary effluent distribution chamber where it is equally divided using flow splitting weirs and conveyed to the aeration selector tanks using large diameter underground piping.

Existing flow splitting weirs are to be replaced with automatic downward opening gates to control flow to the existing and new treatment plant trains.

4.4.2.3 Extended Aeration Activated Sludge (EAAS) Treatment

This section describes the facilities proposed for the EAAS treatment alternative. A schematic diagram of the proposed EAAS treatment facilities including expansion phasing information is shown in Figure 4.3 of Appendix A.

Selector Tankage

Selector tankage is commonly provided with activated sludge treatment systems to favor the growth of desirable organisms and to reduce the growth of filamentous organisms. This is done to enhance the settling characteristics of the mixed liquor suspended solids thereby improving effluent quality and waste sludge concentration.

Selector tankage is typically divided into three compartments with the first and second compartments being of equal volume and the third compartment being equal to the combined volume of the first two compartments. Selectors can be aerobic, anoxic or anaerobic and it is proposed to provide appropriate aeration and mixing equipment to give flexibility to operate the selector tankage in any of these three modes.

Selector tankage can be provided at the upstream of individual aeration tanks. The use of a separate selector tank offers advantages in terms of ease of operation and operational flexibility and is therefore proposed for use at the new secondary treatment train to match existing.

Aeration Tanks

The proposed design of the new EAAS aeration tanks is in accordance with criteria contained in the MECP Design Guidelines for Sewage Works (2019). The guidelines suggest a minimum hydraulic retention time of fifteen (15) hours in the aeration tank based on design flow. The guidelines also note a longer retention time may be required to achieve year-round nitrification as is required for the plant.

The following tank sizing and staging is proposed.

20 Year Design Phase

- Install two (2) tanks at 2,770 m^3 each of the same size as existing

Ultimate Design Phase

- Install one (1) tank at 2,770 m^3

It is proposed that the tanks be fitted with fine bubble air diffusers similar to the existing system. An air supply of approximately 1,200 L/s will be provided to each tank with controls to automatically optimize air flow to meet dissolved oxygen and mixing requirement. To minimize footprint required for the plant expansion, the tankage sizing is based on an assumed liquid depth of 5 m in the aeration tanks. Exact aeration tank dimensions are to be further reviewed and determined during the final design phase.

Final Clarifiers

Mixed liquor flows from the aeration tanks to the final clarifiers where solids settle to the bottom of the clarifier and final effluent overflows from the surface of the clarifier to be disinfected prior to discharge into Lake St. Clair. Most of the solids from the bottom of the clarifier are pumped back to the selector tanks (return activated sludge) and the remainder (waste sludge) is pumped to the digestion facilities for further processing and disposal.

The proposed clarifier design is in accordance with the MECP Design Guidelines for Sewage Works 2019. In this case solids loading criteria govern for sizing of the clarifiers and the tank sizing (surface area) would be as follows.

20 Year Design Phase

- Install two (2) 30 m diameter clarifiers each of the same size as existing

Ultimate Design Phase

- No changes needed

A sludge pump station will be provided as part of the plant expansion. The new sludge pump station will be equipped with pumps to return activated sludge to the selector tankage and to pump waste sludge for further treatment and disposal. Pumping equipment will be added in stages to suit expansion of the EAAS treatment system.

The final clarifiers will be fitted with automatic cleaning equipment to control algae accumulation on the clarifier launders and weirs. This is an important feature to reduce algae plugging problems in the ultraviolet disinfection process.

4.4.2.4 Sludge Processing

Details of alternative biosolids (sludge) handling, stabilization and disposal alternatives are presented in Chapter 8.

4.4.2.5 Disinfection

A schematic layout for the proposed UV disinfection system including expansion phasing information is shown in Figure 4.4 of Appendix A. Plant effluent measurement is to be provided at the downstream of the UV disinfection system.

The proposed system consists of two (2) channels each equipped with two banks of UV lights. The channels include removable side inserts to permit widening of the UV banks as required to accommodate future flows. The proposed staging for construction of the UV facilities to disinfect the treated effluent is as follows.

20 Year Design Phase

- Construct a new UV building consisting of two (2) channels, one duty and one bypass.
- Condition of Existing UV Disinfection is to be reviewed during final design. It may be more cost-effective to build a larger new UV disinfection and decommission the existing UV disinfection.

Ultimate Design Phase

- Add a second bank of UV lights in the duty channel to increase total UV capacity to 77,000 m^3/d.

4.4.2.6 Phosphorus Removal

The effluent criteria set out by the MECP indicate the effluent objective and effluent limit for phosphorus is 0.5 mg/L and 0.6 mg/L respectively. It is proposed to dose alum to enhance sedimentation and achieve the required level of phosphorus removal. A new liquid alum storage and metering pump facilities will be needed for the EAAS process.

4.5 OUTFALL TO LAKE ST. CLAIR

Plant effluent is discharged through diffusers in a 900 dia. outfall approximately 600 meters off the shore of Lake St. Clair. Effluent discharges through nozzles in the end section of the outfall to assist in dispersing the effluent. The existing outfall sewer constructed in the late 1970s have sixteen (16) 250 mm diameter outlets with 250 x 125 reducing elbow diffuser ports.

On September 27, 2019, an underwater inspection was conducted on the existing outfall and diffuser system. Based on the inspection by a diver, the offshore diffuser openings are clear and discharging the effluent. At the time of the inspection light flow was noted at all diffusers. No evidence of exposed mainline outfall pipe was noted above the lakebed during the external inspection. Three (3) of the diffusers appear broken off at the flange connection and should be repaired to allow proper mixing of the effluent in the lake water. With these diffusers being broken close to the lake bottom it is possible during a storm event or high winds for sand or lake materials to fill the main outfall pipe.

The alternative design possibilities that have been considered for the outfall are summarized as follows:

- Alternate No. 1 Construct a new outfall from the plant effluent pumping station into the lake along Rourke Line Road in parallel with existing outfall sewer (refer to Figure 4.5 of Appendix A);

- Alternate No.2 Construct an inland portion of new outfall along Rourke Line Road in parallel with existing outfall sewer (refer to Figure 4.6 of Appendix A).

The first alternative is to construct a new 900 diameter outfall sewer as existing. The proposed new outfall would consist of approximately 720 meters inland portion and 600 meters offshore in Lake St. Clair. The construction of the new outfall sewer in the water would be very costly and would be open cut construction or a lake bottom pipe system that is secured with an appropriate anchoring or ballast system to provide protection for the installation. This alternative is not recommended due to the cost and complexity of construction.

The second alternative to construct an inland portion of a new outfall in parallel with existing outfall sewer would be more feasible. There is an existing 250 diameter sanitary sewer that would need to be relocated for the construction of the new outfall sewer along Rourke Line Road. The new outfall will need to be connected to existing outfall at MH No.5 on Rourke Line Road at Caille Avenue. This alternative avoids the construction of a new outfall in the lake. All existing diffuser ports need to be replaced with with 250 x 250 elbow diffuser ports to hydraulically accommodate increased flows from plant expansion. This alternative is considered as the preferred option.

4.6 ELECTRICAL SUPPLY

The main power supply consists of a power transformer, incoming main service cables and service entrance equipment. The existing power transformer is rated for 1,000 KVA and its projected peak load demand is estimated to be near the full load rating of the transformer.

The existing service entrance switchboard consists of a 1200 amp frame main breaker with 1200 amp rated adjustable trips currently set at 1000 amps. The existing switchboard also consists of 1000 amp rated bus bars and the interrupting and bus bracing capacity.

For future expansions, a new electrical power supply building, which will also house a new standby generator, would be required to provide additional load capacity.

5.0 BIOSOLIDS MANAGEMENT DESIGN ALTERNATIVES

5.1 GENERAL

The biological wastewater treatment processes produce excess solids known as waste activated sludge. Biosolids management deals with all aspects of handling the waste sludge stream including stabilization, dewatering or thickening, and ultimate disposal. This section of the report reviews various possible biosolids management approaches with the objective of selecting the preferred biosolids management system for the Denis St. Pierre WPCP.

As a matter of interest, the terms sludge and biosolids are often used interchangeably, although the term biosolids is more commonly used to describe sludge that has undergone treatment to render it suitable for land application.

5.2 ESTIMATED FUTURE SLUDGE PRODUCTION

5.2.1 Predicted Sludge Production at the Denis St. Pierre WPCP

The MECP Guidelines provide information on typical sludge generation rates and characteristics for various treatment processes. Typical sludge production figures for the EAAS process with phosphorus removal are listed as follows;

- Liquid Sludge – 13.3 L per cubic meter of sewage treated
- Solids Concentration – Range 0.4% to 1.9%
  – Average 0.9%
- Volatile Solids Content – 60%
- Dry Solids – 120 grams per cubic meter of sewage treated or
  55 grams per capita per day

In addition to these typical sludge generation values, historical sludge production rates for the Denis St. Pierre WPCP have been reviewed to help predict sludge generation rates for the 20 year and ultimate design. The 2017 and 2018 historical data indicates that the average total historical sludge production at the plant was about 128 grams of dry solids per cubic meter of sewage treated. This is approximately 10% higher than the MECP guideline value of 120 grams dry solids per cubic meter of sewage treated. As the historical sludge production is higher than typical generation rates, the 2017/2018 historical data was used to estimate future sludge production. Table 5.1 summarizes the estimated future sludge production values at the rated capacity of the plant.

Based on a historic solids production rate of 128 g TS/m^3 raw sewage treated, the future average daily sludge production was estimated at 3,200 kg/d and 3,840 kg/d for the 20 year and ultimate design, respectively. The maximum monthly sludge production values were based on the 2018 peak factors.

Table 5.1 Estimated Future Sludge Production at the Denis St. Pierre WPCP

Parameter	20 Year Design		Ultimate Design	
	Average Day(1)	Max. Month(2)	Average Day(1)	Max. Month(2)
TS Production	3,200 kg/d	4,160 kg/d	3,840 kg/d	4,992 kg/d
TS Concentration	0.6 %	0.6 %	0.6 %	0.6 %
WAS Flow	508 m^3/d	660 m^3/d	610 m^3/d	793 m^3/d

(1) Based on 128 g TS/m^3 raw sewage treated
(2) Represents a max month factor of about 1.3.

5.2.2 Predicted Sludge Production at the Stoney Point WPCP

The initial (Phase 1) construction of the Stoney Point Water Pollution Control Plant (WPCP) for an average daily flow of 3,200 m^3/d would serve the high growth requirements of Stoney Point and Comber and Lighthouse Cove. A Phase 2 plant expansion to increase the capacity by 50% to 4,800 m^3/d average daily flow would permit the construction of a sewage collection system for Rochester Place. The timing of Phase 3 and Phase 4 expansions to accommodate average daily flows of 6,400 and 8,000 m^3/d respectively will depend upon the subsequent growth in the communities.

For Phase 1, sludge produced at the Stoney Point WPCP is aerobically digested, then digested sludge is transported to the Denis St. Pierre WPCP for dewatering by centrifuges. This approach would avoid a significant capital cost outlay in Phase 1, and it provides flexibility and time to gather actual operating information from the new plant. This operating data can be used in planning future Phases of construction to reassess sludge management options and make more informed decisions if changes are required.

The proposed Stoney Point WPCP is an EAAS plant treating mainly domestic wastewater and should therefore have similar sludge generation levels as the Denis St. Pierre WPCP. Table 5.2 provides the sludge generation rates at the Stoney Point WPCP, which were predicted based on the 2017/2108 historical sludge production rates at the Denis St. Pierre WPCP.

For the purposes of this report, the sludge production for the Phase 3 Stoney Point WPCP has been used for preliminary design and sizing of the biosolids management system at the Denis St. Pierre WPCP. This is a conservative approach and will likely result in some oversizing especially for the Denis St. Pierre WPCP expansion.

Table 5.2 Estimated Future Sludge Production at the Stoney Point WPCP

Parameter	Phase 1	Phase 2	Phase 3	Phase 4
Average Digested Sludge(1)	310 kg/d	451 kg/d	601 kg/d	752 kg/d
TS Concentration in Digesters	1.2 %	1.2 %	1.2 %	1.2 %
Digested Sludge Flow	24 m^3/d	36 m^3/d	48 m^3/d	60 m^3/d
(1) Based on 128 g TS/m^3 raw sewage treated, VSS/TTS ratio of 0.7, and 38% VS reduction in aerobic digesters.				

5.2.3 Hauled Sludge

Aside from future sludge haulage from the Stoney Point WPCP, sludge from two Rotating Biological Contactor (RBC) plants in South Woodslee and the North Woodslee are presently hauled to the Denis St. Pierre WPCP for digestion. The South Woodslee sewage collection and treatment system consists of a Septic Tank Effluent Pumping (STEP) system, where raw sewage is conveyed from the house to the septic tank (or clarifier), and effluent from the septic tank is pumped into a pressurized collection system and conveyed to an RBC plant for treatment. The South Woodslee RBC plant has a rated capacity of 425 m^3/day. At the rated capacity, it is estimated that three 2,000 gallon trucks would collect the sludge from the RBC plant, every three months.

The North Woodslee RBC plant has an estimated rated capacity of 330 m^3/d. The amount of sludge produced was estimated based on typical values from the MECP Guidelines. Based on a solids production rate of 90 g/m^3 and a solids concentration of 0.9 percent (an Extended Aeration plant with no phosphorus removal), it was estimated the plant produces 3.3 m^3/d of sludge at its rated capacity.

A sludge receiving station has been installed at the Denis St. Pierre WPCP in 2019. This allows sludge from the South Woodslee plant and the North Woodslee plant to be hauled periodically to the plant for stabilization and disposal.

5.3 BIOSOLIDS MANAGEMENT TECHNOLOGIES

5.3.1 Sludge Thickening

Sludge thickening increases the solids concentration of sludge by removing a portion of the liquid content and it reduces the volume, resulting in smaller digesters and storage tanks and a lower energy requirement for mixing and aeration operations. Several sludge thickening options were analyzed based on performance, operating cost and design parameters, and applicability at the Denis St. Pierre WPCP. These options include: gravity thickening (GT), gravity belt thickeners (GBT), and rotary drum thickeners (RDT).

5.3.1.1 Gravity Thickening with Polymer Addition

Gravity thickening is similar to sedimentation in a conventional clarifier. Dilute sludge is dosed with polymer and fed to a central well in a gravity thickening tank where it is allowed to settle and compact. Supernatant is drawn off the top and thickened sludge is pumped from the bottom of the unit. Gravity thickening is capable of achieving concentrations of 2 to 4% for both raw and digested WAS. However, historically at the Denis St. Pierre WPCP, a solids concentration of less than 2% has been achieved through gravity thickening of digested WAS.

5.3.1.2 Gravity Belt Thickeners

With gravity belt thickeners, polymer conditioned sludge is distributed evenly across the width of a moving fabric belt. Free water drains through the belt, while suspended solids are retained on the surface. Rows of plough blades ride on the belt surface and turn the sludge to release additional water, and expose clear areas on the belt for improved drainage. A high-pressure wash is used to clean polymer and suspended solids from the pores of the fabric belt. Filtrate is collected and returned to the head of the plant, or to the secondary treatment plant. A sludge concentration of 4 to 9 percent can be achieved when thickening raw WAS, and 4 to 6 percent when thickening digested WAS.

5.3.1.3 Rotating Drum Thickeners

With rotating drum thickeners, polymer conditioned sludge is fed into one end and is distributed onto the internal surface of a rotating drum screen. Flocculated sludge solids are retained on the inner surface, while free water drains through the screen. Filtrate is collected in a trough and is returned to the head of the plant, or to the secondary plant. Sludge solids are conveyed towards the outlet end of the drum by flights or an internal screw conveyor. The inside and outside drum surfaces are periodically rinsed to flush trapped solids from the screen. As with GBT, sludge concentrations of 4 to 9 percent can be achieved when thickening raw WAS, and 4 to 6 percent when thickening digested WAS.

5.3.1.4 Comparison of Sludge Thickening Options

Table 5.3 summarizes the advantages and disadvantages of the thickening processes under evaluation for the Denis St. Pierre WPCP.

Table 5.3 Advantages and Disadvantages of Sludge Thickening Processes

Process	Advantages	Disadvantages
Gravity Thickening (GT)	• Simple operation • Low power requirements	• Lower solids capture • Potential for sludge to turn septic due to long HRT • Potential for rising sludge with long retention times • Odour potential • Polymer is required for effective operation • Doesn't work well with filamentous sludge
Gravity Belt Thickener (GBT)	• Low space requirements • Low power requirements • High solids capture • High operating flexibility • Low maintenance requirement	• Polymer is required for effective operation • Odour potential • Higher operation requirements
Rotating Drum Thickener (RDT)	• Low space requirements • Low power requirements • High solids capture • High operating flexibility • Low maintenance requirement • Lower odour potential due to ease of enclosure	• Polymer is required for effective operation • Higher operation requirements

Other technologies that are used for thickening include centrifugation, dissolved air flotation, vacuum filtration, and plate press thickeners that are not considered further in this study. Reasons for not considering these options are outlined below in Table 5.4.

Table 5.4 Sludge Thickening Technologies Not Considered for Application

Thickening Technology	Reason for disregarding Option
Centrifugation	Very high capital cost relative to considered technologies. More suitable for larger facilities.
Dissolved Air Flotation	High operational requirements. Poor performance with variable sludge characteristics.
Vacuum Filtration	Not commonly used.
Plate Press Thickener	More commonly used in industrial applications than municipal applications. Not typically a cost effective alternative for smaller municipal WWTPs.

The main disadvantages of mechanical thickening prior to biosolids stabilization are that a large sludge storage tank would be required which could also be a source of odours. Odours due to septic sludge could also be a concern with the option of providing gravity thickening. The use of thickening may also reduce the capital cost of the dewatering. However, providing an increase in dewatering capacity has the advantage of being re-usable in the future plant expansion.

5.3.2 Biosolids Stabilization

There are a number of potential sludge stabilization alternatives available. Table 5.5 Alternative Methods of Biosolids Stabilization provides a summary of several alternative stabilization processes including anaerobic digestion, aerobic digestion, lime stabilization, composting and pelletization.

Table 5.5 Alternative Methods of Biosolids Stabilization

Stabilization Process	Comments
Anaerobic Digestion (ultimate disposal by landfilling or farm land application)	• High capital costs • Very expensive and complex system for low design capacity • Not viable for this size of application
Aerobic Digestion (ultimate disposal by landfilling or farmland application)	• Well stabilized end product suitable for farmland application • Simple, relatively odor free process • Commonly used at small EAAS plants • Low odor potential • Energy intensive • Significant capital cost but far less than anaerobic digestion
Lime Stabilization (ultimate disposal by landfilling or farmland application)	• Low energy consumption • Suitable for application on farmland • Requires dewatering of unstabilized biosolids for efficient use of lime • High odor potential requiring odor control system • End product susceptible to bacterial regrowth following pH fall • Storage of dewatered stabilized biosolids difficult
Composting (Disposal includes landfill, farmland application and possibly re-sale or giveaway)	• Beneficial reuse • Potential market for sale or giveaway • Capital intensive • High odor potential • Current compost guidelines very restrictive making unrestricted use unobtainable • Difficult to store finished product in odor free form
Pelletization (ultimate disposal alternatives include landfill, farmlands and possibly sale as fertilizer additive)	• Potential market for sale • Very significant volume reduction • Suitable for long term storage and easy handling • Capital intensive • Requires strict quality control for sale purposes • Not viable for this size of application

Considering the sludge stabilization processes that are available, it is evident that anaerobic digestion, composting and pelletization are not preferred choices for this application. Anaerobic digestion has a high capital cost and is rarely, if ever, used at small treatment plants. Pelletization is also very capital cost intensive and is best suited for large treatment plants. Composting has a number of restrictions and disadvantages as noted in the table and is not recommended for this application.

A lime stabilization process could potentially be used at the new treatment plant to condition sludge for application on farmland. Negative factors associated with lime stabilization include high odour potential and difficulties associated with storage of dewatered, lime stabilized, sludge cake.

Aerobic digestion is recommended technology because it is suitable for small municipal wastewater treatment plants and require less maintenance and operator attention than the other technologies. This offers an operational advantage since plant staff is very familiar with the operation of this technology.

5.3.3 Biosolids Dewatering

Four major technologies are available for biosolids dewatering, including belt presses, rotary presses, and screw presses, and centrifuges.

5.3.3.1 Belt Filter Presses

Belt filter presses are able to dewater solids by using two or three belts and a series of rollers. Compression and gravity drainage are both used for the separation of water from solids. Typically, biosolids or conditioned sludge enters the gravity drainage section. Most of the free water is removed by the gravity drainage section. The biosolids are then introduced into a low-pressure section where they are squeezed between two porous cloth belts. In most modern units, the low-pressure section is following by a high-pressure section where the biosolids are subjected to compression forces as belts pass through a series of rollers. The belts are continually washed. The advantages and disadvantages of dewatering belt presses are presented in Table 5.6.

Table 5.6: Dewatering Belt Filter Presses Evaluation

Advantages	Disadvantages
Low energy consumption	Significant housekeeping requirements
Straight forward operation	Higher potential for odours
Moderate capital and O&M costs	Variable efficiency
	High water consumption for belt washing, resulting in high volumes of filtrate returned for retreatment
	Produces aerosol in work area
	High operator attention

5.3.3.2 Rotary Presses

Rotary presses are relatively new technology for dewatering purposes. Their performance on solids capture rate and cake solids content are similar to centrifuges and belt presses. Rotary presses separate water from solids by gravity, friction and pressure differential. Conditioned biosolids are fed into a channel bound by screens on each side. The channel curves with the circumference of the unit, making a 180-degree turn from the inlet to the outlet of the rotary press. The solids move in a continuous, slow, concentric motion through the unit, while free water passes through the screens. The dewatered cake is continuously released through the pressure-controlled outlet. The advantages and disadvantages of the dewatering rotary press are summarized in Table 5.7.

Table 5.7 Dewatering Rotary Presses Evaluation

Advantages	Disadvantages
Totally Enclosed – Odours Contained	Screen Clogging Potential
Small Footprint	Relatively High Capital Cost
Low Noise and Vibration Levels	Limited Performance with Secondary Solids
Uses Less Energy Than Belt Presses and Centrifuges	Low Throughput Compared to Other Mechanical Dewatering Processes

5.3.3.3 Screw Presses

A screw press is a simple, slow moving device that achieves continuous dewatering. Dewatering screw presses are divided into two major categories: inclined and horizontal. The inclined screw presses are at angles 15 to 20 degrees from the horizontal. A screw press is an enclosed cylindrical unit with a rotating screw. The screw transfers the conditioned biosolids through the wedge wire screening basket while the filtrate passes through the bottom and sides of the wedge wire screen. Screw presses dewater solids first by gravity drainage at the inlet section of the screw and then by squeezing free water out of the solids as they are conveyed to the discharge end of the screw under gradually increasing pressure and friction.

The advantages and disadvantages of the dewatering rotary press are summarized in Table 5.8 Dewatering Screw Presses Evaluation.

Table 5.8 Dewatering Screw Presses Evaluation

Advantages	Disadvantages
Low Energy Consumption	Requires Continuous Wash Water (Lower Requirement Than Belt Filter Press)
Containment of Odours and Aerosols	Low Solids Content with No Primary Sludge
Simple Operation and Low Operator Attention	Low Solids Capture Rate
Low Maintenance and Noise	Larger Footprint Requirements

5.3.3.4 Dewatering Centrifuges

Centrifuges are widely used for biosolids dewatering and are relatively simple to operate. Cake dryness and centrate quality can be controlled by changing the conveyor torque and polymer dosage. Centrifuges require less operator attention and can produce sludge cake with high solids content. Summarized in Table 5.9 are the advantages and disadvantages of dewatering centrifuges.

Table 5.9 Dewatering Centrifuges Evaluation

Advantages	Disadvantages
Less operator attention	Energy intensive
Easy to automate	Major maintenance occurs off-site
Dry cake and high solids content	Support structures need to be designed to handle vibrations
Self-contained process, which minimizes housekeeping and odour potential	
operation staff familiar with equipment	
Control capability to improve process performance by adjusting equipment set points	
Widely used at large WWTPs	

The use of dewatering centrifuges is recommended because it is capable of achieving high dewatered solids concentrations and require less maintenance and operator attention than the other technologies. This offers an operational advantage since plant staff is very familiar with the operation of this equipment. In addition, using the same equipment currently in service at the plant offers an advantage from a maintenance perspective. Namely, plant staff are familiar with the maintenance issues of the equipment.

5.3.4 Biosolids Disposal

There are a number of potential biosolids disposal alternatives available. Table 5.10 provides a summary of several different biosolids disposal options including incineration, re-sale or giveaway, landfilling, and farmland application.

Table 5.10 Alternative Methods of Biosolids Disposal

Biosolids Disposal	Evaluation
Incineration	• No incinerators in close proximity within Essex County or Chatham Kent • Prohibitive cost and permitting requirements for new incinerator
Re-Sale or Giveaway	• Beneficial reuse • May generate revenue to offset operating costs • Requires a market demand • Requires extensive processing and quality control • Capital intensive
Landfilling	• Requires dewatering facilities to reduce leachate forming potential and improve manageability at landfill • Ongoing requirement for dewatering, haulage and tipping fees • May require stabilization of biosolids for pathogen reduction
Farmland Application	• Stabilization of biosolids for pathogen reduction necessary • Abundance of suitable farmland • Haulage of biosolids required but usually no disposal charge • Beneficial reuse • Farm operations and weather dictate frequency of disposal • Infrequent disposal introduces requirement for extensive liquid biosolids storage or biosolids dewatering and sludge cake storage facilities

Construction of new incineration facilities is definitely not a viable option and there are no existing incineration facilities that can be used within reasonable proximity of the plant site. Resale or giveaway as a disposal method is not recommended as an alternative due to high costs associated with the need for extensive processing and strict quality control.

The two ultimate disposal options that are best suited for use at the Denis St. Pierre WPCP plant are landfill disposal or disposal by application on farmland. Dewatering of unstabilized sludge followed by sludge cake disposal by landfilling does offer the advantage of being a relatively low-cost option. Negative factors associated with this alternative are odour potential, the need to meet fairly stringent cake dryness criteria, ongoing haulage and tipping fees, the potential need for sludge stabilization and the potential for changes in landfill requirements over time. Also, there is a limited landfilling site available for sludge disposal. Therefore, disposal by application on farmland is recommended because it is a proven process successfully used for biosolids disposal from the plant for many years.

5.4 PREFERRED BIOSOLIDS MANAGEMENT PROCESS

5.4.1 Overview

Based on the information in Section 5.3, the biosolids management process that appears to be most advantageous for this application is sludge stabilization by aerobic digestion followed by sludge dewatering with centrifuges and sludge cake disposal by farmland application. Aerobic digestion is a proven process commonly used for sludge stabilization at EAAS plants. This process is fairly simple to operate and produces a well stabilized end product suitable for use on agricultural land. The capital and operating costs associated with the process are significant but are comparable to or less than the other alternative processes (with the possible exception of landfill disposal of unstabilized sludge).

It is particularly relevant to this study that a biosolids management system consisting of aerobic digestion, sludge dewatering by centrifuge, sludge cake storage and seasonal application on farmland has been used successfully at the existing Denis St. Pierre WPCP for many years. The municipality has an Environmental Compliance Approval for a storage/transport site that is approximately 8 acres in size and located a short distance from the plant. During August and September of each year the stored biosolids are removed from the site and applied to farmland. The municipality is very familiar with the regulatory requirements for this process including submitting and obtaining approval for biosolids land application sites. For farmland application, a Non-Agricultural Source Material (NASM) plan is developed to comply with the Nutrient Management Act, 2002 (NMA) and its General Regulation (O. Reg. 267/03). The NASM approval is to be obtained from the Ministry of Agriculture and Rural Affairs (OMAFRA). Based on historical operational records, there does not appear to be concern with respect to obtaining ongoing approvals for land application.

Figure 5.1 of Appendix A shows phased expansion of biosolids management consisting of aerobic digestion and sludge dewatering.

5.4.2 Aerobic Digesters

The MECP Design Guidelines for design of aerobic digesters include the following criteria.

- An aerobic sludge digestion system should include provisions for digestion, supernatant separation, sludge concentration and sludge storage. These provisions may be accomplished in separate tanks or processes, or within the digestion tanks.
- Multiple digestion units capable of independent operation are desirable and should be provided in plants where the design average daily flow exceeds 380 m^3/d.
- Sizing should be designed to achieve a minimum solids retention time (SRT) of 45 days, including both digester stages and the SRT of the activated sludge treatment process.

- Two stages with a minimum of one digester in each stage should be provided. It is recommended that 2/3 of the total digester volume be in the first stage and 1/3 be in the second stage.
- If supernatant separation is performed in the digestion tank, a minimum of 25 percent additional tank volume is required.
- A loading rate of 1.6 kg/($m^3 \cdot d$) volatile solids based upon first stage volume only should be provided.

These criteria have been used to develop the preliminary aerobic digester sizing information shown in Table 5.11. The digester sizing assumes that 15 days of the required 45 day SRT is provided in the EAAS process with the remaining 30 days in the aerobic digesters. The sizing further assumes a 25% increase in tank volume to account for supernatant separation in the digestion tank rather than in a separate tank. Also, sizing of the digesters is based on historic Denis St. Pierre WPCP operating data, which is higher than MECP typical sludge quantity and quality values.

Table 5.11 Aerobic Digester Sizing

Phase	Existing	20-year Design	Ultimate Design
Flow (m^3/d)	14,500	25,000	30,000
Aerobic Digester Volume m^3	4,365	7,645	9,165
Digester Tankage	3 tanks, one 2,620 m^3, one 935 m^3, and one 810 m^3	Add two tanks with a total additional volume of 4,800 m^3	No changes needed

For preliminary design purposes and recognizing the storage requirement for digested sludge from the Stoney Point WPCP, it is suggested that two digestion tanks with a total volume of 4,800 m^3 be provided in 20-year design.

Provision of 4,800 m^3 of digestion tank volume in 20-year design exceeds the calculated requirement. Provision of surplus digester volume also provides flexibility to store sludge and tailor a sludge trucking schedule to coincide with the availability of dewatering capacity at the Denis St. Pierre WPCP.

Digestion tank dimensions are to be consistent with the aeration tanks. This should give some economy in design and common wall construction. Exact dimensions and configuration of digestion tanks are to be further reviewed and be finalized in the final design stage.

5.4.3 Centrifuge Dewatering Facility

5.4.3.1 Centrifuge Dewatering Process Overview

The function of the dewatering process is to remove moisture from the biosolids produced by the EAAS process at the plant. The objective of dewatering is to reduce the volume of material and produce sludge cake suitable for ultimate disposal (land application).

The dewatering centrifuges are the main process equipment for the sludge dewatering system. The ancillary process components include digested sludge grinders and feed pumps, polymer feed system, mixers, sludge cake handling and storage system, and odour control system.

5.4.3.2 Dewatering Capacity Requirements

It is noted in Section 5.4 that the following biosolids management alternative be selected as the preferred option for expansion of the Denis St. Pierre WPCP.

- Aerobic digestion → Sludge dewatering → Sludge cake trucked to the existing biosolids storage/transfer site → Land application

This alternative also includes trucking digested biosolids from the Stoney Point WPCP to the Denis St. Pierre WPCP for dewatering as well as hauled sludge.

The design parameters for the dewatering centrifuges are summarized in Table 5.12.

Table 5.12 Dewatering Centrifuge Design Parameters

Parameter	Existing	20 Year Design	Ultimate Design
Estimated Biosolids Mass	1,337 kg/d 9,359 kg/wk	3,855 Kg/d (1) 26,985 kg/wk	3,865 Kg/d (2) 27,055 kg/wk
Number of Centrifuges & Design Capacity	Two, each 140 kg/h	Two, 1-duty and 1-standby each 900 kg/h	Same as 20-year design
Estimated % Total Solids	1.2%	1.2%	1.2%
Estimated Sludge Flow	106 m^3/d	306 m^3/d	306 m^3/d

Notes:
(1) Include monthly maximum of 3,054 kg/d from the Denis St. Pierre WPCP, average daily 601 kg/d trucked from the Stoney Point WPCP and RBC plants, and 200 kg/d form hauled sludge.
(2) Include monthly maximum of 3,665 kg/d from the Denis St. Pierre WPCP and 200 kg/d form hauled sludge.
(3) Design based on operating centrifuge be operated 6 hours per day, 5 days per week

The centrifuges are selected to treat the digested sludge with an anticipated solids content of 0.5% - 2.4% with a typical feed concentration of 1.2%. Centrifuge dewatering uses centrifugal force to separate solids from liquid. Solid/liquid separation in centrifuges takes place at high-speed rotation. The rotor consists of the cylindroconical solid bowl and scroll. The solid/liquid mixture is injected to the rotor of the centrifuge and reaches the distributor, where it is subjected to centrifugal force. The dry cake is collected on the bowl wall. The scroll rakes over the centrifuged particles and conveys them to the end of the bowl, where they are discharged by gravity. The liquid, which forms a pond in the bowl, is evacuated at the other end by overflowing a weir.

The dewatering process generates two products; sludge cake and centrate. The sludge cake behaves like a solid material. The biosolids cake is hauled to an existing biosolids storage and transfer site, and then trucked to farmland sites for land application. The centrate, which contains the water removed from the cake and some residual solids, is discharged into the plant sewer and then pumped to the plant headworks.

6.0 ENVIRONMENTAL IMPACTS AND MITIGATING MEASURES

6.1 OVERVIEW

Table 6.1 provides a summary of potential environmental impacts and proposed mitigating measures for the preferred design. In general, the preferred design will have a limited effect on the environment and that effect will be mostly due to construction activities. Other than the environmental effects listed in Table 6.1, it is anticipated that the preferred work will not have a significant effect on the natural environment such as wildlife, vegetation, or the habitat characteristics of any particular species. The main impact that the alternatives for the proposed work will have on the socio-economic environment is the disruption that residents may experience during the construction. However, this inconvenience and disruption will only be temporary and should not significantly impact the environment.

With respect to other socio-economic impacts, it is anticipated that the preferred servicing alternative will not have any serious impact on existing land uses, cultural activities, heritage resources or any other community program except to the extent that it will permit the ongoing implementation of development and other activities as envisioned in planning documents which have positive impacts on the socio-economic environment.

Table 6.1 Environmental Effects and Mitigating Measures

Operation	Effect	Mitigating Measures
Cutting, digging, or trimming ground covers, shrubs and trees	Reduced terrestrial wildlife habitat quality (i.e., diversity, area, function) and increased fragmentation of habitat.	• This is not a concern as there is no significant existing terrestrial wildlife habitat in the proposed area of construction
	Loss of unique or otherwise valued vegetation features	• There are no known unique vegetation features in the area that may be disturbed by construction activities. • Where possible, existing vegetation features will be restored to a preconstruction condition.
Trenching / tunnelling for outfall sewers, excavation and construction for wastewater treatment facilities at the Denis St. Pierre WPCP site	Soil erosion and sediment transport to adjacent water bodies causing sedimentation and turbidity of adjacent water bodies and drainage ditches	• Use of erosion control measures (i.e. sediment traps, silt fences, etc.) • Collect contaminated runoff • Restore vegetation growth quickly • Stage construction activities to minimize potential of adverse impacts
	Reduced water quality and clarity due to increased erosion and sedimentation, and transport of debris.	• Apply wet weather restrictions to construction activity. • Comply with any local regulations, policies and guidelines that stipulate a minimum acceptable buffer width (the allowable distance from a water body). Maximum buffer widths are desirable.

Operation	Effect	Mitigating Measures
		• If possible, direct surface drainage away from working areas and areas of exposed soils. To the maximum extent possible, promote overland sheet flow to well vegetated areas. • Install and maintain silt curtains, sedimentation ponds, check dams, cofferdams or drainage swales, and silt fences around soil storage sites and elsewhere, as required.
	Loss of vegetation and topsoil and mixing topsoil and subsoil	• Restore site by replacing topsoil and reinstate vegetation to prevent erosion
	Removal and/or disturbance of trees and ground flora	• Avoid treed areas where possible • Employ tree protection measures • Replace trees and provide site landscaping
	Temporary disruption of pedestrian and vehicle traffic	• Provide and maintain detours • Provide for safe alternate routes • Select alternate routes to minimize inconvenience
	Temporary disruption and inconvenience during construction to adjacent properties, buildings and inhabitants	• Notify public agencies and neighbouring owners of construction activities • Prepare program for reporting and resolving problems • Ensure access is provided for emergency vehicles and personnel • Apply noise and vibration control measures • Apply dust control measures • Control emissions from construction equipment and vehicles • Use silencers to reduce noise • Require compliance with municipal noise by-laws
	Possible need to remove petroleum contaminated excavated material.	• Sample material. • Handle and dispose of contaminated material in an acceptable manner
	Decreased ambient air quality due to dust and other particulate matter.	• Avoid site preparation or construction during windy and prolonged dry periods. • Cover and contain fine particulate materials during transportation to and from the site. • Instruct workers and equipment operators on dust control methods. • Spray water to minimize dust off paved areas or exposed soils. • Stabilize high traffic areas with a clean gravel surface layer or other suitable cover material. • Cover or otherwise stabilize construction materials, debris and excavated soils against wind erosion.
	Disturbance to microscopic organisms in the soil.	• Limit the size of stockpiles to avoid anaerobic conditions. • Protect stockpiled soils from exposure to and sterilization by solar radiation (or stockpile in an uncovered shaded area).
	Reduced soil capability through compaction and rutting, and mixing of topsoil and layers below.	• Avoid working during wet conditions and/or confine operation to paved or gravel surfaces. • Whenever possible, strip and store topsoil separately from the layers below and return to excavation in sequence.

Operation	Effect	Mitigating Measures
	Removal and/or disturbances of trees and flora.	• Avoid treed areas • Employ tree protection measures • Avoid areas with significant vegetation
	Industrial disruption of field/facility access.	• All driveways, roadways and field access will be restored to pre-construction condition • Staging of construction and advance notice to property owners prior to disruption of construction to minimize inconvenience
	Disruption of tile and surface drainage systems.	• Provide for temporary drainage systems until final restoration is accomplished. • Avoid disturbing drainage systems during critical periods. • All existing culverts, tiles and drainage systems to be restored to pre-construction conditions following construction.
	Reduced water quality of nearby surface waters having value as wildlife habitat.	• Use sediment control techniques for stockpiled materials to minimize degradation of water quality.
	Modifications or removal of aquatic habitat.	• Stage construction to minimize potential for adverse impacts.
	Residential impacts.	• Construction noise and dust impacts will be controlled through noise by-laws and dust control measures in contract specification. • Inconvenience due to temporary loss of property access will be minimized through proper communication and advance notice of disruption. • Pedestrian safety will be maintained through excavation barricades and construction fencing
	Traffic disruption.	• Construction activities will attempt to maintain a minimum of one lane of open traffic at all times with necessary detour signage and flag persons. • If complete closure is required, emergency services will be advised in advance and access will be restored at the end of each working day.
	Visual aesthetics.	• Proposed plant expansion is to match exiting treatment plant and no impact on aesthetics is anticipated.
	Recreation.	• Maintain access to recreational sites during construction. • Locate water and wastewater infrastructure components to minimize impact.
	Archaeological and heritage resources.	• The MTCS's "Criteria for Evaluating Archaeological Potential" checklist was reviewed, and Stage 1 Archaeological Assessment was completed. Proposed work is located in the disturbed areas and away from any known archaeological sites, and thus is not expected to impact heritage resources in the area. • The MTCS's "Screening for Impacts to Build Heritage and Cultural Heritage Landscapes" checklist was reviewed, and Culture Heritage Assessment Report was prepared. Proposed work is located away from any built heritage and cultural

Operation	Effect	Mitigating Measures
		heritage landscapes, and thus is not expected to impact heritage resources in the area.
Use of construction equipment	Contamination of surface waters, drains and public roadways from spills, leaks or equipment refuelling.	• Use containment facilities • Inspect equipment regularly for fuel and oil leaks • Clean equipment before it travels off site
	Decreased air quality due to vehicular emissions causing increased concentrations of chemical pollutants.	• Minimize operation and idling of vehicles and gas-powered equipment, particularly during local smog advisories. • Use well-maintained equipment and machinery within operating specifications.
	Disruption to wildlife migration and movement patterns, breeding, nesting or hibernation.	• There are no known areas containing sensitive vegetation and wildlife. • There are no known areas where migratory birds are breeding.
	Introduction of non-native vegetation, including opportunistic species.	• Clean heavy machinery and equipment prior to transporting to new location.
	Loss of unique or otherwise valued vegetation features	• Avoid or minimize trampling vegetation with equipment. • Minimize physical damage to vegetation by avoiding push-outs and avoiding the placement of splash onto living vegetation.
	Reduced water quality and clarity due to increased erosion and sedimentation, and transport of debris.	• Operate heavy machinery on the shore above the normal water level. • Where possible, conduct activities in the dry, above the actual water level and above any expected rises in water level that may occur during a rainfall or snowmelt event.
	Reduced water quality due to inputs of contaminants from surface runoff during construction and operation.	• Refuel equipment off slopes and well away from water bodies. • Securely contain and store all oils, lubricants, fuels and chemicals. If necessary, use impermeable pads or berms.

6.2 NATURAL ENVIRONMENT IMPACTS AND MITIGATING MEASURES

6.2.1 Aquatic and Terrestrial Habitat

During the preliminary design phase and prior to the final design phase, a preliminary screening is to be completed in accordance with the MECP's guideline "Species at Risk Branch, Permissions and Compliance (DRAFT - May 2019)". The objective of the preliminary screening is to determine whether any species at risk or their habitat exist or are likely to exist at or near their proposed activity, and whether their proposed activity is likely to contravene the Endangered Species Act, 2007 (ESA). Existing conditions (terrestrial and aquatic) at the proposed work site is to be documented based on publicly available data from a variety of secondary sources as described in the guideline.

Once the preliminary screening is completed. A memo is to be prepared to describe existing conditions, recommend general mitigation measures to include during design, and identify permits that may be required prior to construction of the proposed work. The MECP is to be contacted by email at SAROntario@ontario.ca with the findings.

The proposed work area may contain natural features that may support habitat of endangered species and threatened species. As per Section 2.1.7 of the Provincial Policy Statement (PPS 2014) – “Development and site alteration shall not be permitted in habitat of endangered species and threatened species, except in accordance with provincial and federal requirements.” All issues related to the provincial Endangered Species Act and its regulations shall be addressed prior to the construction of the proposed work.

A field investigation shall be carried out to document existing conditions (terrestrial and aquatic) at the proposed work site. The field investigation shall consist of vegetation and wildlife habitat assessments. The number, location and species of Barn Swallow and other bird nests found in trees or vegetated areas that may be affected by the proposed work will be documented. Potential tree or vegetation removals is to be reviewed to identify potential species at risk, such as Butternut, and special habitat features such as bat maternity roosts. Blanding’s Turtle and Eastern Fox Snake (both protected under the Endangered Species Act) are known to occur in this area. As such, an assessment of potential habitat provided by the proposed outfall outlet may be undertaken. The single season field investigation to document aquatic habitat can be combined with the terrestrial field visit and will document existing conditions and habitat suitability for fish and aquatic species at risk within potential in-water work areas in the lake.

A biological survey work plan is to include the following tasks:

1. Compile data from a variety of secondary sources, including the Land Information Ontario (LIO) database, Natural Heritage Information Centre (NHIC) database, the Species at Risk in Ontario List, Fisheries and Oceans Canada (DFO) Aquatic Species at Risk Maps, the Essex Region Natural Heritage System Study (ERHNSS), ERCA’s study reports and mapping including mapping studies, fish assessment data, current extents of the ERCA Limit of Regulated Area, and digital mapping from the ERHNSS, various wildlife atlases, municipal Official Plans and other planning reports.
2. Conduct a field investigation (May to July) to document existing conditions (terrestrial and aquatic) in the outfall site (i.e., the existing outfall, proposed outfall and the area within a 120 m radius of the proposed work).
3. If any in-water work is required, a DFO Self-Assessment is to be undertaken to determine potential impacts of the project to fish and fish habitat and provide mitigation measures to reduce the risk of serious harm to fish.

4. Prepare a memo identifying environmental constraints and permit needs. The technical Memo is to be prepared to document background information, field data and constraints (i.e., one memo combining terrestrial and aquatic habitats). The memo is to describe existing conditions, recommend general mitigation measures to include during design, and identify permits that may be required prior to construction of the proposed work.

During the final design phase, The MECP is to be further consulted to ensure compliance with the ESA. It shall be noted that, if this project is likely to impact species at risk, or protected habitat, authorization under the Endangered Species Act may be required.

6.2.2 Floodplain Hazard Management

The proposed work site is under the jurisdiction of the Essex Region Conservation Authority (ERCA). The preferred route and location of this project was reviewed in accordance with ERCA's floodplain mapping of this area, and it has been determined that the proposed work site fall within the Limit of Regulated Area of the Lake St. Clair. The proposed excavations, construction of structures, drain crossings, and placement and grading of fill, within the regulated area will require permits from the ERCA under Ontario Regulation 158/06, (Development, Interference with Wetlands and Alteration to Shorelines and Watercourse Regulations - Section 28 of the Conservation Authorities Act).

During the final design phase, an application of flood proofing measures must be submitted to the ERCA for review and approval. The permit application shall meet the following requirements:

- Specific "Best Management Practices" regarding erosion control measures, sedimentation, and the removal of vegetation, which is provided in the MECP Stormwater Management Planning and Design Manual (2003);
- The Windsor-Essex Region Stormwater Management Standards Manual (2018);
- Water quality measures shall be considered to ensure no adverse impact on the downstream watercourse. The new preferred outfall sewer will run parallel to the existing outfall sewer that is located along Rourke Line Road, and outletting to the Lake St. Clair. Surface water monitoring program is to be implemented to verify no adverse impact on the downstream watercourse; and,
- Items listed in Table 6-1 "Environmental Effect and Mitigation Measures" described in this ESR Report.

6.2.3 Source Water Protection

6.2.3.1 Source Water Protect

For the protection of local municipal drinking water sources, the Essex Region Source Protection Plan (SPP), which has been established under the Clean Water Act, 2006 (Ontario Regulation 287/07), came into effect on October 1, 2015.

The Clean Water Act (2006) refers to four types of Vulnerable Areas, which include:

- Intake Protection Zones
- Wellhead Protection Areas
- Highly Vulnerable Aquifers
- Significant Groundwater Recharge Areas

The types of Vulnerable Areas are addressed further below in relation to this project location.

6.2.3.2 Intake Protection Zones (IPZs)

There is one municipal Water Treatment Plant (WTP) in the region, the Lakeshore (Belle River) WTP, having its intake in the Lake St. Clair (refer to Map 7 of the Essex Region Source Protection Plan in Appendix B). Intake Protection Zones are areas of land and water, where run-off from streams or drainage systems, in conjunction with currents in lakes and rivers, could directly impact the source water at the municipal drinking water intakes.

An Intake Protection Zone can be described as a defined area surrounding a surface water body intake. The size and shape of each zone in an IPZ represents either a set distance around the intake pipe, or the length of time it would take water and contaminants to reach the intake:

- IPZ-1 is the area closest to the intake pipe and is a set distance which extends one kilometre upstream and 120 meters onto the shore.
- IPZ-2 includes the on and offshore areas where flowing water and any pollution would reach the intake pipe within two hours.
- IPZ-3 is an area where contaminants could reach the intake pipe during and after a large storm.

According to the Approved Source Protection Plan for the Essex region source protection area, Lake St. Clair in the study area is characterized to be an Intake Protection Zone 2 (IPZ-2). Refer to Map 7 of the Essex Region Source Protection Plan in Appendix B)

The purpose of this EA study is to investigate and report on alternative means of treating wastewater in the Belle River and Maidstone areas. The proposed project for expanding the plant treatment capacity and therefore minimizing the plant bypass during extreme storm events will have an important beneficial impact on the source of drinking water quality.

6.2.3.3 Wellhead Protection Areas

Wellhead Protection Areas are not applicable in the Essex Region, as no municipal drinking water systems are supplied by groundwater.

6.2.3.4 Highly Vulnerable Aquifers (HVAs)

Highly Vulnerable Aquifers (HVAs) are defined as aquifers on which external sources have or are likely to have a significant adverse impact, and include the land above the aquifer.

In the ERSPA these HVAs are generally located in the sandy soil areas in the southern part of the region, including most of Pelee Island (refer to Map 4 of the Essex Region Source Protection Plan). There are no HVAs located in or close to the proposed work area.

6.2.3.5 Significant Groundwater Recharge Areas

Significant Groundwater Recharge Areas (SGRAs) are defined as per Regulation 287/07 as areas within which it is desirable to regulate or monitor drinking water threats that may affect the recharge of an aquifer. Groundwater recharge occurs where rain or snowmelt percolates into the ground and flows to an aquifer. The greatest recharge usually occurs in areas which have loose or permeable soil such as sand or gravel that allows the water to seep easily into the aquifer.

Most of the SGRAs in the ERSPA are located in the sandy soil areas of the southern part of the Essex Region, in the Harrow area, parts of Leamington and Kingsville, and limited parts of the Turkey Creek and Pelee Island subwatersheds (refer to Map 5 of the Essex Region Source Protection Plan in Appendix B). There are no HVAs located in the northern part of the Essex Region including Town of Lakeshore area.

6.2.3.6 Overall Vulnerability Assessment Summary

Project activities in vulnerable areas need to be assessed to determine the risk they pose. The Clean Water Act requires that significant threats be managed to reduce the threat to a point where it is no longer significant. Action may be taken to address low and moderate threats at the discretion of the Source Protection Committee. Table 6.2 provides a summary of threats to vulnerable areas and the subsequent actions to be taken, relating to this project.

Table 6.2 Summary of Threats to Vulnerable Areas

Vulnerable Area	Threat Potential	Action Taken
Intake Protection Zone	Low	None
Wellhead Protection Areas	Not applicable	None
Highly Vulnerable Aquifer	Not applicable	None
Significant Ground Water Recharge Areas	Not applicable	None

6.2.3.7 Essex Source Water Protection Plan 2015 - Clean Water Act

The project site lies within the Event Based Area (vulnerable area) of a municipal drinking water intake protection system. The Essex Region Source Protection Plan, which came into effect October 1, 2015, was developed to provide measures to protect Essex Region's municipal drinking water sources. As a result of these policies, there are activities described in the ESR that may require approval by the Essex Region Risk Management Official (RMO) to ensure that appropriate actions are taken to mitigate any potential drinking water threats. Specifically, the handling and storage of fuel is considered a Significant Drinking Water Threat in all Event Based Area in the Essex Region Source Protection Area and a s.58 Risk Management Plan would be required if the activity meets the specific risk circumstances in the Essex Region Source Protection Plan.

During the final design and construction phases, Essex Region Risk Management Official/Inspector will be contacted to confirm that the handling and storage of fuel proposed for this project will not pose a significant risk to local sources of municipal drinking water.

6.2.4 Permits to Take Water

Some areas with sandy subsoils and high water tables have been identified in the outfall sewer site where well point dewatering systems will be required to facilitate the outfall sewer construction.

The use of these dewatering systems will require the acquisition of a Permit to Take Water from the MECP.

6.2.5 Active / Former Waste Sites

The existence and location of any active and/or former waste disposal sites within the study area was carefully reviewed. A listing of information about large and small landfills in Ontario that includes open/closed status, site owner, site location, and Certificate of Approval number are available from Government of Ontario ‘s website.

There is no large or small waste disposal site in the region. As the proposed work includes sewer construction within the road right-of-way and the proposed wastewater treatment facility is located far away from any active/former waste disposal sites, the proposed work is not expected to have any impact on the migration of methane and/or leachate from nearby active and/or former waste sites.

6.2.6 Climate Change

Climate encompasses all aspects of weather, including: temperature, precipitation, air pressure, humidity, wind speeds, and cloudiness. Weather and climate are not static processes and variability is often normal. Weather, for example, changes on a daily and sometimes hourly basis. Weather can also change on a monthly basis, through the changing of seasons. When climate changes on a global scale, it is referred to as Climate Change.

Since the beginning of the industrial revolution in the 18th century, excessive emission of greenhouse gases, like carbon dioxide and methane, have been released through human activities, causing an increased percentage of solar radiation to be trapped in our atmosphere. In recent decades the effect of this on climate has become clearer. As more energy is retained within the atmosphere, a general increasing trend in global temperatures has occurred.

Regardless of the cause, the average temperature in Windsor has increased by almost 1°C since 1940. As air temperatures increases, so does the capacity of the air to hold more water leading to more intense rainfall events. The Environment Canada weather station located at Windsor Airport has been monitoring and recording weather data since 1941. Since this time, an increasing trend in annual precipitation has been documented.

The effects of climate change are expected to include an increase in the number and severity of storms, leading to increased precipitation. Since 1970, there has been increasing evidence of heavier short duration (24 hours or less) rain events in southern Ontario.

Climate changes related to increasing rainfall in the region have a significant impact on municipal sewer systems. The Windsor-Essex Region recently experienced a significant rainfall event that inundated and overwhelmed the area's sanitary and storm sewer system/facilities. In the last decade alone, this region has experienced six (6) significant storm events that have surpassed current 1:100 year regulatory standards, and have resulted in urban flooding issues and sewer backups that have impacted hundreds of homes and businesses in the region. As such, historical data regarding the likelihood of major flooding events must be reconsidered. It is important that the proposed work for wastewater treatment continues to operate effectively in the future. A solution needs to be identified to provide resiliency to the impacts of climate change.

The proposed treatment plant site is located outside the periphery of lands that are designated as Lake St. Clair Floodprone Areas in the Official Plan and in the Zoning By-Law. Specific flood proofing measures are not considered to be undertaken on the site.

The proposed plant site is under the jurisdiction of the Essex Region Conservation Authority (ERCA). The ERCA was contacted to verify whether additional flood proofing measures would be required for the proposed treatment plant site, and no specific comments have been received to date.

The Provincial Policy Statement (2014), which is issued under section 3 of the Planning Act, provides policy direction on matters of provincial interest related to land use planning and development. A listing of applicable policies related to climate changes include:

- Policies 1.6.2, 1.6.6.7 — Encourage green infrastructure (e.g. permeable surfaces) and strengthen stormwater management requirements
- Policy 1.8 — Require the consideration of energy conservation and efficiency, reduced greenhouse gas emissions and climate change adaptation (e.g. tree cover for shade and for carbon sequestration)
- Policy 3.1.3 — Requires consideration of the potential impacts of climate change that may increase the risk associated with natural hazards (e.g. flooding due to severe weather)

To complement and support the above climate-focused policies of the 2014 Provincial Policy Statement, the MECP has issued a guidance “Considering Climate change in the Environmental Assessment Process”. The consideration of the Climatic Features including drought, increased flooding, changes in water levels, increases in surface water runoff due to extreme weather events and climate changes, is also noted in Appendix 2 of the Municipal Class EA (2015).

During the design phase, the primary technical considerations when evaluating alternative treatment process components shall include the ability of a component to consistently meet requirements for energy conservation and greenhouse gas emission reductions, the established treatment requirements, the feasibility of locating a suitable space for the plant expansion, the ability of the improved process to handle variations in hydraulic and organic loadings, and capital and operating costs. Green infrastructure (e.g. permeable surfaces, trees and planting), which can help reduce flooding and water pollution by absorbing and filtering stormwater, is to be incorporated into the final design of the plant expansion.

6.3 SOCIO-ECONOMIC IMPACTS AND MITIGATING MEASURES

6.3.1 Built Heritage Resources and Cultural Heritage Landscapes

The Ministry of Tourism, Culture and Sport (MTCS)'s "Screening for Impacts to Build Heritage and Cultural Heritage Landscapes" checklist was completed for this project. The completed checklist is included in Appendix D.

A Cultural Heritage Assessment Report was also completed and is included in Appendix D. The study area contains a small portion of the former Great Western Railway corridor. Construction related to the twinning of the outfall sewer is not anticipated to alter any heritage attribute of the Great Western Railway corridor. All construction related activities are temporary and the land will be restored to its previous condition. There were no potential cultural heritage resource impacts identified for within the study area.

As shown in Appendix D, the proposed work is also located away from these built heritage and cultural heritage landscapes, the proposed work is not expected to impact heritage resources in the area and therefore no mitigation measures are recommended.

6.3.2 Archaeological Resources

The MTCS's "Criteria for Evaluating Archaeological Potential" checklist was completed for this project. The completed checklist is included in Appendix E.

A Stage 1 Archaeological Assessment was also completed and is included in Appendix E. It was determined the study area retains low to no archaeological potential due to various deep and extensive modern disturbances. As such, a Stage 2 Archaeological Assessment was not required.

As shown in Appendix E, Proposed work is located in the disturbed areas and away from any known archaeological sites, and thus is not expected to impact heritage resources in the area.

6.3.3 Community

6.3.3.1 Disruption of Traffic

Construction of the proposed plant expansion and the outfall will result in temporary detours or lane restrictions that will disrupt traffic in the area and interfere with access for some residents and businesses. All emergency services will be notified of detours prior to commencement of construction. Services that may experience temporary detours or delays include school buses, mail delivery and garbage collection.

Construction of the proposed outfall sewer will result in temporary detours or lane restrictions that will disrupt traffic in the area and interfere with access for some residents and businesses.

All emergency services will be notified of detours prior to commencement of construction. Services that may experience temporary detours or delays include school buses, mail delivery and garbage collection. Where the alignment for the outfall sewer follows a Town Road, approval of the alignment would be obtained from the Town of Lakeshore.

Mitigating measures are to provide and maintain detours, provide for safe alternate routes, and select alternate routes to minimize inconvenience.

6.3.3.2 Inconvenience During Outfall Sewer Construction

Construction activities will create noise and traffic from construction vehicles resulting in temporary inconvenience to residents and businesses.

The best available construction techniques shall be applied to the construction of the proposed outfall sewer to mitigate noise and vibration. The noise and vibration limits set for the project will ensure that the community, all buildings, including those with heritage features, are protected. Monitoring during construction will ensure that noise and vibration are kept below the established limit.

6.3.3.3 Proximity to Arterial Roadway

The County Road No.22 major arterial roadways that provide direct access to the local Communities and neighboring areas. It is not expected that there will be any significant traffic disruptions during the construction of the proposed work.

6.3.3.4 Crossing Railway Rights-of-Way

Rail traffic should not be disrupted by outfall sewer construction. Permits to cross railways would be obtained from the railway company. In all railway crossings, directional drilling procedures should be used to install steel casings for insertion of outfall sewer pipes.

6.3.3.5 Proximity to Existing Dwellings

The MECP has developed Guidelines with respect to recommended separation or buffer zone distances between various sizes and types of wastewater treatment facilities and nearby "sensitive" land uses. In some cases these Guidelines are applied as policy by MECP staff especially where there is a proposal for expansion of a large treatment facility and where there are concerns related to the generation of odours or noise. An application to the MECP for approval of air and noise emissions from any proposed treatment facility is required under the regulations of the Provincial Environmental Protection Act.

Separation distances between sewage works and sensitive land use are specified in MECP Guideline D-2, Compatibility between Sewage Treatment and Sensitive Land Use. The guideline indicates that:

1. Where practical, sensitive land uses should not be placed adjacent to treatment facilities.

2. When new facilities or enlargements to existing facilities are proposed, an adequate buffer area should be acquired as part of the project. Plants with a capacity of less than or equal to 500 m^3/d have a recommended separation distance of 100 meters. Plants with a capacity greater than 500 m^3/d but less than 25,000 m^3/d have a minimum separation distance of 100 meters, and plants with a capacity greater than 25,000 m^3/d have a minimum separation distance of 150 meters.

The ultimate capacity of the proposed treatment facility is 30,000 m^3/d. Therefore, the minimum separation of 150 meters would apply.

The MECP has indicated sensitive land use in the context of this Guideline can be defined as: "A use associated with residences, schools, hospitals and senior citizen homes or other land uses where humans and the natural environment may be adversely affected by emissions from the facilities".

The existing treatment plant site is located to provide a buffer zone of more than 150 m from the closest residential property line to any open tankage. This buffer zone exceeds the minimum requirements as outlined by the MECP. The buffer zone will help minimize potential impacts on adjacent lands and effectively mitigate potential impacts related to aesthetics.

7.0 PUBLIC CONSULTATION

The Municipal Class Environmental Assessment process provides a minimum of three points of contact for a Schedule C undertaking where members of the public and review agencies have the opportunity to review the project findings and submit comments for consideration in development of the project. The following sections summarize the approach that has been taken with respect to public participation during this project.

7.1 PUBLIC PARTICIPATION

A Notice of Commencement was originally published in the April 11, 2019 edition of the Lakeshore News and Tilbury Times, and the April 12, 2019 edition of the Shoreline News advising of the initiation of this Class EA undertaking and inviting public input. A copy of the notice is contained in Appendix F.

In addition to this discretionary point of contact, there are two points for mandatory public contact during this Class EA study, namely:

- Phase 3: Public Consultation and Information Centre
- Phase 4: Notice of Completion

A public Open House was held on September 11, 2019 to provide information regarding this undertaking and to invite input and comment from interested persons. Information on alternative concepts for the preferred design selected in Phase 3 of the Class EA process was available for review. A copy of the open house notice as published in the Windsor Star on August 24, 2019, Tilbury Times on August 27, 2019, the Lakeshore News on August 29, 2019, and the Shoreline News on August 30, 2019 is included in Appendix F together with a copy of the Open House materials that is to be given to all attendees.

7.2 REVIEW AGENCIES

The Class EA provides for the involvement in the project by the MECP's various branches as well as other provincial and federal ministries and outside agencies. The list of Review Agencies varies depending upon the scope of the project, its location and the potential environmental impacts.

A letter dated April 3, 2019, advising of the initiation of this project was sent to review agencies via Canada Post. Copies of the letter, notice and the list of review agencies are contained in Appendix F.

Information on the preferred design selected in Phase 3 of the Class EA process were distributed to review agencies and mandatory contacts under cover of a letter dated September 10, 2019. A copy of the letter and distribution list is included in Appendix F.

Copies of the Draft ESR Report were distributed to review agencies and mandatory contacts under cover of letters in September 10, 2019.

7.3 RESPONSE FROM PUBLIC AND REVIEW AGENCIES

7.3.1 Notice of Project Initiation

The notice of initiation of the project did not generate any public response. The following responses (copies included in Appendix F) were received from review agencies and mandatory contacts.

- Ministry of the Environment, Conservation and Parks (MECP) - advised by emails on April 10, 2019 and May 31, 2019 that the MECP has comments and concerns regarding this project. Responses to the MECP's comments/concerns have been addressed.

- Ministry of Natural Resources and Forestry (MNRF), Aylmer District – advised in an email dated April 10, 2019 that the MECP has now assumed responsibility for the Endangered Species Act (ESA), including species at risk (SAR) in Ontario.

- Ministry of Tourism, Culture and Sport (MTCS) – advised in an email dated May 8, 2019 that the Class EA should identify and address potential impacts to Archaeological resources, including land-based and marine; built heritage resources, including bridges and monuments; and Cultural heritage landscapes.

- Transport Canada – advised in an email dated May 9, 2019 that Transport Canada does not require receipt of all individual or Class EA related notifications. The project proponent is requested to self-assess if the project will interact with a federal property and/or waterway and require approval and/or authorization under any Acts administered by Transport Canada.

- Essex Region Conservation Authority (ERCA) – advised in a letter dated May 29, 2019 that ERCA is interested in providing support and comments to the Town as this study progresses.

- Indigenous Services Canada (ISC) - requested in a letter dated May 6, 2019 that ISC be kept informed of progress of this project. ISC has no comments concerning the project at this time.

- Hydro One - advised in a letter dated July 30, 2019 that there are no existing Hydro One Transmission assets in the subject area. No further consultation with Hydro One Networks Inc. is required if no changes are made to the current information.

- Also received responses from Town of Essex, ENWIN Utilities Ltd., and Meo & Associates requested to be kept on the mailing list.

7.3.2 Phase 3 Public Consultation and Information Centre

A Notice of Public Information Centre was originally published in the following news publications advising of a Phase 3 Public Consultation and Information Centre.

- Windsor Star on August 24, 2019;
- Lakeshore News on August 29, 2019; and,
- Lakeshore News on August 30, 2019.

A copy of the notice is contained in Appendix F.

The public Open House was held on September 11, 2019 at the Atlas Tube Centre in Belle River, ON, to provide information regarding this undertaking and to invite input and comment from interested persons.

Electronic copies of the Draft ESR Report including information on the preferred design selected in Phase 3 of the Class EA process were distributed to review agencies and mandatory contacts under cover of letters in September 10, 2019. The following responses (copies included in Appendix F) were received from review agencies and mandatory contacts.

- Ministry of the Environment, Conservation and Parks (MECP) - advised by emails on October 18, 2019, January 28, 2020 and February 5, 2020 that the MECP has comments and concerns regarding this project. Responses to the MECP's comments/concerns have been addressed.

- Ministry of Tourism, Culture and Sport (MTCS) – advised in an email dated October 25, 2019 that the Class EA should include Cultural Heritage Evaluation Report (CHER) and Stage 1 archaeological assessment to identify and address potential impacts to Archaeological resources, built heritage resources, and Cultural heritage landscapes. Responses to the MTCS's comments/concerns have been addressed.

- Ministry of Transportation (MTO) – advised in a letter dated September 17, 2019 that the MTO has no concerns. No further contact is needed on this project.

- Essex Region Conservation Authority (ERCA) – advised in an email dated October 17, 2019 that the ERCA has comments and concerns regarding this project. Responses to the ERCA's comments/concerns have been addressed.

- Hydro One - advised in a letter dated October 08, 2019 that there are no existing Hydro One Transmission assets in the subject area. No further consultation with Hydro One Networks Inc. is required if no changes are made to the current information.

- James Sylvestre Developments Ltd – Josette Eugeni advised in an email dated September 26, 2019 that Josette has comments and concerns regarding this project. Responses to the Josette's comments/concerns have been addressed.

A copy of the display material, which is presented at the open house describing the design options considered leading to selection of the recommended design, is included in Appendix F.

7.4 FIRST NATIONS CONSULTATION

First nations consultation is to be completed in accordance with the Municipal Class EA First Nations Consultation requirements. As part of this Class EA, communications with First Nations agencies and communities are being undertaken in parallel with the other stakeholder communications and consultations. Letters were sent to the following First Nations agencies and communities at study commencement and public open house to solicit their interest or non-interest in the study.

- Ministry of Aboriginal Affairs
- Ministry of Aboriginal Affairs and Northern Development Canada
- Indigenous and Northern Affairs Canada
- Southern First Nations Secretariat
- Delaware Nation (Moravian of the Thames)
- Aamjiwnaang First Nation
- Caldwell First Nation
- Bkejwanong Territory (Walpole Island) First Nation
- Metis Nation of Ontario
- Chippewas of Kettle and Stony Point First Nation
- Chippewas of the Thames First Nation (COTTFN)
- Oneida Nation of the Thames ONYOTA'A;KA

A Notice of Commencement was sent to all communities and organizations noted above via Canada Post on April 3, 2019. There was one response received from the COTTFN.

- COTTFN advised in a letter dated May 8, 2019 that the proposed project is located within the McKee Treaty area (1790) to which COTTFN is a signatory, as well as the Big Bear Creek Addition to Reserve (ATR) land selection area, and COTTFN's Traditional Territory. COTTFN has minimal concerns with the proposed project. It is requested that COTTFN be kept informed of progress of this project including distribution of a digital copy of the study report.

A public Open House was held on September 11, 2019 at the Atlas Tube Centre in Belle River, ON. A copy of the Open House materials and the Draft ESR were sent to all agencies and communities via Canada Post on September 10, 2019. No responses were received from this communication. A follow up email was sent on February 26, 2020 to all agencies and groups that had email information available. The Delaware Nation did not have available email information and therefore received a follow up phone call on February 27, 2020. A voicemail was left with Chief Denise Stonefish.

Documentation of consultation with First Nations communities during the Environmental Assessment Process is located in Appendix F.

8.0 SUMMARY

8.1 RECOMMENDATIONS

The recommended alternative designs that form the preferred solution are summarized in Figure 8.1of Appendix A.

When capital budget funding becomes available, it is recommended that the following major work described in the ESR proceed to Phase 5 with final design and construction:

- Increase pumping capacity of the existing Maidstone Pumping Station No.8
- Add second fine screen and vortex grit tank in the existing Screening and Grit Removal Facility
- Add two new aeration tanks and final clarifiers
- Build new UV disinfection facility
- Construct new service building accommodating blowers, sludge pumps, and chemical feed and storage
- Add two new aerobic digesters
- Construct new centrifugal dewatering facility
- Construct new electrical and standby generator building
- Twinning of inland portion of outfall sewer along Rourke Line Road from the Denis St. Pierre WPCP to Caille Avenue.

The exact locations and dimensions of the above proposed new facilities, which are shown in Figure 8.1, are to be further reviewed and finalized during the final design phase.

8.2 OPINION OF PROBABLE COST

This section discusses an opinion of probable cost for the preferred solution. An opinion of probable cost can be prepared as an attempt to project what someone else will be willing to contract for in the future to do construction work which has not yet been defined and which is subject to changes in scope, design, and market conditions.

8.2.1 Level of Accuracy

Opinions of probable cost are typically provided throughout various stages of a project's life cycle. There are a number of classifications for estimates that identify typical minimum and maximum probable costs or levels of accuracy. These classifications vary widely by industry, but all are based on the fact that the level of accuracy is directly proportional to the level of detail available at each stage of the project.

The level of accuracy increases as the project moves through the various stages from planning to preliminary design to final design. A wide range of accuracy would be expected at the planning stage of a project development because a number of details would be unknown. As the project moves closer to completion of final design, the estimate would become more accurate due to the increased level of detail available and the reduced number of unknowns.

Table 8.1 includes a summary of typical estimate classifications used throughout a project's development including a description of the project stage and range of accuracy. The opinions of probable cost in this study are estimated at the study stage (Class 2) and the corresponding level of accuracy could range from –15% to +30% from the opinion presented in the report.

Table 8.1 Classification of Cost Estimates

Class	Description	Level of Accuracy	Stage of Project Lifecycle
1	Conceptual Estimate	+50% to -30%	Screening of alternatives.
2	Study Estimate	+30% to -15%	Treatment system master plans.
3	Preliminary Estimate	+25% to -10%	Pre-design report.
4	Detailed Estimate	+15% to -5%	Completed plans and specifications.
5	Tender Estimate	+10% to -3%	This is the actual tender price and it can vary depending on the amount of contingency allowance consumed.

8.2.2 Opinion of Probable Cost for Preferred Solution

In addition to the level of accuracy discussed, the opinion of probable cost was prepared taking into consideration the following factors.

- All estimates are 2019 dollars based on an Engineering News Record (ENR) Construction Cost Index of 1200.
- It is assumed that the Contractor will have unrestricted access to the site and will complete the work during normal working hours from 7:00 am to 6:00 pm Monday to Friday. There is no allowance for premium time included.
- Labour costs are based on union labour rates for the Windsor area.
- An allowance is included for mobilization and demobilization and the Contractor's overhead and profit.

- Equipment costs are based on vendor supplied price quotations and historical pricing of similar equipment.
- Bulk material and equipment rental costs used are typical for the Windsor area.
- The estimate does not include the cost of application or permit fees.
- Taxes are not included.
- Allowances for engineering and contingency allowances (approximately 15% and 10%, respectively) are included in the estimate.
- No allowance is included for interim financing costs or legal costs.
- No allowance is included for escalation beyond the date of this report.
- It is not known whether contaminated soil conditions may be encountered in the areas proposed for the plant expansion. The potential impact cannot reasonably be determined at this point and no allowance is included in the estimate for this possible eventuality.
- Another factor that could impact the estimate is the possible presence of archaeological resources at the plant site or along the outfall sewer. The potential impact cannot reasonably be determined at this point and no allowance is included in the estimate for this eventuality.

A capital budget estimate (in 2019 dollars) is summarized in Table 8.2.

Table 8.2 Opinion of Probable Capital Cost for Preferred Solution

Description	Expansion
Inlet Works and Grit Building	$2,500,000
Extended Aeration Tanks and Blower Facility	$5,500,000
Final Settling Tanks and Alum Storage & Feed Facility	$4,800,000
UV disinfection	$1,200,000
Outfall	$3,500,000
Aerobic Digester	$1,500,000
Dewatering Building	$2,500,000
Electrical and Standby Generator Building	$1,200,000
Sub-total	$22,700,000
Contingency 10%	$2,270,000
Engineering Allowance 15%	$3,745,500
TOTAL	$28,715,500

8.3 PERMIT AND APPROVAL

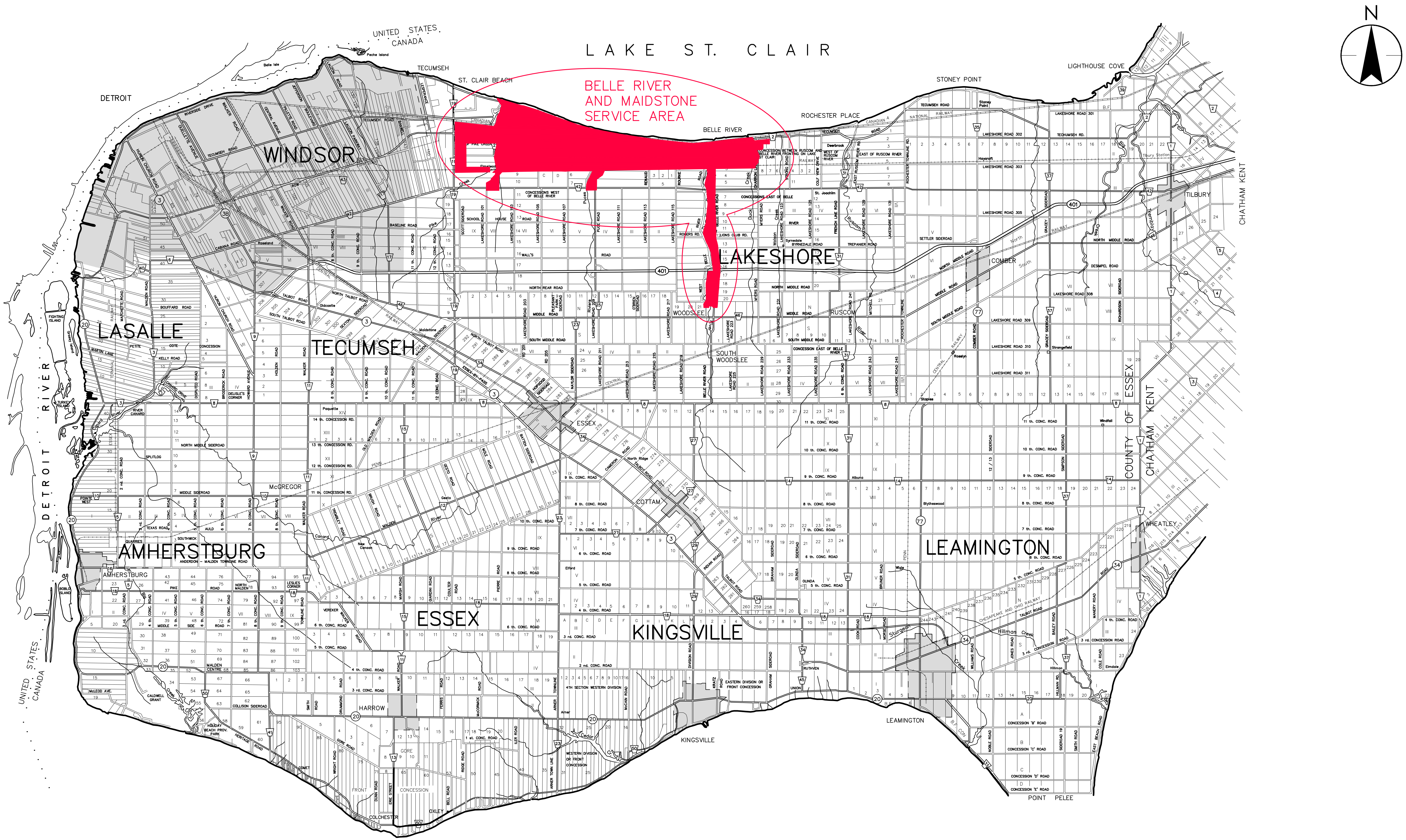
Table 8.3 shows the permit and approval requirements for the preferred design. The permit requirements are based on past experience with similar projects and may change at the discretion of the regulatory authorities. The applications shall be prepared upon completion of the detailed design drawings and specifications.

Table 8.3 Permit Requirements for Implementing the Preferred Design

Regulatory Authority or Owner	Permit/Approval
Ministry of Environment Conservation and Parks (MECP)	ECA for Plant expansion
Essex Region Conservation Authority (ERCA)	Regulatory Approval Under Section 28 of the Conservation Authorities Act
Essex Region Risk Management Official (RMO)	Confirm handling and storage of fuel proposed for this project in complying with Essex Source Water Protection Plan 2015 - Clean Water Act
Canadian National Railway (CNR)	Encroachment and crossing Approval for Outfall Sewer

APPENDIX A

Figures



Lakeshore

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TOWN OF LAKESHORE
DENIS ST. PIERRE WPCP EXPANSION
CLASS ENVIRONMENTAL ASSESSMENT

KEY PLAN OF ESSEX COUNTY

PROJECT NO.		DRAWING NO.
165620173	0 2 6 10km	
DATE	1:200000	FIGURE 1.1
2020.03.06		

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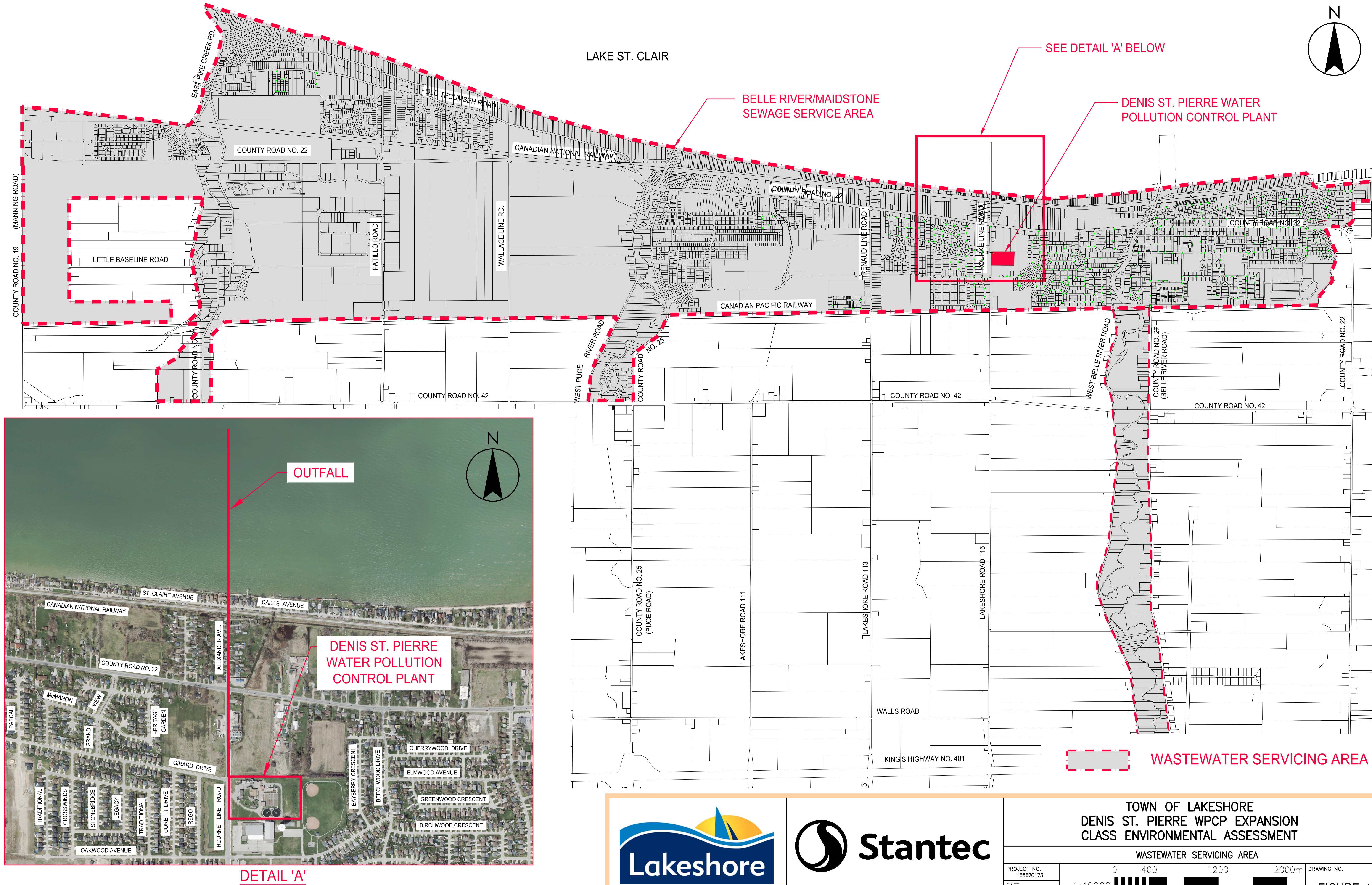

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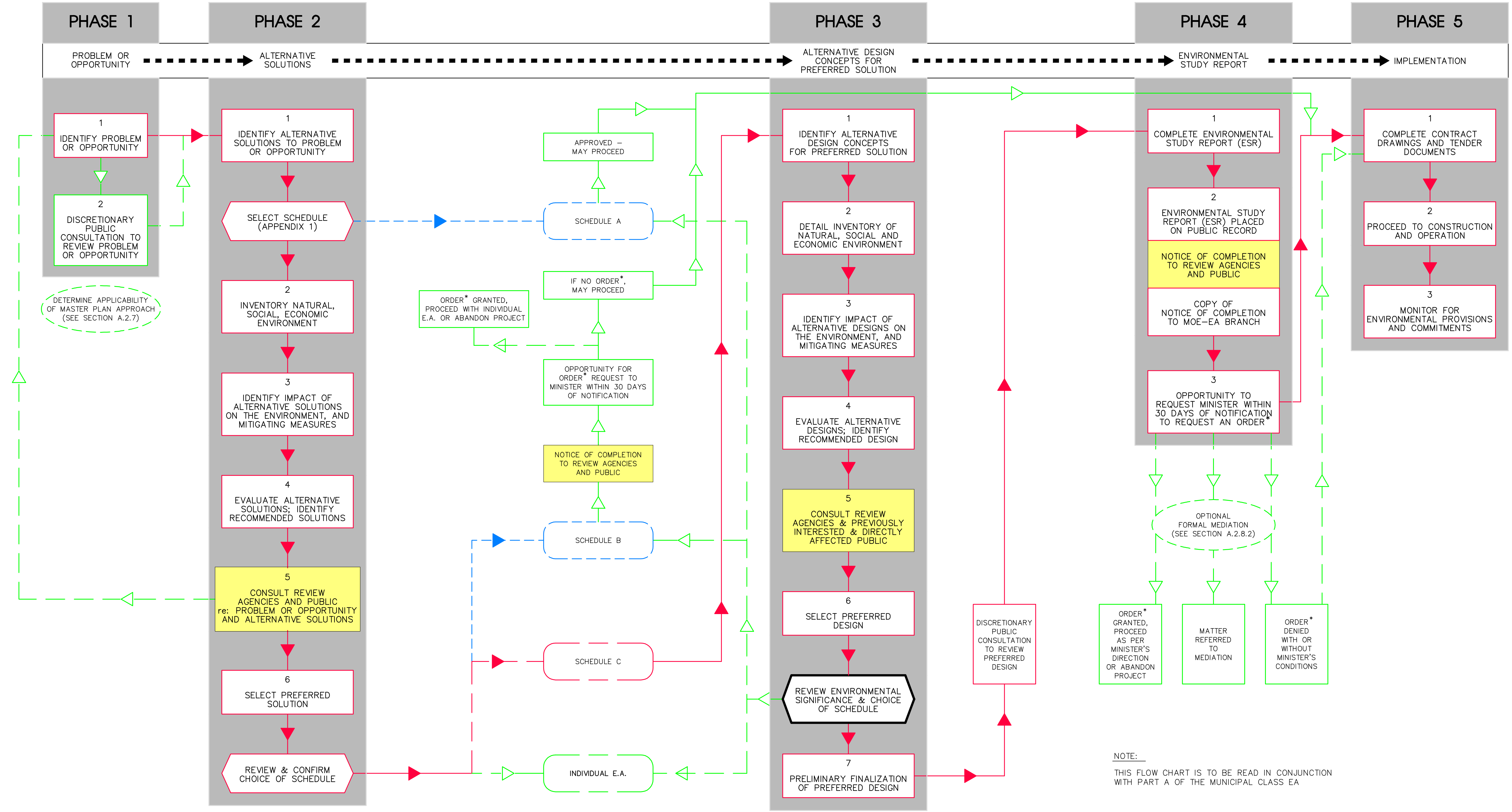
TOWN OF LAKESHORE
DENIS ST. PIERRE WPCP EXPANSION
CLASS ENVIRONMENTAL ASSESSMENT

WASTEWATER SERVICING AREA

PROJECT NO.	165620173
DATE	2020.03.06
SCALE	1:40000 (0, 400, 1200, 2000m)
DRAWING NO.	FIGURE 1.2



INDICATES MANDATORY EVENTS

INDICATES POSSIBLE EVENTS

INDICATES PROBABLE EVENTS

MANDATORY PUBLIC CONTACT POINTS (SEE SECTION A.3 CONSULTATION)

DECISION POINTS ON CHOICE OF SCHEDULE

OPTIONAL

* PART II ORDER (SEE SECTION A.2.8)

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TOWN OF LAKESHORE
DENIS ST. PIERRE WPCP EXPANSION
CLASS ENVIRONMENTAL ASSESSMENT

MUNICIPAL CLASS EA PLANNING AND DESIGN PROCESS

PROJECT NO. 165620173

DATE 2020.03.06

DRAWING NO. FIGURE 1.3

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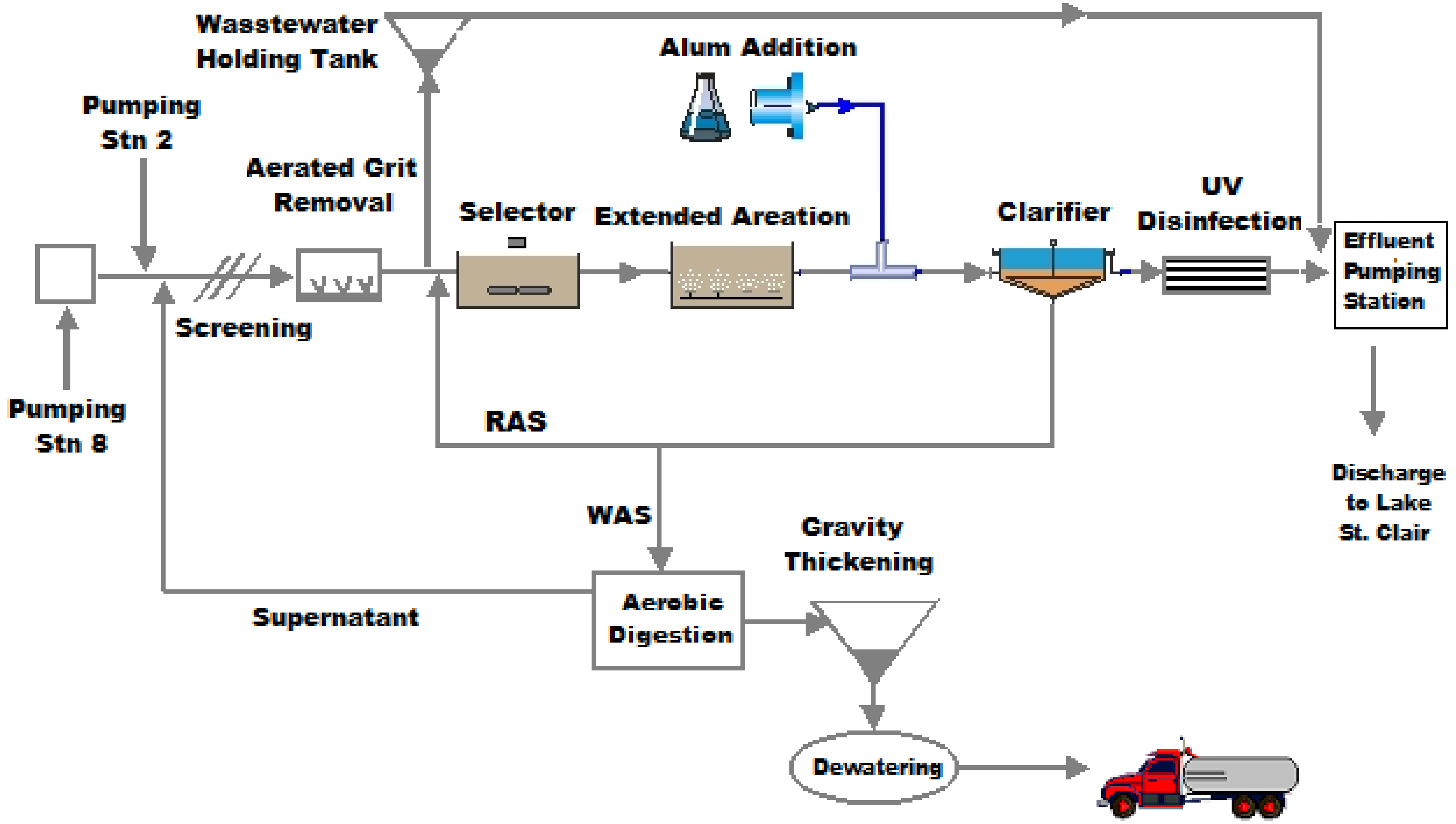

Figure 2.1: Denis St. Pierre Water Pollution Control Plant Process Schematic

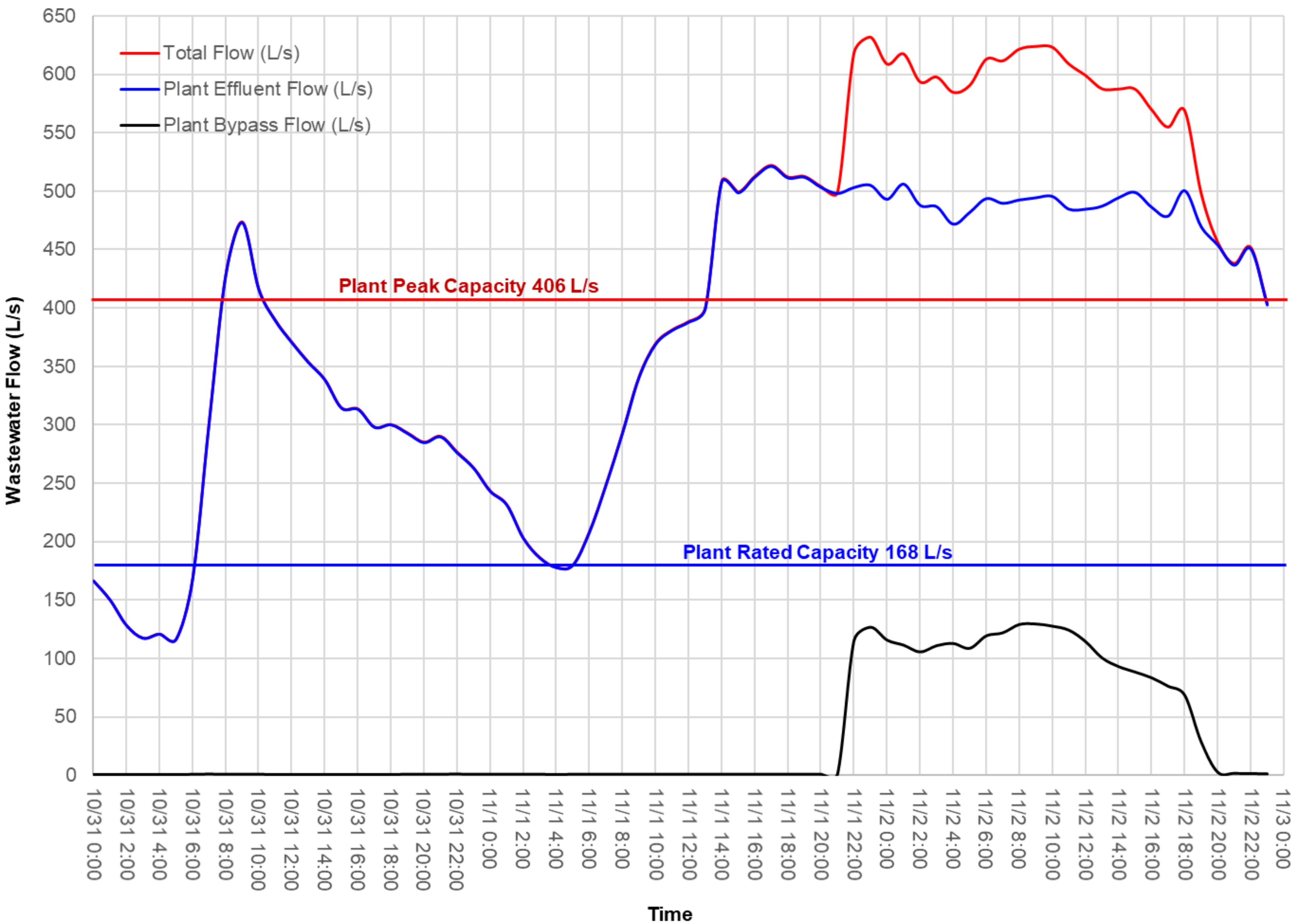

Figure 2.2: Denis St. Pierre WPCP Storm Bypass Event (Oct 31-Nov 2, 2018)

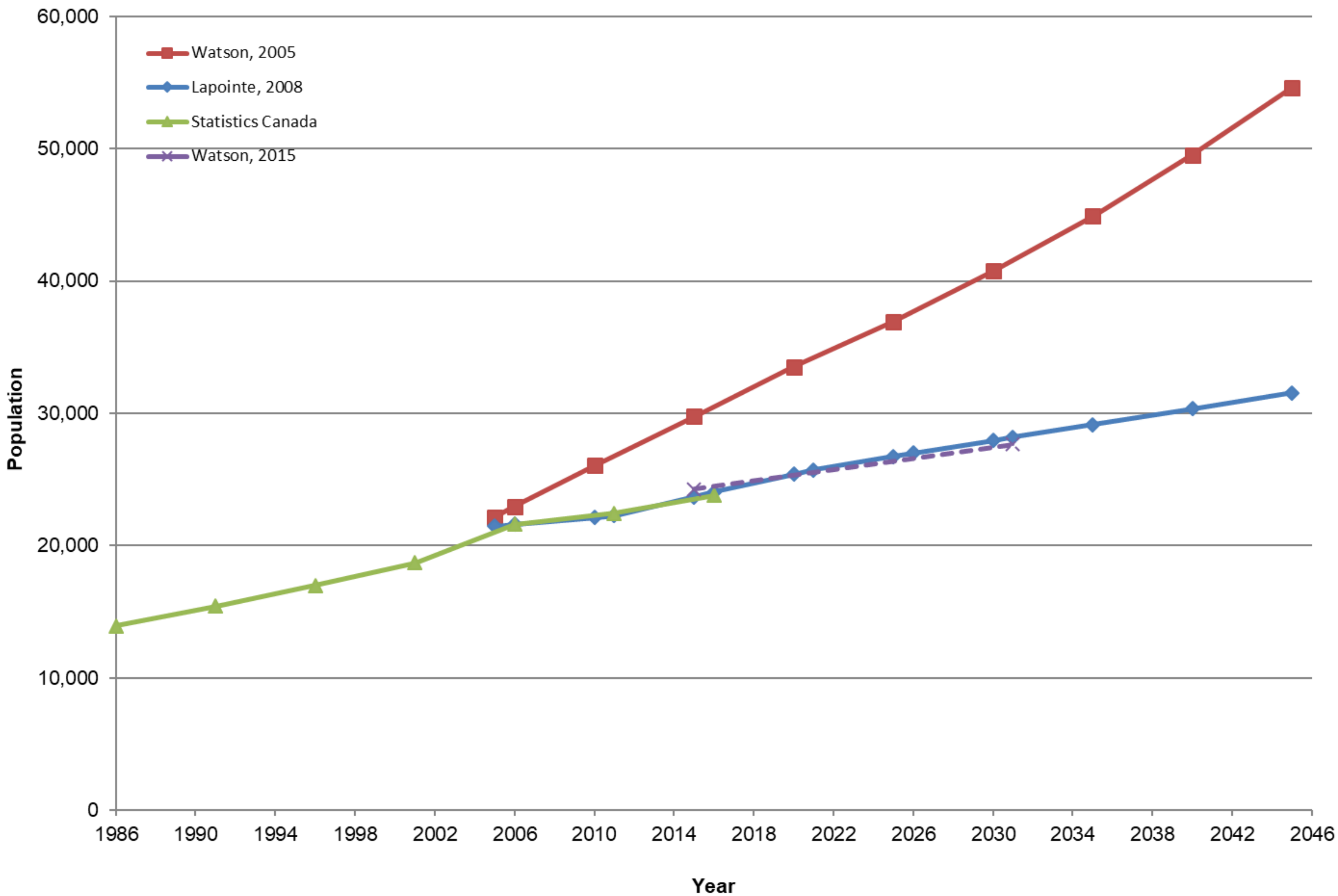

Figure 3.1: Population Growth Projections for the Maidstone and Belle River Area

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2020-3-06 09:47am BY: qkha

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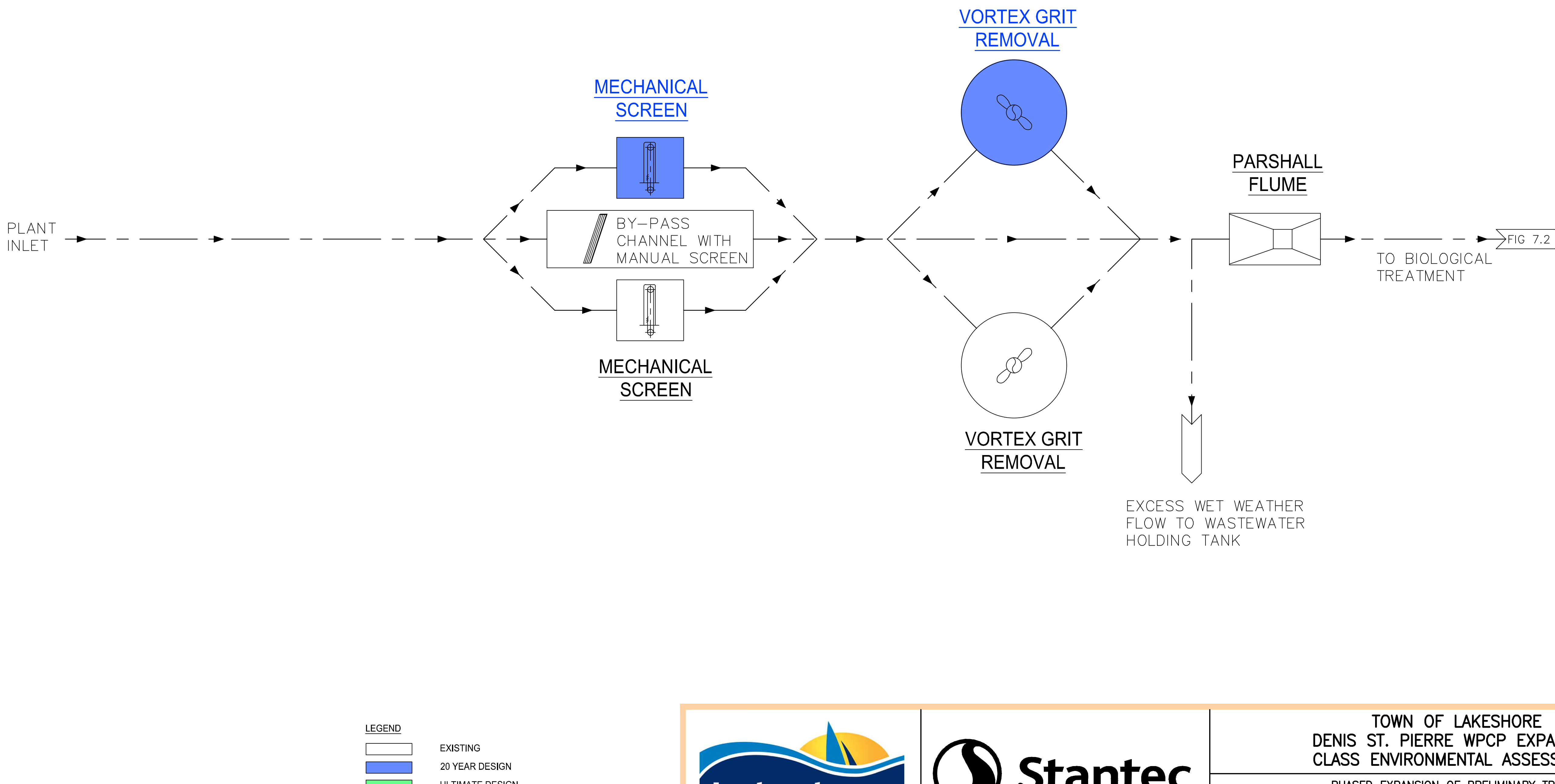
TOWN OF LAKESHORE
DENIS ST. PIERRE WPCP EXPANSION
CLASS ENVIRONMENTAL ASSESSMENT

SITE PLAN OF EXISTING DENIS ST. PIERRE WPCP

PROJECT NO. 165620173	1:1000	0 10 30 50m	DRAWING NO. FIGURE 4.1
DATE 2020.03.06			

PHASES	DESIGN FLOW	PEAK DRY WEATHER	PEAK WET WEATHER	PROPOSED TREATMENT FACILITIES
EXISTING	14,500m^3/d	35,070m^3/d	67,855m^3/d	1 MECHANICAL CLEANED SCREEN (70,200m^3/d) 1 MANUALLY CLEANED BAR SCREEN 1 VORTEX GRIT SYSTEM (70,200m^3/d)
20 YEAR DESIGN	25,000m^3/d	64,000m^3/d	90,000m^3/d	ADD A SECOND MECHANICAL CLEANED SCREEN (70,200m^3/d) ADD A SECOND VORTEX GRIT SYSTEM (70,200m^3/d)
ULTIMATE DESIGN	30,000m^3/d	77,000m^3/d	108,000m^3/d	NO CHANGES NEEDED



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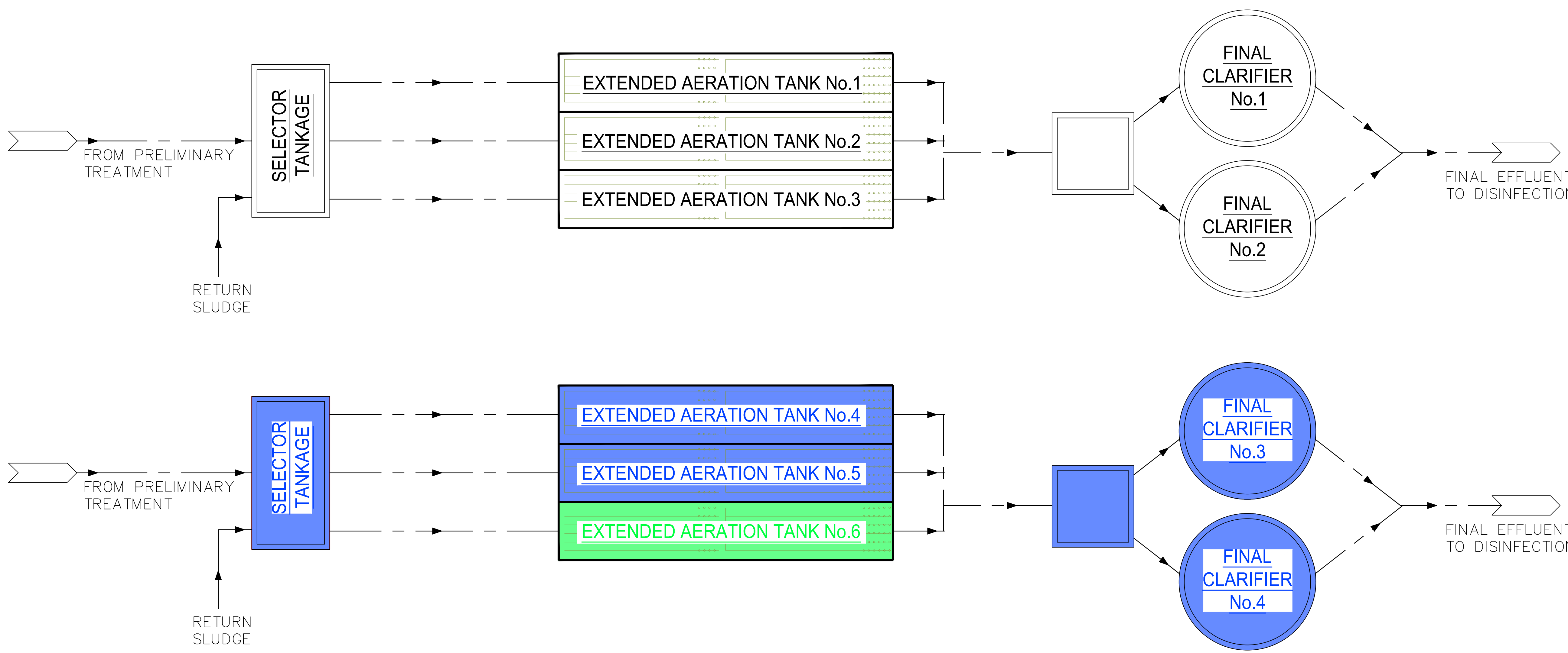
TOWN OF LAKESHORE
DENIS ST. PIERRE WPCP EXPANSION
CLASS ENVIRONMENTAL ASSESSMENT

PHASED EXPANSION OF PRELIMINARY TREATMENT

PROJECT NO. 165620173
DATE 2020.03.06
DRAWING NO. FIGURE 4.2

PHASES	DESIGN FLOW	PEAK FLOW	PROPOSED TREATMENT FACILITIES
EXISTING	14,500m^3/d	35,070m^3/d	3 AERATION TANKS AT 2,770m^3 EACH TWO CLARIFIERS - 30m DIAMETER
20 YEAR DESIGN	25,000m^3/d	64,000m^3/d	ADD 2 AERATION TANK EACH AT 2,770m^3 ADD 2 CLARIFIER EACH - 30m DIAMETER
ULTIMATE DESIGN	30,000m^3/d	77,000m^3/d	ADD 1 AERATION TANK No.6 AT 2,770m^3



Lakeshore
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TOWN OF LAKESHORE
DENIS ST. PIERRE WPCP EXPANSION
CLASS ENVIRONMENTAL ASSESSMENT

PHASED EXPANSION OF EAAS TREATMENT

PROJECT NO. 165620173
DATE 2020.03.06
DRAWING NO. FIGURE 4.3

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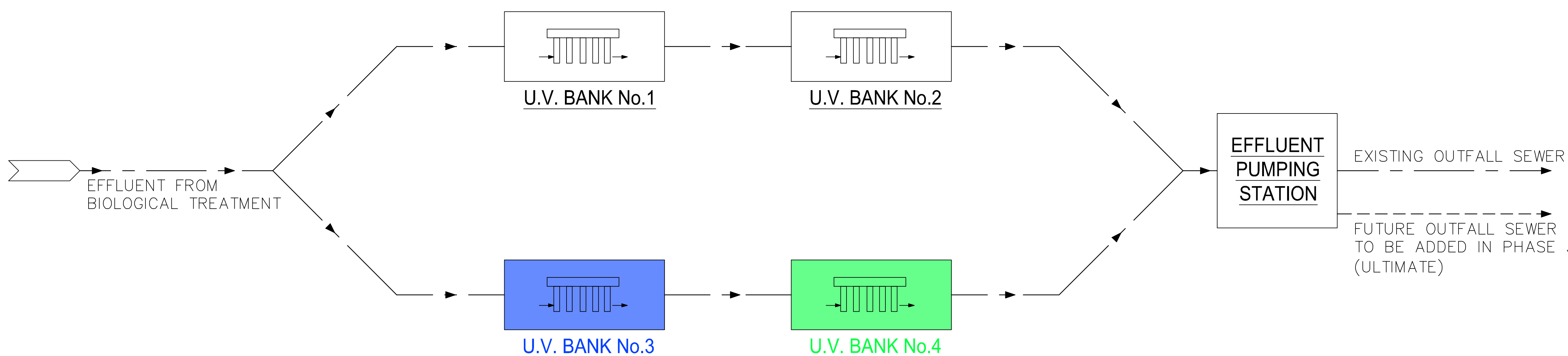
2020-3-06 09:48am BY: kfox

PHASES	DESIGN FLOW	PEAK FLOW	PROPOSED TREATMENT FACILITIES
EXISTING	14,500m^3/d	35,070m^3/d	2 U.V. BANK IN EXISTING U.V. FACILITY RATED AT 35,070m^3/d
20 YEAR DESIGN	21,650m^3/d	55,450m^3/d	CONSTRUCT A NEW U.V. FACILITY TO HANDLE 20 YEAR PEAK FLOW
ULTIMATE DESIGN	30,000m^3/d	77,000m^3/d	ADD U.V. BANK No.4 IN SECOND U.V. FACILITY FOR A TOTAL CAPACITY OF 77,000m^3/d



NOTE:

1. CONDITION OF EXISTING U.V. DISINFECTION TO BE REVIEWED DURING FINAL DESIGN.

2. IT MAY BUILD A NEW LARGE U.V. DISINFECTION AND DECOMMISSION THE EXISTING U.V. DISINFECTION

LEGEND

- EXISTING
- 20 YEAR DESIGN
- ULTIMATE DESIGN

Lakeshore

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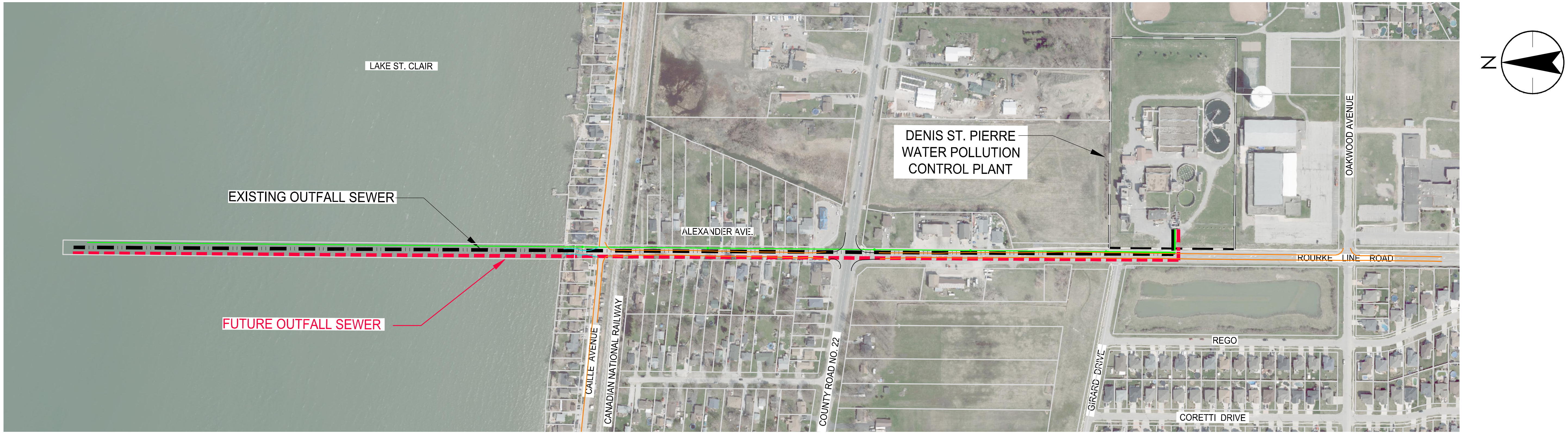
TOWN OF LAKESHORE
DENIS ST. PIERRE WPCP EXPANSION
CLASS ENVIRONMENTAL ASSESSMENT

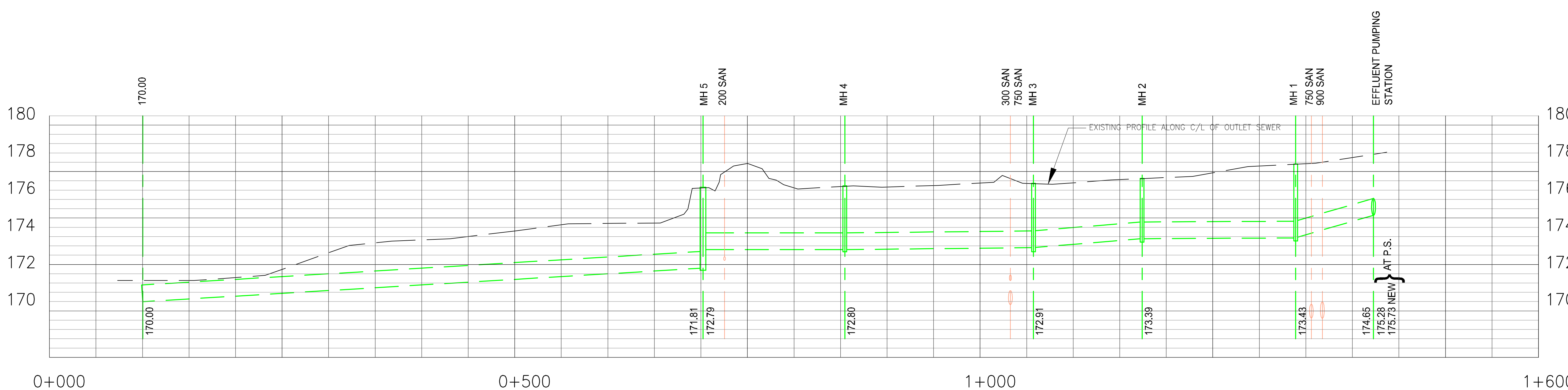
PHASED EXPANSION OF U.V. DISINFECTION

PROJECT NO. 165620173

DATE 2020.03.06

DRAWING NO. FIGURE 4.4





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2020-3-06 09:50am BY: kfox

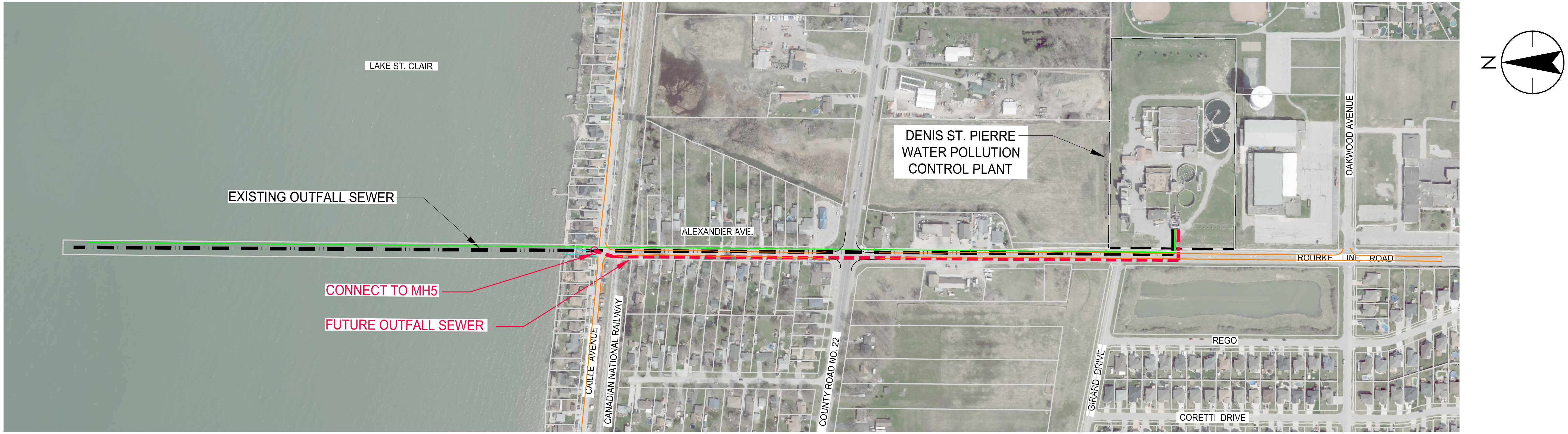
Lakeshore

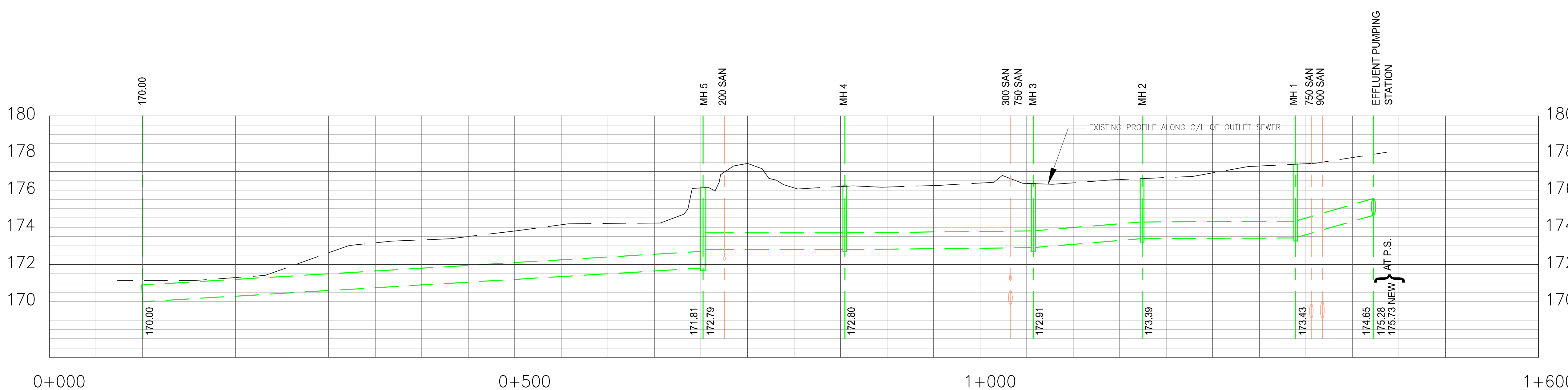
Stantec

TOWN OF LAKESHORE
DENIS ST. PIERRE WPCP EXPANSION
CLASS ENVIRONMENTAL ASSESSMENT

ALTERNATIVE 1 – TWINNING OF THE ENTIRE OUTFALL SEWER

PROJECT NO. 165620173	0 50 150 250m	DRAWING NO.
DATE 2020.03.06	1:5000	FIGURE 4.5





NOTES:

1. NEW OUTFALL SEWER CONNECTED TO EXISTING OUTFALL AT MH No.5.
2. MODIFY OUTFALL DIFFUSER TO SUIT FUTURE FLOWS.

Lakeshore

Stantec

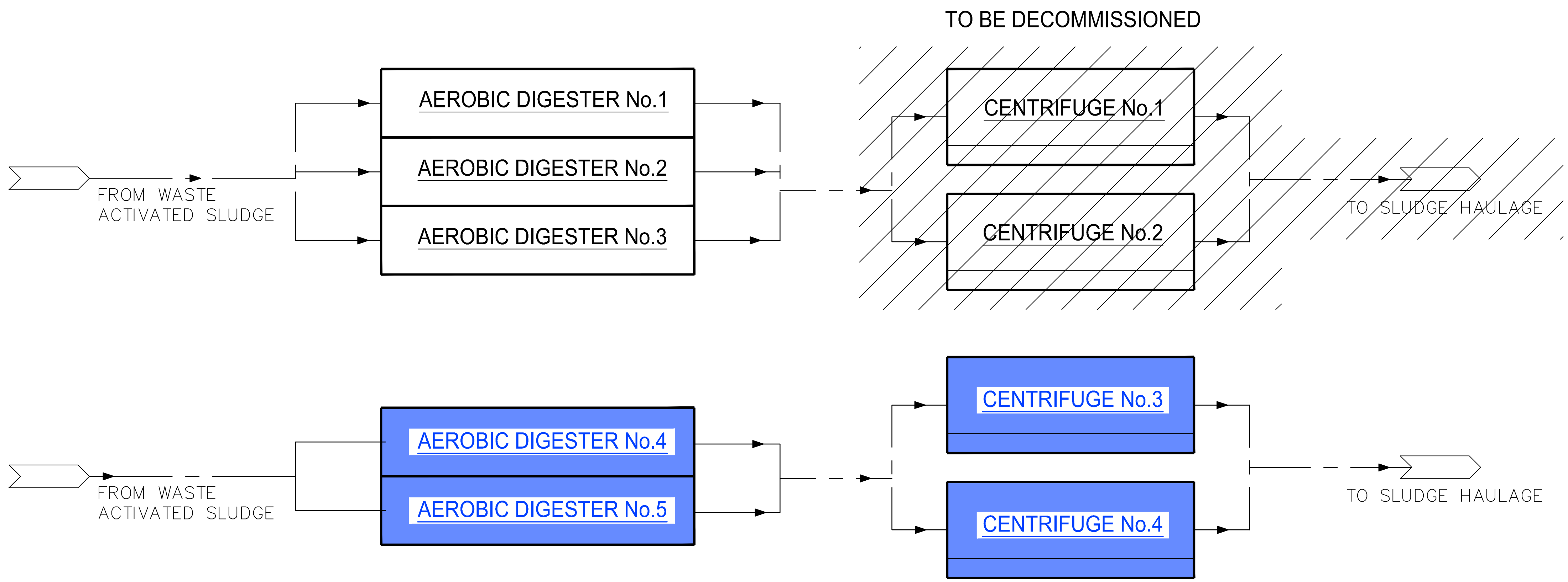
TOWN OF LAKESHORE
DENIS ST. PIERRE WPCP EXPANSION
CLASS ENVIRONMENTAL ASSESSMENT

ALTERNATIVE 2 – TWINNING OF THE INLAND PORTION OF THE OUTFALL SEWER

PROJECT NO. 165620173
DATE 2020.03.06
1:5000 0 50 150 250m
DRAWING NO. FIGURE 4.6

V:\01656\active\165620173\planning\ESR Report\Drawings\20173_FIGURE_4.6a.dwg
2020-3-06 09:51am BY: kfox

PHASES	DESIGN FLOW	PEAK FLOW	PROPOSED AEROBIC DIGESTERS	PROPOSED CENTRIFUGAL DEWATERING
EXISTING	14,500m^3/d	35,070m^3/d	3 DIGESTER TANKS AT 2,770m^3 EACH	2 CENTRIFUGES, EACH 140 Kg/HR
20 YEAR DESIGN	25,000m^3/d	64,000m^3/d	ADD 2 DIGESTER TANKS AT A TOTAL VOLUME OF 4,800m^3	NEW DEWATERING BUILDING WITH TWO NEW CENTRIFUGES, EACH 900 Kg/HR
ULTIMATE DESIGN	30,000m^3/d	77,000m^3/d	NO CHANGES NEEDED	NO CHANGES NEEDED



NOTES:

1. CENTRIFUGE TO INCLUDE SLUDGE FROM STONEY POINT WPCP.
2. DECOMMISSION EXISTING CENTRIFUGES WHEN NEW CENTRIFUGES ARE IN OPERATION.

LEGEND

(white)	EXISTING
(blue)	20 YEAR DESIGN
(green)	ULTIMATE DESIGN

Lakeshore

Stantec

TOWN OF LAKESHORE
DENIS ST. PIERRE WPCP EXPANSION
CLASS ENVIRONMENTAL ASSESSMENT

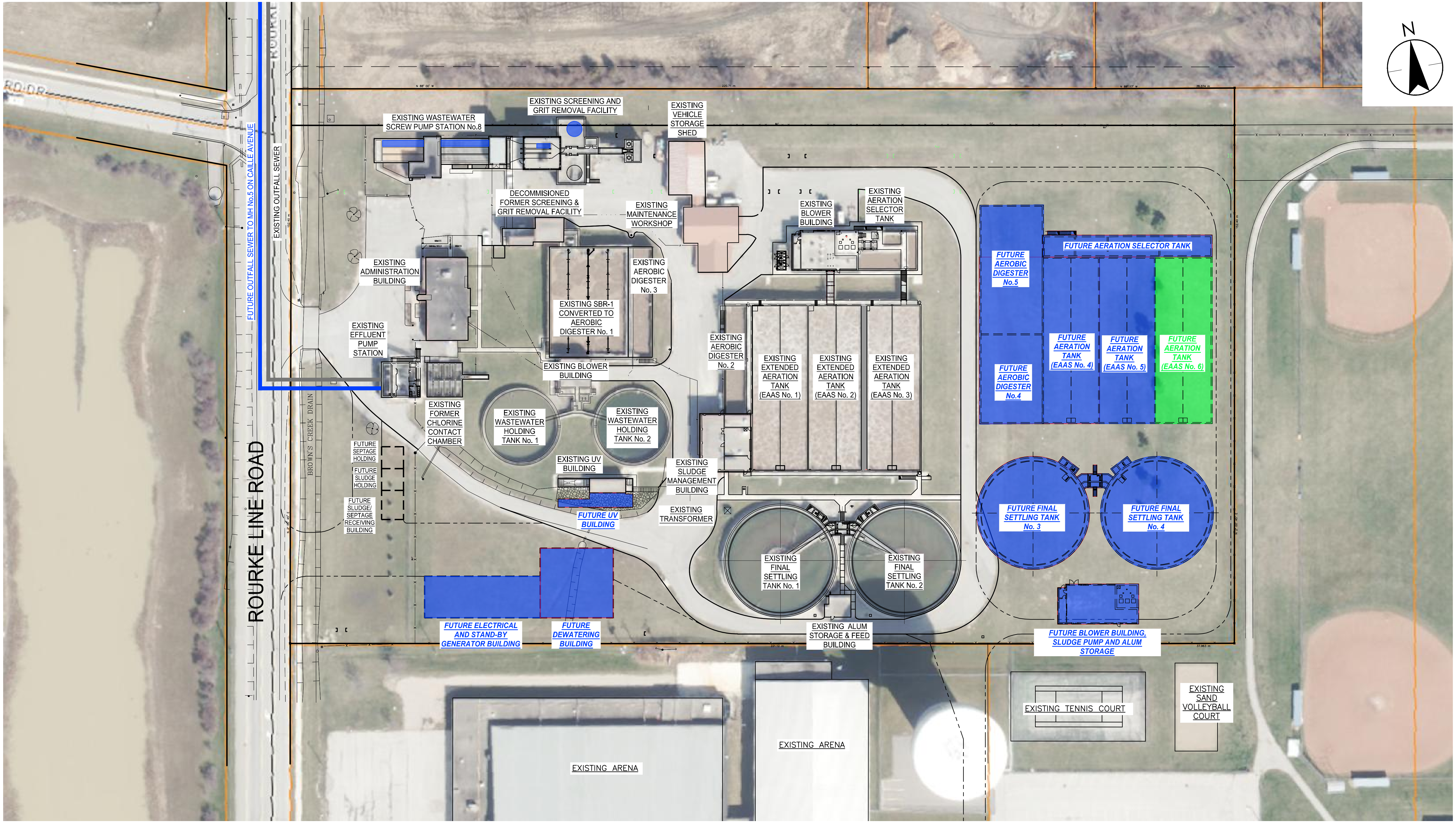
PHASED EXPANSION OF BIOSOLIDS MANAGEMENT

PROJECT NO. 165620173

DATE 2020.03.06

DRAWING NO. FIGURE 5.1

V:\01656\active\165620173\planning\ESR Report\Drawings\20173_FIGURE_5.1.dwg
2020-3-06 09:51am BY: kfox



LEGEND

▭	EXISTING
▭ (blue)	20 YEAR DESIGN
▭ (green)	ULTIMATE DESIGN

TOWN OF LAKESHORE
DENIS ST. PIERRE WPCP EXPANSION
CLASS ENVIRONMENTAL ASSESSMENT

AERIAL PLAN OF PHASED PLANT EXPANSION

PROJECT NO. 165620173

DATE 2020.03.06

1:1000 0 10 30 50m

DRAWING NO. FIGURE 8.1

V:\01656\active\165620173\planning\ESR Report\Drawings\20173_FIGURE_8.1a.dwg
2020-3-06 09:52am BY: kfox

APPENDIX B

- B-1 Environment Compliance Approval
- B-2 Water and Wastewater Master Plan (2008)
  - Executive Summary
- B-3 Water and Wastewater Master Plan Update (2017)
  - Executive Summary
- B-4 Appendix G of Essex Region Source Protection
  - Map 4: Highly Vulnerable Aquifers
  - Map 5: Significant Groundwater Recharge Areas
  - Map 7: Lakeshore (Belle River) Water Treatment Plant IPZs and Vulnerability Scoring

APPENDIX B-1

Environment Compliance Approval

Ontario

Ministry of the Environment, Conservation and Parks
Ministère de l'Environnement, de la Protection de la nature et des Parcs

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 1087-B7FLRU
Issue Date: January 29, 2019

The Corporation of the Town of Lakeshore
419 Notre Dame St
Belle River, Ontario
N0R 1A0

Site Location: The Denis St. Pierre Water Pollution Control Plant
276 Rourke Line Rd Belle River
Town of Lakeshore, Ontario

You have applied under section 20.2 of Part II.1 of the Environmental Protection Act , R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:

re-rating, usage and operation of existing municipal sewage works, for the treatment of sanitary sewage and disposal of effluent to Lake St. Clair River via a Sewage Treatment Plant (the Denis St. Pierre Wastewater Treatment Plant) and Final Effluent disposal facilities as follows:

Classification of Collection System: Separate Sewer System

Classification of Sewage Treatment Plant: Secondary

Design Capacity of Sewage Treatment Plant

Design Capacity with All Treatment Trains in Operation	Prior to Completion of Re-Rating	Upon Completion of Re-Rating
Rated Capacity	13,640 m3/d	14,500 m3/d

Influent, Imported Sewage and Processed Organic Waste

Receiving Location	Types
In Collection System	Sanitary Sewage
At Sewage Treatment Plant	Holding Tank, Processed Organic Waste

Existing Works:

Sanitary Sewage Pumping Stations

Denis St. Pierre Sewage Pumping Station

- a two-stage screw pump station with two (2) screw pumps per stage each pump having a rated capacity of 23,560 m^3/d, discharging via an elevated channel to the existing screening and grit removal facility;

Denis St. Pierre

Influent Sewers

- inlet sewers from the Maidstone sewage collection system discharging to Pumping Station No. 8 (on-site);
-
- elevated channel redirecting discharge from the existing Pumping Station No. 8 to the elevated inlet chamber of the screening and grit removal facility;
-
- two (2) 300 mm diameter forcemains from Belle River Pumping Station No. 2 to discharging to the elevated inlet chamber of the new screening and grit removal facility;

Emergency Storage Facilities - Wet Weather Overflow

- one (1) 900 m^3 capacity wastewater holding tank for wet weather overflows to be returned later to the inlet of the plant for treatment;
-
- one (1) additional 900 m^3 capacity wastewater holding tank converted from the existing sludge thickening tank for wet weather overflows to be returned later to the inlet of the plant for treatment;

Preliminary Treatment System

- Screening
    - one (1) screening channel equipped with a mechanically cleaned 6 mm fine screen with a peak flow rate of 67,855 m^3/d, complete with screw wash press
    -
    - one (1) screening channel equipped with a manually cleaned 12 mm spacing bar screen for emergency and maintenance bypass;

- Grit Removal
    - one (1) vortex type grit removal tank with a hydraulic peak flow rate of 67,855 m^3/d, complete with grit pump, grit blower, cyclone and classifier;
    -

Influent Flow Measurement and Sampling Point

- influent Parshall flume;
- automatic composite sampler in the headworks building;

Primary Treatment System

Primary Effluent Distribution

- a primary effluent distribution chamber with three compartments, one common receiving compartment for the screened and degritted effluent and two discharge compartments, one with piping to the aeration selector tank and one with only the drop portion of the piping and capped for future extension;
-

Secondary Treatment Systems

- **Aeration Selector Tank**

  - an aeration selector tank with an inlet chamber and three aeration selection zones and an outlet chamber to distribute effluent to the three extended aeration tanks;
  -
  - one (1) mixer in the inlet chamber
  -
  - three (3) mixers and fine bubble diffusion systems in the aeration zones for operation in anoxic or aerated mode;
  -

- Biological Treatment

  - three (3) 15.0 m x 45.1 m x 4.23 m SWD extended aeration tanks converted from the existing sequencing batch reactors and upgraded with a longitudinal baffle wall to provide a plug flow pattern and retrofitted with fine bubble diffusion system;

    - one (1) air blower for the aeration selector tank with a capacity of 232 L/s;
    - four (4) air blowers for the extended aeration tanks (one standby), each with a capacity of 1,000 L/s;
    -
    - two (2) air blowers to supply the stage-one aerobic digester (one standby), each with a capacity of 645 L/s;
    -
    - six (6) existing air blowers to supply the stage-two aerobic digesters (two standby), four (4) with a capacity of 425 L/s each and two (2) with a capacity of 350 L/s each

- Secondary Sedimentation
  - two (2) 30.3 m diameter x 4.0 m SWD secondary clarifiers each equipped with sludge and scum collection mechanism;
  -
  - three (3) return activated sludge pumps (one standby), each with a capacity of 13,640 m^3/d and equipped with VFD;
  -
  - two (2) waste activated sludge pumps (one standby), each with a capacity of 1,728 m^3/d;
  -
  - two (2) scum pumps (one installed and one shelf spare), each with a capacity of 5.0 L/s;

Supplementary Treatment Systems

- Phosphorus Removal
  - one (1) 46,000 L capacity chemical storage tank and two (2) chemical metering pumps (one standby) each having a capacity range of 20 - 108 L/h;

Disinfection System

- a UV disinfection system with a peak flow rate of 35,070 m^3/d comprising one (1) contact channel equipped with two (2) banks of UV lamps;
-

Final Effluent Flow Measurement and Sampling Point

- effluent Parshall flume following UV;
- automatic composite sampler at outlet of in UV disinfection channel;

Sludge Management System

- Sludge Thickening
  - one (1) sludge holding/thickening tank, equipped with coarse bubble diffuser system and two (2) sludge transfer pumps (one standby) for the centrifuges;
- Sludge Digestion

  Primary Digesters

  - a two-stage aerobic sludge digestion system comprising one (1) 935 m^3 stage-one digester and one (1) 810 m^3 stage-two digester, both equipped with coarse bubble diffuser system, sludge transfer pump, telescopic supernatant withdrawal valve;
  -
  - one (1) 2,620 m^3 stage-one aerobic digester with additional jet aeration header;
- Digested Sludge Dewatering
  - two (2) centrifuges each with a solids loading rate of 140 kg/h and a hydraulic loading rate of 2.8 L/s;
  -
  - a polymer system for dry/emulsion polymer, a 2,500 L mixing tank and metering pump with a capacity range of 0.08 - 0.58 L/s;

Final Effluent Disposal Facilities

- an effluent pumping station equipped with three (3) submersible pumps (one standby), each with a capacity of 35,070 m^3/d to discharge the effluent by pumping when necessary;
- approximately 1,350 m of 900 mm diameter outfall sewer with diffuser section discharging to Lake St. Clair;
-

including all other mechanical system, electrical system, instrumentation and control system, standby power system, piping, pumps, valves and appurtenances essential for the proper, safe and reliable operation of the Works in accordance with this Approval, in the context of process performance and general principles of wastewater engineering only;

all in accordance with the submitted supporting documents listed in Schedule A.

For the purpose of this environmental compliance approval, the following definitions apply:

1. "Annual Average Effluent Concentration" is the mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar year, calculated and reported as per the methodology specified in Schedule F;

2. "Annual Average Daily Effluent Flow" means the cumulative total Final Effluent discharged during a calendar year divided by the number of days during which Final Effluent was discharged that year;

3. "Approval" means this environmental compliance approval and any schedules attached to it, and the application;

4. "BOD5" (also known as TBOD5) means five day biochemical oxygen demand measured in an unfiltered sample and includes carbonaceous and nitrogenous oxygen demands;

5. "Bypass" means diversion of sewage around one or more treatment processes, excluding Preliminary Treatment System, within the Sewage Treatment Plant with the diverted sewage flows being returned to the Sewage Treatment Plant treatment train upstream of the Final Effluent sampling point(s) and discharged via the approved effluent disposal facilities;

6. "CBOD5" means five day carbonaceous (nitrification inhibited) biochemical oxygen demand measured in an unfiltered sample;

7. "Director" means a person appointed by the Minister pursuant to section 5 of the EPA for the purposes of Part II.1 of the EPA;

8. "District Manager" means the District Manager of the appropriate local district office of the Ministry where the Works is geographically located;

9. "*E. coli*" refers to the thermally tolerant forms of Escherichia that can survive at 44.5 degrees Celsius;

10. "EPA" means the *Environmental Protection Act*, R.S.O. 1990, c.E.19, as amended;

11. "Equivalent Equipment" means alternate piece(s) of equipment that meets the design requirements and performance specifications of the piece(s) of equipment to be substituted;

12. "Event" means an action or occurrence, at a given location within the Works that causes a Bypass or Overflow. An Event ends when there is no recurrence of Bypass or Overflow in the 12-hour period following the last Bypass or Overflow. Overflows and Bypasses are separate Events even when they occur concurrently;

13. “Existing Works” means those portions of the Works included in the Approval that have been constructed previously;

14. "Final Effluent" means effluent that is discharged to the environment through the approved effluent disposal facilities, including all Bypasses, that are required to meet the compliance limits stipulated in the Approval for the Sewage Treatment Plant at the Final Effluent sampling point(s);

15. "Imported Sewage" means sewage hauled to the Sewage Treatment Plant by licensed waste management system operators of the types and quantities approved for co-treatment in the Sewage Treatment Plant, including hauled sewage and leachate within the meaning of R.R.O. 1990, Regulation 347: General – Waste Management, as amended;

16. "Influent" means flows to the Sewage Treatment Plant from the collection system;

17. "Limited Operational Flexibility” (LOF) means the conditions that the Owner shall follow in order to undertake any modification that is pre-authorized as part of this Approval;

18. "Ministry" means the ministry of the government of Ontario responsible for the EPA and OWRA and includes all officials, employees or other persons acting on its behalf;

19. "Monthly Average Effluent Concentration" is the mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar month, calculated and reported as per the methodology specified in Schedule F; (use only if monthly averaging period is used in the effluent concentration requirement for a contaminant)

20. "Monthly Geometric Mean Density" is the mean of all Single Sample Results of *E.coli* measurement in the samples taken during a calendar month, calculated and

reported as per the methodology specified in Schedule F;

21. “Normal Operating Condition” means the condition when all unit process(es), excluding Preliminary Treatment System, in a treatment train is operating within its design capacity;

22. “Operating Agency” means the Owner or the entity that is authorized by the Owner for the management, operation, maintenance, or alteration of the Works in accordance with this Approval;

23. "Overflow" means a discharge to the environment from the Works at designed location(s) other than the approved effluent disposal facilities or via the effluent disposal facilities downstream of the Final Effluent sampling point;

24. "Owner" means the Corporation of the Town of Lakeshore and its successors and assignees;

25. "OWRA" means the *Ontario Water Resources Act*, R.S.O. 1990, c. O.40, as amended;

26. "Peak Daily Flow Rate" (also referred to as maximum daily flow or maximum day flow) means the largest volume of flow to be received during a one-day period for which the sewage treatment process unit or equipment is designed to handle;

27. “Preliminary Treatment System” means all facilities in the Sewage Treatment Plant associated with screening and grit removal;

28. “Primary Treatment System” means all facilities in the Sewage Treatment Plant associated with the primary sedimentation unit process and includes chemically enhanced primary treatment;

29. "Processed Organic Waste" means organic waste within the meaning of R.R.O. 1990, Regulation 347:General - Waste Management, as amended, that is hauled to the Sewage Treatment Plant of the types and quantities approved for co-processing in the sludge management system;

30. "Professional Engineer” means a person entitled to practice as a Professional Engineer in the Province of Ontario under a licence issued under the Professional Engineers Act;

31. "Rated Capacity" means the Annual Average Daily Influent Flow for which the Sewage Treatment Plant is designed to handle;

32. "Sanitary Sewers" means pipes that collect and convey wastewater from residential, commercial, institutional and industrial buildings, and some infiltration and inflow from extraneous sources such as groundwater and surface runoff through means other than stormwater catch basins;

33. “Separate Sewer Systems" means wastewater collection systems that comprised of Sanitary Sewers while runoff from precipitation and snowmelt are separately collected in Storm Sewers;

34. “Sewage Treatment Plant" means all the facilities related to sewage treatment within the sewage treatment plant site excluding the Final Effluent disposal facilities;

35. “Single Sample Result" means the test result of a parameter in the effluent discharged on any day, as measured by a probe, analyzer or in a composite or grab sample, as required;

36. "Storm Sewers" means pipes that collect and convey runoff resulting from precipitation and snowmelt (including infiltration and inflow);

37. "Works" means the approved sewage works, and includes Existing Works and modifications made under Limited Operational Flexibility.

You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. **GENERAL PROVISIONS**

2. The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Works is notified of this Approval and the terms and conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

3. The Owner shall design, construct, operate and maintain the Works in accordance with the conditions of this Approval.

4. Where there is a conflict between a provision of any document referred to in this Approval and the conditions of this Approval, the conditions in this Approval shall take precedence.

5. **CHANGE OF OWNER AND OPERATING AGENCY**

6. The Owner shall, within thirty (30) calendar days of issuance of this Approval, prepare/update and submit to the District Manager the Municipal and Local Services Board Wastewater System Profile Information Form, as amended (Schedule G) under any of the following situations:

a. the form has not been previously submitted for the Works;
b. this Approval is issued for extension, re-rating or process treatment upgrade of the Works;
c. when a notification is provided to the District Manager in compliance with requirements of change of Owner or Operating Agency under this condition.

7. The Owner shall notify the District Manager and the Director, in writing, of any of the following changes within thirty (30) days of the change occurring:

a. change of address of Owner;
b. change of Owner, including address of new owner;
c. change of partners where the Owner is or at any time becomes a partnership, and a copy of the most recent declaration filed under the *Business Names Act, R.S.O. 1990, c. B.17*, as amended, shall be included in the notification;
d. change of name of the corporation where the Owner is or at any time becomes a corporation, and a copy of the most current information filed under the *Corporations Information Act, R.S.O. 1990, c. C.39*, as amended, shall be included in the notification.

8. The Owner shall notify the District Manager, in writing, of any of the following changes within thirty (30) days of the change occurring:

a. change of address of Operating Agency;
b. change of Operating Agency, including address of new Operating Agency.

9. In the event of any change in ownership of the Works, the Owner shall notify the succeeding owner in writing, of the existence of this Approval, and forward a copy of the notice to the District Manager.

10. The Owner shall ensure that all communications made pursuant to this condition refer to the environmental compliance approval number.

11. **RECORD DRAWINGS**

12. A set of record drawings of the Works shall be kept up to date through revisions undertaken from time to time and a copy shall be readily accessible for reference at the

Works.

13. **BYPASSES**

14. Any Bypass is prohibited, except:

a. an emergency Bypass when a structural, mechanical or electrical failure causes a temporary reduction in the capacity of a treatment process or when an unforeseen flow condition exceeds the design capacity of a treatment process that is likely to result in personal injury, loss of life, health hazard, basement flooding, severe property damage, equipment damage or treatment process upset, if a portion of the flow is not bypassed;

b. a planned Bypass that is a direct and unavoidable result of a planned repair and maintenance procedure or other circumstance(s), the Owner having notified the District Manager in writing at least fifteen (15) days prior to the occurrence of Bypass, including an estimated quantity and duration of the Bypass, an assessment of the impact on the quality of the Final Effluent and the mitigation measures if necessary, and the District Manager has given written consent of the Bypass;

15. Notwithstanding the exceptions given in Paragraph 1, the Operating Agency shall undertake everything practicable to maximize the flow through the downstream treatment process(es) prior to bypassing.

16. At the beginning of a Bypass Event, the Owner shall immediately notify the Spills Action Centre (SAC) and the local Medical Officer of Health. This notice shall include, at a minimum, the following information:

a. the type of the Bypass as indicated in Paragraph 1 and the reason(s) for the Bypass;

b. the date and time of the beginning of the Bypass;

c. the treatment process(es) gone through prior to the Bypass and the treatment process(es) bypassed;

d. the effort(s) done to maximize the flow through the downstream treatment process(es) and the reason(s) why the Bypass was not avoided.

17. Upon confirmation of the end of a Bypass Event, the Owner shall immediately notify the Spills Action Centre (SAC) and the local Medical Officer of Health. This notice shall include, at a minimum, the following information:

a. the date and time of the end of the Bypass;

b. the estimated or measured volume of Bypass.

18. For any Bypass Event, the Owner shall collect daily sample(s) of the Final Effluent, inclusive of the Event and analyze for all effluent parameters outlined in Compliance Limits condition, except for *E. coli* , toxicity to Rainbow Trout and Daphnia magna, total residual chlorine / bisulphite residual, dissolved oxygen, pH, temperature and unionized ammonia, following the same protocol specified in the Monitoring and Recording condition as for the regular samples. The sample(s) shall be in addition to the regular Final Effluent samples required under the monitoring and recording condition, except when the Event occurs on a scheduled monitoring day.

19. The Owner shall submit a summary report of the Bypass Event(s) to the District Manager on a quarterly basis, no later than each of the following dates for each calendar year: February 15, May 15, August 15, and November 15. The summary reports shall contain, at a minimum, the types of information set out in Paragraphs (3), (4) and (5) and either a statement of compliance or a summary of the non-compliance notifications submitted as required under Paragraph 1 of Condition 11. If there is no Bypass Event during a quarter, a statement of no occurrence of Bypass is deemed sufficient.

20. The Owner shall develop a notification procedure in consultation with the District Manager and SAC and notify the public and downstream water users that may be adversely impacted by any Bypass Event.

21. **OVERFLOWS**

22. Any Overflow is prohibited, except:

a. an emergency Overflow in an emergency situation when a structural, mechanical or electrical failure causes a temporary reduction in the capacity of the Works or when an unforeseen flow condition exceeds the design capacity of the Works that is likely to result in personal injury, loss of life, health hazard, basement flooding, severe property damage, equipment damage or treatment process upset, if a portion of the flow is not overflowed;
b. a planned Overflow that is a direct and unavoidable result of a planned repair and maintenance procedure or other circumstance(s), the Owner having notified the District Manager in writing at least fifteen (15) days prior to the occurrence of Overflow, including an estimated quantity and duration of the Overflow, an assessment of the impact on the environment and the mitigation measures if necessary, and the District Manager has given written consent of the Overflow;

23. Notwithstanding the exceptions given in Paragraph 1, the Operating Agency shall undertake everything practicable to maximize the flow through the downstream

treatment process(es) and Bypass(es) prior to overflowing.

24. At the beginning of an Overflow Event, the Owner shall immediately notify the Spills Action Centre (SAC) and the local Medical Officer of Health. This notice shall include, at a minimum, the following information:

a. the type of the Overflow as indicated in Paragraph 1 and the reason(s) for the Overflow;
b. the date and time of the beginning of the Overflow;
c. the point of the Overflow from the Works, the treatment process(es) gone through prior to the Overflow, the disinfection status of the Overflow and whether the Overflow is discharged through the effluent disposal facilities or an alternate location;
d. the effort(s) done to maximize the flow through the downstream treatment process(es) and Bypass(es) and the reason(s) why the Overflow was not avoided.

25. Upon confirmation of the end of an Overflow Event, the Owner shall immediately notify the Spills Action Centre (SAC) and the local Medical Officer of Health. This notice shall include, at a minimum, the following information:

a. the date and time of the end of the Overflow;
b. the estimated or measured volume of the Overflow.

26. For any Overflow Event

a. in the Sewage Treatment Plant, the Owner shall collect grab sample(s) of the Overflow, one near the beginning of the Event and one every eight (8) hours for the duration of the Event, and have them analyzed at least for CBOD5, total suspended solids, total phosphorus, total ammonia nitrogen, total Kjeldahl nitrogen, E. coli.except that raw sewage and primary treated effluent Overflow shall be analyzed for BOD5, total suspended solids, total phosphorus and total Kjeldahl nitrogen only.
b. at a sewage pumping station in the collection system, the Owner shall collect at least one (1) grab sample representative of the Overflow Event and have it analyzed for BOD5, total suspended solids, total phosphorus and total Kjeldahl nitrogen.

27. The Owner shall submit a summary report of the Overflow Event(s) to the District Manager on a quarterly basis, no later than each of the following dates for each calendar year: February 15, May 15, August 15, and November 15. The summary report shall contain, at a minimum, the types of information set out in Paragraphs (3), (4) and (5). If there is no Overflow Event during a quarter, a statement of no occurrence of Overflow is deemed sufficient.

28. The Owner shall develop a notification procedure in consultation with the District Manager and SAC and notify the public and downstream water users that may be adversely impacted by any Overflow Event.

29. **DESIGN OBJECTIVES**

30. The Owner shall design and undertake everything practicable to operate the Sewage Treatment Plant in accordance with the following objectives:

a. Final Effluent parameters design objectives listed in the table(s) included in Schedule B.
b. Final Effluent is essentially free of floating and settleable solids and does not contain oil or any other substance in amounts sufficient to create a visible film or sheen or foam or discolouration on the receiving waters.
c. Annual Average Daily Influent Flow is within the Rated Capacity of the Sewage Treatment Plant.

31. **COMPLIANCE LIMITS**

1. The Owner shall operate and maintain the Sewage Treatment Plant such that compliance limits for the Final Effluent parameters listed in the table(s) included in Schedule C are met.

2. The Owner shall operate and maintain the Sewage Treatment Plant such that the Final Effluent is disinfected continuously year-round.

32.

OPERATION AND MAINTENANCE

1. The Owner shall ensure that, at all times, the Works and the related equipment and appurtenances used to achieve compliance with this Approval are properly operated and maintained. Proper operation and maintenance shall include effective performance, adequate funding, adequate staffing and training, including training in all procedures and other requirements of this Approval and the OWRA and regulations, adequate laboratory facilities, process controls and alarms and the use of process chemicals and other substances used in the Works.

2. The Owner shall update the operations manual for the Works within six (6) months of completion of the plant re-rating, that includes, but not necessarily limited to, the following information:

a. operating procedures for the Works under Normal Operating Conditions;
b. inspection programs, including frequency of inspection, for the Works and the methods or tests employed to detect when maintenance is necessary;
c. repair and maintenance programs, including the frequency of repair and maintenance for the Works;
d. procedures for the inspection and calibration of monitoring equipment;
e. operating procedures for the Works to handle situations outside Normal Operating Conditions and emergency situations such as a structural, mechanical or electrical failure, or an unforeseen flow condition, including procedures to minimize Bypasses and Overflows;
f. a spill prevention and contingency plan, consisting of procedures and contingency plans, including notification to the District Manager, to reduce the risk of spills of pollutants and prevent, eliminate or ameliorate any adverse effects that result or may result from spills of pollutants;
g. procedures for receiving, responding and recording public complaints, including recording any followup actions taken.

3. The Owner shall maintain the operations manual up-to-date and make the manual readily accessible for reference at the Works.

4. The Owner shall ensure that the Operating Agency fulfills the requirements under O. Reg. 129/04, as amended for the Works, including the classification of facilities, licensing of operators and operating standards.

33. **MONITORING AND RECORDING**

34. The Owner shall, upon commencement of operation of the Works, carry out a scheduled monitoring program of collecting samples at the required sampling points, at the frequency specified or higher, by means of the specified sample type and analyzed for each parameter listed in the tables under the monitoring program included in Schedule D and record all results, as follows:

a. all samples and measurements are to be taken at a time and in a location characteristic of the quality and quantity of the sewage stream over the time period being monitored.
b. a schedule of the day of the week/month for the scheduled sampling shall be created. The sampling schedule shall be revised and updated every year through rotation of the day of the week/month for the scheduled sampling program, except when the actual scheduled monitoring frequency is three (3) or more times per week.

c. definitions and preparation requirements for each sample type are included in document referenced in Paragraph 3.b.

d. definitions for frequency:
    i. Weekly means once every week; and
    ii. Monthly means once every month;

35. In addition to the scheduled monitoring program required in Paragraph 1, the Owner shall collect daily sample(s) of the Final Effluent, on any day when there is any situation outside Normal Operating Conditions, by means of the specified sample type and analyzed for each parameter listed in the tables under the monitoring program included in Schedule D, except for *E. coli* , toxicity to Rainbow Trout and Daphnia magna, total residual chlorine / bisulphite residual, dissolved oxygen, pH, temperature and unionized ammonia.

36. The methods and protocols for sampling, analysis and recording shall conform, in order of precedence, to the methods and protocols specified in the following documents and all analysis shall be conducted by a laboratory accredited to the ISO/IEC:17025 standard or as directed by the District Manager:

a. the Ministry's Procedure F-10-1, “Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works (Liquid Waste Streams Only), as amended;

b. the Ministry's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater Version 2.0" (January 2016), PIBS 2724e02, as amended;

c. the publication "Standard Methods for the Examination of Water and Wastewater", as amended.

37. The Owner shall monitor and record the flow rate and daily quantity using flow measuring devices or other methods of measurement as approved below calibrated to an accuracy within plus or minus 15 per cent (+/- 15%) of the actual flowrate of the following:

a. Influent flow to the Sewage Treatment Plant by continuous flow measuring devices and instrumentations/pumping rates/details of other methods (e.g. top water elevation of lagoons), or in lieu of an actual installation of equipment, adopt the flow measurements of the Final Effluent for the purpose of estimating Influent flows if the Influent and Final Effluent streams are considered not significantly different in flow rates and quantities;

b. Final Effluent discharged from the Sewage Treatment Plant by continuous flow measuring devices and instrumentations/pumping rates/details of other methods (e.g. level of lagoons), or in lieu of an actual installation of equipment, adopt the flow measurements of the Influent for the purpose of estimating Final Effluent flows if the Influent and Final Effluent streams are considered not significantly different in flow rates and quantities;

c. each type of Imported Sewage received from co-treatment at the Sewage Treatment Plant by flow measuring devices/pumping rates/haul manifests;
d. Processed Organic Waste received for co-processing at the Sewage Treatment Plant by flow measuring devices/pumping rates/haul truck manifests;

38. The Owner shall retain for a minimum of five (5) years from the date of their creation, all records and information related to or resulting from the monitoring activities required by this Approval.

39.

LIMITED OPERATIONAL FLEXIBILITY

1. The Owner may make pre-authorized modifications to the sewage pumping stations and Sewage Treatment Plant in Works in accordance with the document “Limited Operational Flexibility - Protocol for Pre-Authorized Modifications to Municipal Sewage Works” (Schedule E), as amended, subject to the following:

a. the modifications will not involve the addition of any new treatment process or the removal of an existing treatment process, including chemical systems, from the liquid or solids treatment trains as originally designed and approved.
b. the scope and technical aspects of the modifications are in line with those delineated in Schedule E and conform with the Ministry’s publication “Design Guidelines for Sewage Works 2008”, as amended, Ministry’s regulations, policies, guidelines, and industry engineering standards;
c. the modifications shall not negatively impact on the performance of any process or equipment in the Works or result in deterioration in the Final Effluent quality;
d. where the pre-authorized modification requires notification, a "Notice of Modifications to Sewage Works" (Schedule E), as amended shall be completed with declarations from a Professional Engineer and the Owner and retained on-site prior to the scheduled implementation date. All supporting information including technical memorandum, engineering plans and specifications, as applicable and appropriate to support the declarations that the modifications conform with LOF shall remain on-site for future inspection.

2. The following modifications are not pre-authorized under Limited Operational

Flexibility:

a. Modifications that involve addition or extension of process structures, tankages or channels;
b. Modifications that involve relocation of the Final Effluent outfall or any other discharge location or that may require reassessment of the impact to the receiver or environment;
c. Modifications that involve addition of or change in technology of a treatment process or that may involve reassessment of the treatment train process design;
d. Modifications that require changes to be made to the emergency response, spill prevention and contingency plan; or
e. Modifications that are required pursuant to an order issued by the Ministry.

40. **REPORTING**

1. The Owner shall report to the District Manager orally as soon as possible any non-compliance with the compliance limits, and in writing within seven (7) days of non-compliance.

2. The Owner shall, within fifteen (15) days of occurrence of a spill within the meaning of Part X of the EPA, submit a full written report of the occurrence to the District Manager describing the cause and discovery of the spill, clean-up and recovery measures taken, preventative measures to be taken and schedule of implementation, in addition to fulfilling the requirements under the EPA and O. Reg. 675/98 "Classification and Exemption of Spills and Reporting of Discharges".

3. The Owner shall, upon request, make all manuals, plans, records, data, procedures and supporting documentation available to Ministry staff.

4. The Owner shall prepare performance reports on a calendar year basis and submit to the District Manager by March 31 of the calendar year following the period being reported upon. The reports shall contain, but shall not be limited to, the following information pertaining to the reporting period:

a. a summary and interpretation of all Influent, Imported Sewage and Processed Organic Waste monitoring data, and a review of the historical trend of the sewage characteristics and flow rates;
b. a summary and interpretation of all Final Effluent monitoring data, including concentration, flow rates, loading and a comparison to the design objectives and compliance limits in this Approval, including an overview of the success and adequacy of the Works;

c. a summary of any deviation from the monitoring schedule and reasons for the current reporting year and a schedule for the next reporting year;

d. a summary of all operating issues encountered and corrective actions taken;

e. a summary of all normal and emergency repairs and maintenance activities carried out on any major structure, equipment, apparatus or mechanism forming part of the Works;

f. a summary of any effluent quality assurance or control measures undertaken;

g. a summary of the calibration and maintenance carried out on all Influent, Imported Sewage and Final Effluent monitoring equipment to ensure that the accuracy is within the tolerance of that equipment as required in this Approval or recommended by the manufacturer;

h. a summary of efforts made to achieve the design objectives in this Approval, including an assessment of the issues and recommendations for pro-active actions if any are required under the following situations:
    i. when any of the design objectives is not achieved more than 50% of the time in a year, or there is an increasing trend in deterioration of Final Effluent quality;
    ii. when the Annual Average Daily Influent Flow reaches 80% of the Rated Capacity;

i. a tabulation of the volume of sludge generated, an outline of anticipated volumes to be generated in the next reporting period and a summary of the locations to where the sludge was disposed;

j. a summary of any complaints received and any steps taken to address the complaints;

k. a summary of all Bypasses, Overflows, other situations outside Normal Operating Conditions and spills within the meaning of Part X of EPA and abnormal discharge events;

l. a summary of all Notice of Modifications to Sewage Works completed under Paragraph 1.d. of Condition 10, including a report on status of implementation of all modification.

m. a summary of efforts made to achieve conformance with Procedure F-5-1 including but not limited to projects undertaken and completed in the sanitary sewer system that result in overall Bypass/Overflow elimination including expenditures and proposed projects to eliminate Bypass/Overflows with estimated budget forecast for the year following that for which the report is submitted.

n.

The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 regarding general provisions is imposed to ensure that the Works are constructed and operated in the manner in which they were described and upon which approval was granted.

2. Condition 2 regarding change of Owner and Operating Agency is included to ensure that the Ministry records are kept accurate and current with respect to ownership and Operating Agency of the Works and to ensure that subsequent owners of the Works are made aware of the Approval and continue to operate the Works in compliance with it.

3. Condition 3 regarding record drawings is included to ensure that the Works are constructed in accordance with the Approval and that record drawings of the Works "as constructed" are updated and maintained for future references.

4. Condition 4 regarding Bypasses is included to indicate that Bypass is prohibited, except in circumstances where the failure to Bypass could result in greater damage to the environment than the Bypass itself. The notification and documentation requirements allow the Ministry to take action in an informed manner and will ensure the Owner is aware of the extent and frequency of Bypass Events.

5. Condition 5 regarding Overflows is included to indicate that Overflow of untreated or partially treated sewage to the receiver is prohibited, except in circumstances where the failure to Overflow could result in greater damage to the environment than the Overflow itself. The notification and documentation requirements allow the Ministry to take action in an informed manner and will ensure the Owner is aware of the extent and frequency of Overflow Events.

6. Condition 6 regarding design objectives is imposed to establish non-enforceable design objectives to be used as a mechanism to trigger corrective action proactively and voluntarily before environmental impairment occurs.

7. Condition 7 regarding compliance limits is imposed to ensure that the Final Effluent discharged from the Works to the environment meets the Ministry's effluent quality requirements.

8. Condition 8 regarding operation and maintenance is included to require that the Works be properly operated, maintained, funded, staffed and equipped such that the environment is protected and deterioration, loss, injury or damage to any person or property is prevented. As well, the inclusion of a comprehensive operations manual governing all significant areas of operation, maintenance and repair is prepared, implemented and kept up-to-date by the Owner. Such a manual is an integral part of

the operation of the Works. Its compilation and use should assist the Owner in staff training, in proper plant operation and in identifying and planning for contingencies during possible abnormal conditions. The manual will also act as a benchmark for Ministry staff when reviewing the Owner's operation of the Works.

9. Condition 9 regarding monitoring and recording is included to enable the Owner to evaluate and demonstrate the performance of the Works, on a continual basis, so that the Works are properly operated and maintained at a level which is consistent with the design objectives and compliance limits.

10. Condition 10 regarding Limited Operational Flexibility is included to ensure that the Works are constructed, maintained and operated in accordance with the Approval, and that any pre-approved modification will not negatively impact on the performance of the Works.

11. Condition 11 regarding reporting is included to provide a performance record for future references, to ensure that the Ministry is made aware of problems as they arise, and to provide a compliance record for this Approval.

Schedule A

1. Application for Environmental Compliance Approval submitted by Mr Mike Newbigging, P.Eng. of Jacobs received on September 4, 2018 for the proposed rerating of the Denis St Pierre WPCP, including design report, final plans and specifications.

Schedule B

Final Effluent Design Objectives

Concentration Objectives prior to rerating the Works

Final Effluent Parameter	Averaging Calculator	Objective (milligrams per litre unless otherwise indicated)
CBOD5	Monthly Average Effluent Concentration	10.0 mg/L
Total Suspended Solids	Monthly Average Effluent Concentration	10.0 mg/L
Total Phosphorus	Monthly Average Effluent Concentration	0.8 mg/L
Total Ammonia Nitrogen	Monthly Average Effluent Concentration	1.0 mg/L (May 1 to Nov 30) 2.0 mg/L (Dec 1 to April 30)
E. coli	Monthly Geometric Mean Density	*150 CFU/100 mL

pH	Single Sample Result	6.5 - 8.5 inclusive

*If the MPN method is utilized for *E.coli* analysis the objective shall be 150 MPN/100 mL

Concentration Objectives after rerating the Works

Final Effluent Parameter	Averaging Calculator	Objective
CBOD5	Monthly Average Effluent Concentration	10.0 mg/L
Total Suspended Solids	Monthly Average Effluent Concentration	10.0 mg/L
Total Phosphorus	Monthly Average Effluent Concentration	0.5 mg/L
Total Ammonia Nitrogen	Monthly Average Effluent Concentration	1.0 mg/L (May 1 to Nov 30) 2.0 mg/L (Dec 1 to April 30)
E. coli	Monthly Geometric Mean Density	*150 CFU/100 mL
pH	Single Sample Result	6.5 - 8.5 inclusive

*If the MPN method is utilized for *E.coli* analysis the objective shall be 150 MPN/100 mL

Schedule C

Final Effluent Compliance Limits

Concentration Limits prior to rerating the Works

Final Effluent Parameter	Averaging Calculator	Limit (maximum unless otherwise indicated)
CBOD5	Monthly Average Effluent Concentration	15.0 mg/L
Total Suspended Solids	Monthly Average Effluent Concentration	15.0 mg/L
Total Phosphorus	Monthly Average Effluent Concentration	1.0 mg/L
Total Ammonia Nitrogen	Monthly Average Effluent Concentration	1.5 mg/L (May 1 - Nov 30) 3.0 mg/L (Dec 1 - April 30)
E. coli	Monthly Geometric Mean Density	*200 CFU/100 mL

*If the MPN method is utilized for *E.coli* analysis the limit shall be 200 MPN/100 mL

Concentration Limits after rerating the Works

Final Effluent Parameter	Averaging Calculator	Limit (maximum unless otherwise indicated)

CBOD5	Monthly Average Effluent Concentration	14.0 mg/L
Total Suspended Solids	Monthly Average Effluent Concentration	14.0 mg/L
Total Phosphorus	Monthly Average Effluent Concentration	0.8 mg/L
Total Ammonia Nitrogen	Monthly Average Effluent Concentration	1.4 mg/L (May 1- Nov 30) 2.8 mg/L (Dec 1 - April 30)
E. coli	Monthly Geometric Mean Density	*200 CFU/100 mL
pH	Single Sample Result	between 6.0 - 9.5 inclusive

*If the MPN method is utilized for *E.coli* analysis the limit shall be 200 MPN/100 mL

Loading Limits prior to rerating the Works

Final Effluent Parameter	Averaging Calculator	Limit (maximum unless otherwise indicated)
CBOD5	Monthly Average Daily Effluent Loading	204.6 kg/d
Total Suspended Solids	Monthly Average Daily Effluent Loading	204.6 kg/d
Total Phosphorus	Monthly Average Daily Effluent Loading	13.6 kg/d
Total Ammonia Nitrogen	Monthly Average Daily Effluent Loading	20.5 kg/d (May 1 - Nov 30) 40.9 kg/d (Dec 1 - Apr 30)

Loading Limits after rerating the Works

Final Effluent Parameter	Averaging Calculator	Limit (maximum unless otherwise indicated)
CBOD5	Monthly Average Daily Effluent Loading	203.0 kg/d
Total Suspended Solids	Monthly Average Daily Effluent Loading	203.0 kg/d
Total Phosphorus	Monthly Average Daily Effluent Loading	11.6 kg/d
Total Ammonia Nitrogen	Monthly Average Daily Effluent Loading	20.3 kg/d (May 1- Nov 30) 40.6 kg/d (Dec 1- Apr 30)

Schedule D

Monitoring Program

Influent - Influent sampling point

Parameters	Sample Type	Minimum Frequency
BOD5	24 hour composite	Monthly
Total Suspended Solids	24 hour composite	Monthly
Total Phosphorus	24 hour composite	Monthly
Total Kjeldahl Nitrogen	24 hour composite	Monthly

Imported Sewage - Sampled from hauled sewage truck

Parameters	Sample Type	Minimum Frequency
BOD5	Grab	Monthly
Total Suspended Solids	Grab	Monthly
Total Phosphorus	Grab	Monthly
Total Kjeldahl Nitrogen	Grab	Monthly

Final Effluent - Final Effluent sampling point

Parameters	Sample Type	Minimum Frequency
CBOD5	24 hour composite	Weekly
Total Suspended Solids	24 hour composite	Weekly
Total Phosphorus	24 hour composite	Weekly
Total Ammonia Nitrogen	24 hour composite	Weekly
E. coli	Grab	Weekly
pH*	Grab/Probe/Analyzer	Weekly
Temperature*	Grab/Probe/Analyzer	Weekly

*pH and temperature of the Final Effluent shall be determined in the field at the time of sampling for Total Ammonia Nitrogen.

**The concentration of un-ionized ammonia shall be calculated using the total ammonia concentration, pH and temperature using the methodology stipulated in "Ontario's Provincial Water Quality Objectives" dated July 1994, as amended.

Sludge/Biosolids – holding tank/truck loading bay

Parameters	Sample Type	Minimum Frequency
Total Solids	Grab	Quarterly
Total Phosphorus	Grab	Quarterly
Total Ammonia Nitrogen	Grab	Quarterly
Nitrate as Nitrogen	Grab	Quarterly
Metal Scan - Arsenic - Cadmium	Grab	Quarterly

- Cobalt - Chromium - Copper - Lead - Mercury - Molybdenum - Nickel - Potassium - Selenium - Zinc		

Schedule E

Limited Operational Flexibility

Protocol for Pre-Authorized Modifications to Municipal Sewage Works

1. **General**

2. Pre-authorized modifications are permitted only where Limited Operational Flexibility has already been granted in the Approval and only permitted to be made at the pumping stations and sewage treatment plant in the Works, subject to the conditions of the Approval.

3. Where there is a conflict between the types and scope of pre-authorized modifications listed in this document, and the Approval where Limited Operational Flexibility has been granted, the Approval shall take precedence.

4. The Owner shall consult the District Manager on any proposed modifications that may fall within the scope and intention of the Limited Operational Flexibility but is not listed explicitly or included as an example in this document.

5. The Owner shall ensure that any pre-authorized modifications will not:

f. adversely affect the hydraulic profile of the Sewage Treatment Plant or the performance of any upstream or downstream processes, both in terms of hydraulics and treatment performance;

g. result in new Overflow or Bypass locations, or any potential increase in frequency or quantity of Overflow(s) or Bypass(es).

h. result in a reduction in the required Peak Flow Rate of the treatment process or equipment as originally designed.

9. **Modifications that do not require pre-authorization:**

10. Sewage works that are exempt from Ministry approval requirements;

11. Modifications to the electrical system, instrumentation and control system.

12. **Pre-authorized modifications that do not require preparation of "Notice of Modification to Sewage Works"**

13. Normal or emergency maintenance activities, such as repairs, renovations, refurbishments and replacements with Equivalent Equipment, or other improvements to an existing approved piece of equipment of a treatment process do not require pre-authorization. Examples of these activities are:

a. Repairing a piece of equipment and putting it back into operation, including replacement of minor components such as belts, gear boxes, seals, bearings;

b. Repairing a piece of equipment by replacing a major component of the equipment such as motor, with the same make and model or another with the same or very close power rating but the capacity of the pump or blower will still be essentially the same as originally designed and approved;

c. Replacing the entire piece of equipment with Equivalent Equipment.

14. Improvements to equipment efficiency or treatment process control do not require pre-authorization. Examples of these activities are:

a. Adding variable frequency drive to pumps;

b. Adding on-line analyzer, dissolved oxygen probe, ORP probe, flow measurement or other process control device.

15. **Pre-Authorized Modifications that require preparation of "Notice of Modification to Sewage Works"**

16. Pumping Stations

q. Replacement, realignment of existing sewers including manholes, valves, gates, weirs and associated appurtenances provided that the modifications will not add new influent source(s) or result in an increase in flow from existing sources as originally approved.

r. Extension or partition of wetwell to increase retention time for emergency response and improve station maintenance and pump operation;

s. Replacement or installation of inlet screens to the wetwell;

t. Replacement or installation of flowmeters, construction of station bypass;

u. Replacement, reconfiguration or addition of pumps and modifications to pump suctions and discharge pipings including valve, gates, motors, variable frequency drives and associated appurtenances to maintain firm pumping capacity or modulate the pump rate provided that the modifications will not result in a reduction in the firm pumping capacity or discharge head or an increase in the peak pumping rate of the pumping station as originally designed;

v. Replacement, realignment of existing forcemain(s) including valves, gates, and associated appurtenances provided that the modifications will not reduce the flow capacity or increase the total dynamic head and transient in the forcemain.

23. Sewage Treatment Plant

24. Sewers and appurtenances

   a. Replacement, realignment of existing sewers (including pipes and channels) or construction of new sewers, including manholes, valves, gates, weirs and associated appurtenances within the a sewage treatment plant, provided that the modifications will not add new influent source(s) or result in an increase in flow from existing sources as originally approved and that the modifications will remove hydraulic bottlenecks or improve the conveyance of sewage into and through the Works.

25. Flow Distribution Chambers/Splitters

   a. Replacement or modification of existing flow distribution chamber/splitters or construction of new flow distribution chamber/splitters, including replacements or installation of sluice gates, weirs, valves for distribution of flows to the downstream process trains, provided that the modifications will not result in a change in flow distribution ratio to the downstream process trains as originally designed.

26. Imported Sewage Receiving Facility

   a. Replacement, relocation or installation of loading bays, connect/disconnect hook-up systems and unloading/transferring systems;

b. Replacement, relocation or installation of screens, grit removal units and compactors;
c. Replacement, relocation or installation of pumps, such as dosing pumps and transfer pumps, valves, piping and appurtenances;
d. Replacement, relocation or installation of storage tanks/chambers and spill containment systems;
e. Replacement, relocation or installation of flow measurement and sampling equipment;
f. Changes to the source(s) or quantity from each source, provided that changes will not result in an increase in the total quantity and waste loading of each type of Imported Sewage already approved for co-treatment.

27. Preliminary Treatment System

a. Replacement of existing screens and grit removal units with equipment of the same or higher process performance technology, including where necessary replacement or upgrading of existing screenings dewatering washing compactors, hydrocyclones, grit classifiers, grit pumps, air blowers conveyor system, disposal bins and other ancillary equipment to the screening and grit removal processes.
b. Replacement or installation of channel aeration systems, including air blowers, air supply main, air headers, air laterals, air distribution grids and diffusers.

28. Primary Treatment System

a. Replacement of existing sludge removal mechanism, including sludge chamber;
b. Replacement or installation of scum removal mechanism, including scum chamber;
c. Replacement or installation of primary sludge pumps, scum pumps, provided that:the modifications will not result in a reduction in the firm pumping capacity or discharge head that the primary sludge pump(s) and scum pump(s) are originally designed to handle.

29. Secondary Treatment System

1. Biological Treatment
   a. Conversion of complete mix aeration tank to plug-flow multi-pass aeration tank, including modifications to internal structural configuration;
   b. Addition of inlet gates in multi-pass aeration tank for step-feed operation mode;

c. Partitioning of an anoxic/flip zone in the inlet of the aeration tank, including installation of submersible mixer(s);

d. Replacement of aeration system including air blowers, air supply main, air headers, air laterals, air distribution grids and diffusers, provided that the modifications will not result in a reduction in the firm capacity or discharge pressure that the blowers are originally designed to supply or in the net oxygen transferred to the wastewater required for biological treatment as originally required.

2. Secondary Sedimentation
   a. Replacement of sludge removal mechanism, including sludge chamber;
   b. Replacement or installation of scum removal mechanism, including scum chamber;
   c. Replacement or installation of return activated sludge pump(s), waste activated sludge pump(s), scum pump(s), provided that the modifications will not result in a reduction in the firm pumping capacity or discharge head that the activated sludge pump(s) and scum pump(s) are originally designed to handle.

30. Post-Secondary Treatment System

a. Replacement of filtration system with equipment of the same filtration technology, including feed pumps, backwash pumps, filter reject pumps, filtrate extract pumps, holding tanks associated with the pumping system, provided that the modifications will not result in a reduction in the capacity of the filtration system as originally designed.

31. Disinfection System

1. UV Irradiation
   a. Replacement of UV irradiation system, provided that the modifications will not result in a reduction in the design capacity of the disinfection system or the radiation level as originally designed.

2. Chlorination/Dechlorination and Ozonation Systems
   a. Extension and reconfiguration of contact tank to increase retention time for effective disinfection and reduce dead zones and minimize short-circuiting;
   b. Replacement or installation of chemical storage tanks, provided that the tanks are provided with effective spill containment.

32. Supplementary Treatment Systems

1. Chemical systems
    a. Replacement, relocation or installation of chemical storage tanks for existing chemical systems only, provided that the tanks are sited with effective spill containment;
    b. Replacement or installation of chemical dosing pumps provided that the modifications will not result in a reduction in the firm capacity that the dosing pumps are originally designed to handle.
    c. Relocation and addition of chemical dosing point(s) including chemical feed pipes and valves and controls, to improve phosphorus removal efficiency;
    d. Use of an alternate chemical provided that it is a non-proprietary product and is a commonly used alternative to the chemical approved in the Works, provided that the chemical storage tanks, chemical dosing pumps, feed pipes and controls are also upgraded, as necessary..

33. Sludge Management System

1. Sludge Holding and Thickening
    a. Replacement or installation of sludge holding tanks, sludge handling pumps, such as transfer pumps, feed pumps, recirculation pumps, provided that modifications will not result in reduction in the solids storage or handling capacities;
2. Sludge Digestion
    a. Replacement or installation of digesters, sludge handling pumps, such as transfer pumps, feed pumps, recirculation pumps, provided that modifications will not result in reduction in the solids storage or handling capacities;
    b. replacement of sludge digester covers.
3. Sludge Dewatering and Disposal
    a. Replacement of sludge dewatering equipment, sludge handling pumps, such as transfer pumps, feed pumps, cake pumps, loading pumps, provided that modifications will not result in reduction in solids storage or handling capacities.
4. Processed Organic Waste
    a. Changes to the source(s) or quantity from each source, provided that changes will not result in an increase in the total quantity already approved for co-processing.

34. Standby Power System

1. Replacement or installation of standby power system, including feed from alternate power grid, emergency power generator, fuel supply and storage systems, provided that the existing standby power generation capacity is not reduced.

35. Pilot Study

1. Small side-stream pilot study for existing or new technologies, alternative treatment process or chemical, provided:
   a. all effluent from the pilot system is hauled off-site for proper disposal or returned back to the sewage treatment plant for at a point no further than immediately downstream of the location from where the side-stream is drawn;
   b. no proprietary treatment process or propriety chemical is involved in the pilot study;
   c. the effluent from the pilot system returned to the sewage treatment plant does not significantly alter the composition/concentration of or add any new contaminant/inhibiting substances to the sewage to be treated in the downstream process;
   d. the pilot study will not have any negative impacts on the operation of the sewage treatment plant or cause a deterioration of effluent quality;
   e. the pilot study does not exceed a maximum of two years and a notification of completion shall be submitted to the District Manager within one month of completion of the pilot project.

36. Lagoons

a. installing baffles in lagoon provided that the operating capacity of the lagoon system is not reduced;
b. raise top elevation of lagoon berms to increase free-board;
c. replace or install interconnecting pipes and chambers between cells, provided that the process design operating sequence is not changed;
d. replace or install mechanical aerators, or replace mechanical aerators with diffused aeration system provided that the mixing and aeration capacity are not reduced;
e. removal of accumulated sludge and disposal to an approved location offsite.

37. Final Effluent Disposal Facilities

al. Replacement or realignment of the Final Effluent channel, sewer or forcemain, including manholes, valves and appurtenances from the end of the treatment train to the discharge outfall section, provided that the sewer conveys only effluent discharged from the Sewage Treatment Plant and that the replacement or re-aligned sewer has similar dimensions and performance criteria and is in the same or approximately the same location and that the hydraulic capacity will not be reduced.

This page contains an image of the form entitled "Notice of Modification to Sewage Works". A digital copy can be obtained from the District Manager.

Ontario

Ministry of the Environment, Conservation and Parks

Notice of Modification to Sewage Works

RETAIN COPY OF COMPLETED FORM AS PART OF THE ECA ON-SITE PRIOR TO THE SCHEDULED IMPLEMENTATION DATE.

Part 1 – Environmental Compliance Approval (ECA) with Limited Operational Flexibility

(Insert the ECA's owner, number and issuance date and notice number, which should start with "01" and consecutive numbers thereafter)

ECA Number	Issuance Date (mm/dd/yy)	Notice number (if applicable)

ECA Owner	Municipality

Part 2: Description of the modifications as part of the Limited Operational Flexibility

(Attach a detailed description of the sewage works)

Description shall include:

1. A detail description of the modifications and/or operations to the sewage works (e.g. sewage work component, location, size, equipment type/model, material, process name, etc.)
2. Confirmation that the anticipated environmental effects are negligible.
3. List of updated versions of, or amendments to, all relevant technical documents that are affected by the modifications as applicable, i.e. submission of documentation is not required, but the listing of updated documents is (design brief, drawings, emergency plan, etc.)

Part 3 – Declaration by Professional Engineer

I hereby declare that I have verified the scope and technical aspects of this modification and confirm that the design:

1. Has been prepared or reviewed by a Professional Engineer who is licensed to practice in the Province of Ontario;
2. Has been designed in accordance with the Limited Operational Flexibility as described in the ECA;
3. Has been designed consistent with Ministry's Design Guidelines, adhering to engineering standards, industry's best management practices, and demonstrating ongoing compliance with s.53 of the Ontario Water Resources Act; and other appropriate regulations.

I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate

Name (Print)	PEO License Number
Signature	Date (mm/dd/yy)
Name of Employer	

Part 4 – Declaration by Owner

I hereby declare that:

1. I am authorized by the Owner to complete this Declaration;
2. The Owner consents to the modification; and
3. This modifications to the sewage works are proposed in accordance with the Limited Operational Flexibility as described in the ECA.
4. The Owner has fulfilled all applicable requirements of the *Environmental Assessment Act*.

I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate

Name of Owner Representative (Print)	Owner representative's title (Print)
Owner Representative's Signature	Date (mm/dd/yy)

Schedule F

Methodology for Calculating and Reporting

Monthly Average Effluent Concentration, Annual Average

Effluent Concentration and Monthly Geometric Mean Density

1. Monthly Average Effluent Concentration

Step 1: Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar month and proceed as follows depending on the result of the calculation:

a. If the arithmetic mean does not exceed the compliance limit for the contaminant, then report and use this arithmetic mean as the Monthly Average Effluent Concentration for this parameter where applicable in this Approval;
b. If the arithmetic mean exceeds the compliance limit for the contaminant and there was no Bypass Event during the calendar month, then report and use this arithmetic mean as the Monthly Average Effluent Concentration for this parameter where applicable in this Approval;
c. If the arithmetic mean exceeds the compliance limit for the contaminant and there was Bypass Event(s) during the calendar month, then proceed to Step 2;
d. If the arithmetic mean does not exceed the compliance limit for the contaminant and there was Bypass Event(s) during the calendar month, the Owner may still elect to proceed to Step 2 calculation of the flow-weighted arithmetic mean.

Step 2: Calculate the flow-weighted arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar month and proceed depending on the result of the calculation:

a. Group No Bypass Days (**NBPD**) data and Bypass Days (**BPD**) data during a calendar month separately;

b. Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured on all NBPD during a calendar month and record it as **Monthly Average NBPD Effluent Concentration**;

c. Obtain the "**Total Monthly NBPD Flow**" which is the total amount of Final Effluent discharged on all NBPD during the calendar month;

d. Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured on all BPD during a calendar month and record it as **Monthly Average BPD Effluent Concentration**;

e. Obtain the "**Total Monthly BPD Flow**" which is the total amount of Final Effluent discharged on all BPD during the calendar month;

f. Calculate the flow-weighted arithmetic mean using the following formula:

[(Monthly Average NBPD Effluent Concentration × Total Monthly NBPD Flow) + (Monthly Average BPD Effluent Concentration × Total Monthly BPD Flow)] ÷ (Total Monthly NBPD Flow + Total Monthly BPD Flow)

It should be noted that in this method, if there are no Bypass Event for the month, the calculated result would be the same as the non-flow-weighted arithmetic mean method;

g. Report and use the lesser of the flow-weighted arithmetic mean obtained in Step 2 and the arithmetic mean obtained in Step 1 as the Monthly Average Effluent Concentration for this parameter where applicable in this Approval.

2. Annual Average Effluent Concentration

Step 1: Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar year and proceed as follows depending on the result of the calculation:

a. If the arithmetic mean does not exceed the compliance limit for the contaminant, then report and use this arithmetic mean as the Annual Average Effluent Concentration for this parameter where applicable in this Approval;

b. If the arithmetic mean exceeds the compliance limit for the contaminant and there was no Bypass Event during the calendar year, then report and use this arithmetic mean as the Annual Average Effluent Concentration for this parameter where applicable in this Approval;

c. If the arithmetic mean exceeds the compliance limit for the contaminant and there was Bypass Event(s) during the calendar year, then proceed to Step 2;

d. If the arithmetic mean does not exceed the compliance limit for the contaminant and there was Bypass Event(s) during the calendar year, the Owner may still elect to proceed to Step 2 calculation of the flow-weighted arithmetic mean.

Step 2: Calculate the flow-weighted arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar year and proceed depending on the result of the calculation:

a. Group No Bypass Days (**NBPD**) data and Bypass Days (**BPD**) data during a calendar year separately;

b. Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured on all NBPD during a calendar year and record it as **Annual Average NBPD Effluent Concentration**;

c. Obtain the "**Total Annual NBPD Flow**" which is the total amount of Final Effluent discharged on all NBPD during the calendar year;

d. Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured on all BPD during a calendar year and record it as **Annual Average BPD Effluent Concentration**;

e. Obtain the "**Total Annual BPD Flow**" which is the total amount of Final Effluent discharged on all BPD during the calendar year;

f. Calculate the flow-weighted arithmetic mean using the following formula:

[(Annual Average NBPD Effluent Concentration × Total Annual NBPD Flow) + (Annual Average BPD Effluent Concentration × Total Annual BPD Flow)] ÷ (Total Annual NBPD Flow + Total Annual BPD Flow)

It should be noted that in this method, if there are no Bypass Event for the calendar year, the calculated result would be the same as the non-flow-weighted arithmetic mean method;

g. Report and use the lesser of the flow-weighted arithmetic mean obtained in Step 2 and the arithmetic mean obtained in Step 1 as the Annual Average Effluent Concentration for this parameter where applicable in this Approval.

3. Monthly Geometric Mean Density

Geometric mean is defined as the n^{th} root of the product of *n* numbers. In the context of calculating Monthly Geometric Mean Density for *E.coli*, the following formula shall be used:

$$\sqrt[n]{x_1 x_2 x_3 \cdots x_n}$$

in which,

"*n*" is the number of samples collected during the calendar month; and

"*x*" is the value of each Single Sample Result.

For example, four weekly grab samples were collected and tested for *E.coli* during the calendar month. The *E.coli* densities in the Final Effluent were found below:

Sample Number	*E.coli* Densities* (CFU/100 mL)
1	10
2	100
3	300
4	50

The Geometric Mean Density for these data:

$$\sqrt[4]{10 \times 100 \times 300 \times 50} = 62$$

*If a particular result is zero (0), then a value of one (1) will be substituted into the calculation of the Monthly Geometric Mean Density. If the MPN method is utilized for E.coli analysis, values in the table shall be MPN/100 mL.

Schedule G

Municipal and Local Services Board Wastewater System

Profile Information Form

(For reference only, images of the form are attached on the next four pages. A digital copy can be obtained from the District Manger.)

Ministry of the Environment, Conservation and Parks

Municipal and Local Services Board Wastewater System Profile Information Form

The information in this form is necessary to administer the Ministry's approvals, compliance and enforcement programs with respect to wastewater treatment and collection systems owned by municipalities and local services boards. These programs are authorized under the *Ontario Water Resources Act*, the *Environmental Protection Act*, the *Nutrient Management Act* and their respective regulations.

Email the completed form to: waterforms@ontario.ca
For any questions call 1-866-793-2588.

[A] SYSTEM PROFILE INFORMATION

Wastewater System Number *(if assigned)*	☐ New Profile ☐ Update Existing Profile
Name of System Name of Municipality or Local Services Board	Level of Treatment (select one*) ☐ Primary ☐ Secondary ☐ Tertiary ☐ Secondary Equivalent ☐ Other (specify): **See Terms and Concepts on page 4*

Population Served	Population (Design)	Type of System ☐ Treatment & Collection System ☐ Collection System Only

Design Rated Capacity (m^3/day)	Peak Flow Rate (m^3/day)	Current Environmental Compliance Approval (ECA) Number	Current ECA Issue Date (yyyy/mm/dd):

The treatment plant receives sewage from: (Check all that applies.* If you have checked more than one option below, indicate the approximate %)

☐ Sanitary Sewer ☐ Combined Sewer
☐ Nominally Separated Sewer ☐ Partially Separated Sewer **See Terms and Concepts on page 4*

[B] OWNER INFORMATION

Legal Name of Municipality or Local Services Board

Unit No	Street No.	Street Name.	Street Type (St, Rd, etc)	Street Direction (N,S,E,W)

PO Box	City/Town	Postal Code

☐ Dr ☐ Miss ☐ Mr ☐ Mrs ☐ Ms	Owner Contact First Name	Owner Contact Last Name	Owner Contact Job Title

Tel. No. ( ) - ext.	Fax Number ( ) -	Email address

[C] OPERATING AUTHORITY ☐ Check if same as owner

Legal Name of Operator

Unit No	Street No.	Street Name.	Street Type (St, Rd, etc)	Street Direction (N,S,E,W)

PO Box	City/Town	Postal Code

☐ Dr ☐ Miss ☐ Mr ☐ Mrs ☐ Ms	Operator Contact First Name	Operator Contact Last Name	Operator Contact Job Title

Tel. No. ( ) - ext.	Fax Number ( ) -	Email address

[D] 24/7 CONTACT

☐ Dr ☐ Miss ☒ Mr ☐ Mrs ☐ Ms	First Name	Last Name	Job Title

Tel. No. ( ) - ext.	Fax Number ( ) -	Email address

[E] SYSTEM CIVIC LOCATION ADDRESS (I.E. ADDRESS OF TREATMENT PLANT)

Unit No	Street No.	Street Name.	Street Type (St, Rd, etc)	Street Direction (N,S,E,W)

PO Box	City/Town	Postal Code

If the Wastewater System has no street address

Geographical Township	Lot	Concession

Geographical Referencing (if known, enter the Geographical Reference Information for this Wastewater System)

Map Datum	Geo-Referencing Method	Accuracy Estimate	Location Reference	
Latitude	Longitude	Zone	Easting	Northing

[F] TREATMENT PROCESS

Preliminary	Primary	Secondary	Secondary Equivalent	Post-Secondary	Additional Treatment
☐ Screening ☐ Shredding/ grinding ☐ Grit Removal ☐ Other(specify):	☐ Settling/sedimentation/ clarification ☐ Scum Removal ☐ Polymer Addition ☐ Other(specify):	☐ Conventional Activated Sludge (CAS) ☐ Extended Aeration ☐ Membrane Bioreactor (MBR) ☐ Sequencing Batch Reactor (SBR) ☐ Rotating Biological Contactor (RBC) ☐ Trickling Filter (TF) ☐ Biological Aerated Filter (BAF) ☐ Other(specify):	☐ Aerated Lagoon ☐ Facultative Lagoon ☐ Anaerobic Lagoon ☐ Aerobic Lagoon ☐ Other(specify):	☐ Filtration ☐ Clarification ☐ Intermittent Sand Filter (after lagoons) ☐ Polishing Wetlands ☐ Polishing Lagoons ☐ Other(specify):	☐ Phosphorous Removal ☐ Biological ☐ Chemical If chemical is used, specify: ☐ Nitrification ☐ Denitrification ☐ Other(specify):

[G] DISINFECTION

Method of Disinfection	Disinfection Period
☐ Chlorination If you chlorinate, do you practice de-chlorination? ☐ Yes ☐ No	☐ Continuous ☐ Seasonal
☐ Ultraviolet Irradiation	☐ Continuous ☐ Seasonal
☐ Other (specify):	☐ Continuous ☐ Seasonal

[H] SLUDGE	
Sludge Stabilization Process	Method of Sludge Disposal/Utilization
☐ Aerobic Digestion	☐ Agricultural
☐ Anaerobic Digestion	☐ Landfill
☐ Drying & Pelletization	☐ Incineration
☐ Lime Treatment	☐ Other (specify):
☐ Composting	
☐ Other (specify):	
Available Sludge Storage Capacity (m^3):	

[I] EFFLUENT	
Effluent Disposal Method	Effluent Discharge Frequency
☐ Surface Water Receiving Water Body Name:	☐ Continuous ☐ Seasonal
☐ Subsurface	☐ Continuous ☐ Seasonal
☐ Other (specify):	☐ Continuous ☐ Seasonal
Is the effluent discharged in a vulnerable area identified in the local source protection assessment report approved under the Clean Water Act, 2006? ☐ Yes ☐ No	

[J] INFLUENT

Does the plant receive sewage from another municipality or local services board either through an interconnected collection system or hauled sewage?

☐ Yes ☐ No

(if yes, name(s) of other municipality or local services board):

Plant receives:
- ☐ Leachate (approximate annual volume in m^3):
- ☐ Septage (approximate annual volume in m^3):
- ☐ Industrial input (approximate annual volume in m^3):
  or (approximate volume in %):

Terms and Concepts

The following Terms and Concepts are provided to assist you when completing Wastewater System Profile Information Form.

In order to determine the level of treatment that applies to the wastewater system, the effluent quality objectives that the wastewater treatment plant was designed to meet must be considered. The process based approach often used in the past has led to confusion and is open to interpretation due to recent developments and practices in the wastewater treatment industry. For example, a plant with a high rate filter (often referred to as a tertiary filter) after its secondary treatment was considered a tertiary treatment in the past since the filter was designed and operated to produce a tertiary quality effluent. However, secondary plants are now being constructed with these filters as a safeguard against any potential secondary clarifier performance degradation and not for the purpose of ensuring tertiary treatment performance. Also, new technologies have evolved that can produce tertiary quality effluent without having these high rate filters (e.g., membrane bioreactors). Lagoons were considered in the past as being capable of providing only secondary equivalent treatment. However, with add-on treatment after the lagoons (e.g. intermittent sand filters), many lagoon treatment systems are capable of producing secondary or tertiary quality effluent.

During the establishment of sewage works, site-specific effluent limits (including averaging periods) are provided by the Ministry's Regional Technical Support Section, considering the assimilative capacity of the receivers and the minimum treatment requirements provided in Procedure F-5-1. The designer of the sewage works then selects objective values that are acceptable to the Ministry and are less (i.e. more stringent) than the effluent limits , in order to provide an adequate safety factor based on the designer's confidence/experience with the technology chosen and other site-specific conditions. The sewage works are then designed (and operated) to meet these design objectives in a reliable and consistent manner. Therefore, the values that are to be used in the determination of the level of treatment that applies to the sewage works must be based on the design objectives, and not the effluent limits.

Two common parameters used in almost all sewage works designs and performance evaluations are $CBOD_5$ (carbonaceous biochemical oxygen demand) (BOD_5 – biochemical oxygen demand - for primary sewage works) and total suspended solids (TSS). Therefore, it is logical that the **objective values** of these two parameters are used to determine the level of treatment at the sewage works.

Level of Treatment:

Primary:
Wastewater treatment plants that have only settling/sedimentation (with or without chemical addition) and providing 30% and 50% or better reduction of BOD_5 and TSS respectively are considered primary plants (MOE Procedures F-5-1 and F-5-5).

Secondary:
Wastewater treatment plants that have biological processes (e.g. activated sludge process and its variations, fixed film processes) or physical-chemical processes producing an effluent quality of $CBOD_5$ and TSS of 15 mg/L or better are considered secondary plants (MOE Design Guidelines for Sewage Works, 2008).

Secondary Equivalent:
Wastewater treatment plants producing an effluent quality of $CBOD_5$ of 25 mg/L and TSS of 30 mg/L or better are considered as secondary equivalent plants.

Note: Wastewater treatment plants that provide only primary settling of solids and the addition of chemicals to improve the removal of TSS (and phosphorus) are not considered as secondary treatment plants or secondary equivalent plants (MOE Design Guidelines for Sewage Works, 2008).

Tertiary:
Wastewater treatment plants that have biological processes (e.g. activated sludge process and its variations, fixed film processes) and/or physical-chemical processes producing an effluent quality of $CBOD_5$ and TSS of 5 mg/L or better are considered tertiary plants.

Note: Biological processes such as nitrification, denitrification and enhanced biological phosphorus removal can be part of either a secondary or tertiary treatment plant. They may be described as secondary treatment plant with nitrification, secondary treatment plant with enhanced biological phosphorus removal, tertiary treatment plant with nitrification etc.

Sewer System Type:

Sanitary Sewers:
Pipes that convey sanitary sewage flows made up of wastewater discharges from residential, commercial, institutional and industrial establishments plus extraneous flow components from such sources as groundwater and surface run off.

Combined Sewers:
Pipes that convey both sanitary sewage and stormwater runoff through a single-pipe system.

Partially Separated Sewers:
Exist when either a portion of the combined sewer area was retrofitted to separate (sanitary and storm) sewers and/or a service area with combined sewers has had a new development area with separate sewers added to the service area; whatever the case may be, the final flows will be combined sewage.

Nominally Separated Sewers:
These sewers are constructed as separate sewers, but the sanitary sewers accept stormwater from roof and foundation drains (i.e., these are separated sewers in name only).

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). 9475-AP5RQG issued on July 31, 2017.

In accordance with Section 139 of the Environmental Protection Act, you may by written

Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

a. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;

b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;
5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary* Environmental Review Tribunal 655 Bay Street, Suite 1500 Toronto, Ontario M5G 1E5	AND	The Director appointed for the purposes of Part II.1 of the Environmental Protection Act Ministry of the Environment, Conservation and Parks 135 St. Clair Avenue West, 1st Floor Toronto, Ontario M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or** www.ert.gov.on.ca

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 29th day of January, 2019

Fariha Pannu, P.Eng.
Director

appointed for the purposes of Part II.1 of the *Environmental Protection Act*

WS/
c: Area Manager, MECP Windsor
c: District Manager, DWECD, MECP Sarnia
Mike Newbigging, Jacobs Engineering Group, Inc.

APPENDIX B-2

Water and Wastewater Master Plan
- Executive Summary

EXECUTIVE SUMMARY

ES.1.0 INTRODUCTION

ES.1.1 PURPOSE OF THE MASTER PLAN

The Town of Lakeshore retained Stantec Consulting Ltd. in association with Watson & Associates Economists Ltd. to prepare a Water and Wastewater Master Plan Study including a Rate Review Study in accordance with the Municipal Class Environmental Assessment (EA) process. The goal was to provide a consolidated framework to guide the planning and implementation of strategic water and wastewater infrastructure improvements over the next 20 year planning horizon and beyond with integrated consideration of the natural, social and economic environments.

ES.1.2 BACKGROUND AND SERVICE AREAS

The following sections briefly describe the existing water and wastewater service areas throughout the Town and identify potential future wastewater service areas which are not presently serviced by municipal wastewater systems.

ES.1.2.1 Water Service Areas

The Town of Lakeshore is presently serviced by five separate water supply systems. They include the Belle River, Stoney Point, Union, Tecumseh and Tilbury / Wheatley water supply systems.

ES.1.2.2 Wastewater Service Areas

There are presently five existing wastewater service areas in the Town of Lakeshore. They include the Belle River / Maidstone, Stoney Point, Comber, South Woodslee and North Woodslee Sewage Works.

ES.1.2.3 Future Wastewater Service Areas

As part of this study, residentially populated areas which are not currently being serviced by municipal sanitary sewage collection and treatment systems were identified for evaluation. These areas, listed below, are serviced by individual on-site private septic systems generally consisting of septic tanks and leaching beds:

- **Lighthouse Cove Area** (including shoreline area west of Lighthouse Cove. i.e. Laforet Beach, Crystal Beach and Couture Beach Roads).

- **Rochester Place Area** (including Deerbrook, St. Joachim and shoreline areas generally between Charron Line Road and Rochester Town Line Road including along the Ruscom River).

- **Belle River Road Area** (north of North Woodslee hamlet and south of Belle River urban area)

- **Essex Fringe Area** (south-west corner of the Town along County Road 35 and including adjacent side streets)

Potential Highway 401 Employment Area - For the purposes of the Water and Wastewater Master Plan, broad assumptions have been made with respect to the water and wastewater servicing requirements of the potential Highway 401 employment lands corridor.

ES.1.3 ENVIRONMENTAL ASSESSMENT PROCESS

The work undertaken in preparation of the Lakeshore Water and Wastewater Master Plan follows the planning and design process of the Municipal Engineers Association (MEA) Class EA, October 2000, as Amended in 2007.

Typically, Master Plans are long range plans with broader scopes which integrate infrastructure requirements for existing and future land use with environmental assessment planning principles. These plans examine an infrastructure system or group of related projects in order to outline a framework for planning subsequent projects and/or developments. *Master Plans address (in part) Phases 1 and 2 of the Municipal Class EA process*.

ES.2.0 EXISTING ENVIRONMENTAL CONDITIONS

Projects identified through the Master Plan process must be evaluated on the basis of the potential impact on the existing environmental conditions of the study area. The Master Plan report provides a general description of the existing natural, social and economic environmental conditions in the Town of Lakeshore.

With respect to the natural environment, the Master Plan report includes a discussion on the local climate, geology and physiology, soils, water resources, natural vegetation, terrestrial and aquatic animal life throughout the Town of Lakeshore. As part of documenting existing environmental conditions under the Class EA process, a Benthic Invertebrate Survey was undertaken on the watercourses within the Town of Lakeshore which receive effluent discharges from an existing wastewater treatment facility. Also, a pollution survey was conducted within the main settlement areas of the Town which are not currently serviced by a municipal wastewater system.

ES.3.0 GROWTH, WATER DEMAND AND WASTEWATER FLOW PROJECTIONS

ES.3.1 COMMUNITY GROWTH PROJECTIONS

The growth projections for the Lakeshore Water and Wastewater Master Plan form the basis for establishing water demand and wastewater flow rate assumptions and ultimately the future servicing plans. Community growth projections were established for the 20 and 40 year planning horizons as well as the corresponding projected water demands and wastewater flows.

Residential and non-residential growth projections have been based on a report prepared for the Town of Lakeshore by Watson Associates Economists Ltd. (formerly C.N. Watson and Associates Ltd.) entitled “Town of Lakeshore Population, Household and Employment Forecast Final Report, April 28, 2006”.

ES.3.2 EXISTING AND PROJECTED WATER DEMANDS

Prediction and planning for water demand is one of the most important elements of water supply master planning. The historical water supply and consumption records for the Belle River and Stoney Point water systems were evaluated to establish current water demands. The following tables summarize the present, 20 year and 40 year water demand projections for the Belle River and Stoney Point water supply systems:

Table 3.1: Existing and Projected Water Demands

Water Supply System	**Total Max Day Demand, m^3/day (MIGD)**		
	Existing (2005)	***20-Year (2025)***	***40-Year (2045)***
Belle River	*16,958 (3.7)*	*32,987 (7.3)*	*50,115 (11.0)*
Stoney Point	*3,548 (0.78)*	*8,030 (1.8)*	*10,047 (2.2)*

ES.3.3 EXISTING AND PROJECTED WASTEWATER FLOWS

Sanitary sewage flows are made up of waste discharges from residential, commercial, industrial and institutional establishments plus extraneous non-waste flow components from sources such as groundwater and surface runoff.

The following tables summarize the present, 20 year and 40 year wastewater flow projections for the existing and potential wastewater service areas previously identified. The average per capita sewage flow including extraneous flow has been established for each respective service area based on a review of the historical flow records at the existing sewage treatment facilities. For areas which are not presently serviced by a municipal sewage system, an average per capita sewage flow of 455 Lpcpd has been assumed.

Table 3.2: Existing and Projected Average Daily Wastewater Flows (m^3/d)

Wastewater Service Areas	*Existing (2005)*	*20-Year (2025)*	*40-Year (2045)*
1. BELLE RIVER / MAIDSTONE	*7,730*	*15,593*	*24,532*
2. STONEY POINT	*1,092*	*2,100*	*3,108*
3. COMBER	*395*	*1,409*	*1,714*
4. SOUTH WOODSLEE	*71*	*123*	*146*
5. NORTH WOODSLEE	*0*	*320*	*381*
6. LIGHTHOUSE COVE	*0*	*1,186*	*1,795*
7. ROCHESTER PLACE	*0*	*1,302*	*1,769*
8. BELLE RIVER ROAD	*0*	*541*	*808*
9. ESSEX FRINGE	*0*	*296*	*296*
10. HIGHWAY 401 CORRIDOR	*0*	*816*	*2,992*

ES.4.0 PROBLEM STATEMENTS

ES.4.1 WATER

The primary focus of the Water component of the Master Plan is to evaluate the ability of the water treatment, storage and watermains within the Belle River and Stoney Point water supply systems to meet existing and projected water demands and identify constraints, improvements and or modifications.

The following problems have been identified for the Belle River and Stoney Point water supply systems to satisfy the needs of existing consumers and provide sufficient capacity to accommodate future growth based on projected 20 year demands.

ES.4.1.1 Belle River Water Supply System

.1 Additional clear water storage capacity of approximately 9,000 m^3 (or 2.0 MIG) is required in addition to existing available storage to meet MOE Guidelines (note: existing storage includes both the Belle River and Maidstone elevated water towers as well as the expanded Belle River WTP reservoir).

.2 Improvements to the existing water distribution system are required to augment the existing pipeline network to convey the increased flows to meet projected demand as well as improve the level of fire protection.

ES.4.1.2 Stoney Point Water Supply System

.1 Additional treatment plant capacity of approximately 3,600 m^3/d (or 0.8 MIG) is required.

.2 Additional clear water storage capacity of approximately 2,500 m^3 (or 0.6 MIG) is required in addition to the existing available system storage to meet MOE Guidelines.

.3 Improvements to the existing water distribution system are required to augment the existing pipeline network to convey the increased flows to meet projected demands as well as improve the level of fire protection.

ES.4.2 WASTEWATER

The following problems have been identified for the existing and potential wastewater service areas throughout the Town of Lakeshore to satisfy the needs of existing development and provide sufficient capacity to accommodate future growth based on projected 20 year demands.

ES.4.2.1 Belle River / Maidstone Wastewater System

1. Additional treatment plant capacity of approximately 2,000 m^3/d (or 0.5 MIGD) is required to service the existing service area and anticipated growth areas.

2. Extension of the Oakwood trunk sanitary sewer westerly to service existing development and future growth within the existing service area and anticipated growth areas including provision of a new local collection system in the Pike Creek area to address pollution concerns

3. I&I into the existing collection system is an ongoing problem.

ES.4.2.2 Stoney Point Wastewater System

1. Additional treatment plant capacity of approximately 1,200 m^3/d (or 0.25 MIGD) is required to service the existing service area.

2. I&I into the collection system is an ongoing problem.

ES.4.2.3 Comber Wastewater System

1. Additional treatment plant capacity of approximately 1,000 m^3/d (or 0.22 MIGD) is required to service the existing service area and anticipated growth areas.

2. I&I into the collection system is an ongoing problem.

ES.4.2.4 South Woodslee Wastewater System

1. Upgrades to the existing collection system are required to address on-going problems with the existing septic tank effluent pumping (S.T.E.P) systems.

ES.4.2.5 North Woodslee Wastewater System

1. Construction of a new wastewater collection system to service the areas in North Woodslee east of the Belle River.

ES.4.2.6 Un-Serviced Settlement Areas

1. The Lighthouse Cove, Rochester Place, Belle River Road Corridor and Essex Fringe study areas require sanitary sewage servicing to address pollution problems related to existing malfunctioning septic systems and to address development pressures.

2. The proposed Highway 401 Employment Lands require sanitary sewage servicing to accommodate development.

ES.5.0 DEVELOPMENT AND EVALUATION OF ALTERNATIVE SOLUTIONS

ES.5.1 PLANNING LEVEL CONCEPTUAL ALTERNATIVE SOLUTIONS

Several conceptual alternative solutions were identified to address the problems and needs of the water and wastewater systems. The following broad planning level alternative solutions were considered for providing adequate water and wastewater servicing in the Town of Lakeshore:

1. Do Nothing.
2. Restrict Community Growth.
3. Implement water use reduction and inflow / infiltration control measures.
4. Undertake projects to construct, expand or augment water and wastewater system capacity as needed to service existing and future development.

The advantages and disadvantages of each alternative together with their effects on the socio-economic and natural environment were evaluated. The results of the preliminary screening clearly indicate that the recommended alternative solutions which address the identified problems and study objectives are as follows:

- ***Expand the capacity of the existing water and wastewater system components (treatment, distribution, collection, etc.) including the provision of additional capacity at new or existing facilities to meet the existing and future servicing requirements,***

- ***Implement water efficiency and inflow and infiltration control measures***.

ES.5.2 SERVICING ALTERNATIVES

Alternative servicing solutions were identified and evaluated to address the specific problems and needs of the water and wastewater systems and the unserviced settlement areas. A detailed evaluation of the various alternative solutions is included in the full Master Plan report.

ES.6.0 PUBLIC AND REVIEW AGENCY CONSULTATION

Consultation is a key feature of a successful environmental assessment. The Municipal Class EA process identifies mandatory consultation requirements. The Master Plan has provided several opportunities for participation to date including:

- Notice of Study Commencement advertised to Public and issued to Review Agencies
- Three Public Information Sessions (under Phase 1 of the EA Master Plan Study)
- Two Town Council Information Sessions (under Phase 1 of the EA Master Plan Study)
- Consultation with local Municipalities
- Consultation with Interested Stakeholders including individual meetings with local development groups in Lighthouse Cove, Rochester Place, urban Maidstone and the Belle River Corridor areas.
- One Public Information Session (under Phase 2 of the EA Master Plan Study)

ES.7.0 RECOMMENDED SERVICING PLAN

ES.7.1 SERVICING PLAN

A servicing plan was developed which outlines the recommended water and wastewater infrastructure works required within the Town of Lakeshore to service the needs of the community over the next 20 years and beyond.

Tables 7.1 and 7.2 below summarize the identified water and wastewater projects with respect to capital budget estimates (in 2007 dollars), anticipated timing and Class EA Schedule.

ES.7.2 WATER & WASTEWATER RATE STUDY

Based on the recommendations established in the Water and Wastewater Master Plan, a separate report entitled “Town of Lakeshore – Financial Impact of the Water and Wastewater Master Plan on Consumer Rates, March 24, 2008” (Rate Study) was prepared by Watson & Associates Economists Ltd. The purpose of the study was to evaluate the financial aspects of the recommended servicing alternatives and identify the impact of water and sewer rates in the Town of Lakeshore. A copy of the report is included with the full Master Plan report. The following tables summarize the calculated water and wastewater rates identified in the Rate Study based on the current rate structures over a 10 year period:

Table ES.1: Water Rate Summary

Description	***2007 Passed***	***2008***	***2009***	***2010***	***2011***	***2012***	***2013***	***2014***	***2015***	***2016***	***2017***
Base Charge ($, monthly)	12.50	12.50	12.50	12.50	12.50	12.50	13.50	13.50	13.50	13.50	13.50
Special Levy ($, monthly)	12.00	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Volume Charge ($ /m^3)	0.83	0.92	1.40	1.41	1.46	1.63	1.67	1.77	1.78	1.78	1.82
Avg. Annual Residential Bill*	501.50	524.25	500.27	502.94	514.55	557.29	580.70	604.84	606.66	606.88	616.20

** Average annual residential bill based on 250m^3*

Table ES.1: Wastewater Rate Summary

Description	***2007 Passed***	***2008***	***2009***	***2010***	***2011***	***2012***	***2013***	***2014***	***2015***	***2016***	***2017***
Base Charge ($, monthly)	12.50	12.50	12.50	12.50	12.50	12.50	13.50	13.50	13.50	13.50	13.50
Special Levy ($, monthly)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Volume Charge ($ /m^3)	0.90	1.00	1.10	1.20	1.30	1.38	1.38	1.38	1.38	1.38	1.38
Avg. Annual Residential Bill*	375.00	401.03	425.03	449.99	475.93	495.01	507.02	507.01	507.01	507.00	506.96

** Average annual residential bill based on 250m^3*

Possible alternative rate structures were evaluated and identified in the Rate Review. The alternatives involved maintaining the current special capital levy for water and establishing a new levy for wastewater.

ES.7.3 NEXT STEPS

To complete the Lakeshore Water and Wastewater Master Plan Study process, the following activities will be undertaken:

- Conduct a Public Information Session to present recommended servicing solutions and Rate Review results and provide an opportunity for public input.
- Circulate the Water and Wastewater Master Plan report to review agencies and interested stakeholders for comments.
- Document feedback from public and review agencies and update Master Plan report identifying preferred servicing solutions.
- Issue a “Study Notice of Completion” and place the Master Plan report on public record for a 30-day review period.
- Upon completion of the 30-day review period and assuming no Part II Order requests are submitted to the Minister of Environment, the Master Plan report will be adopted by Town Council in the form of a Council Resolution.

ES.7.4 MONITORING

The scheduling of many planned projects is related to the anticipated growth in demand for water and sewer services. Accordingly, the Town should closely monitor actual growth, water demand and wastewater flows, and adjust scheduling and implementation of related infrastructure projects as needed.

Table ES.3: Summary of Identified 20-Year Water Supply Projects

WATER PROJECTS	***PROBABLE COST***	***YEAR REQUIRED***	***CLASS EA SCHEDULE***
BELLE RIVER WATER SUPPLY SYSTEM			
Watermains			
300-mm along West Pike Creek Road from County Road 42 to Whisper Creek Cir.	$565,000	Completed in 2007	A+
600-mm along West River St. from Caille Ave. to County Road 22.	$420,000	Completed in 2007	A+
600-mm along County Road 22 from West River St. to Rourke Line	$1,520,000	Completed in 2007	A+
400-mm along County Road 22 from Rourke Line to East Puce River Road	$2,720,000	Completed in 2007	A+
250-mm along South St. from Saint Charles St. to Desjardins St.	$200,000	Completed in 2007	A+
400-mm along First St. from Broadway St. to Notre Dame St.	$290,000	Completed in 2007	A+
600-mm along Lakeview Ave. from Belle River WTP to West River St. (new crossing of Belle River)	$750,000	2008	A+
400-mm along Little Baseline Road from existing 500-mm to Stonebrook St.	$500,000	2010	A+
400-mm crossing of Pike Creek along Little Baseline Road	$350,000	2010	A+

WATER PROJECTS	*PROBABLE COST*	*YEAR REQUIRED*	*CLASS EA SCHEDULE*
BELLE RIVER WATER SUPPLY SYSTEM (Watermains cont'd)			
600-mm from West Puce River Road to Patillo Road (through Wallace Woods growth area)	$1,470,000	2010	A+
600-mm along Rourke Line from County Road 22 to future Tower site	$680,000	2011	A+
600-mm feedermain to 401 Employment Lands	$3,100,000	2012	A+
600-mm crossing of Puce River along County Road 22	$460,000	2013	A+
600-mm along West Puce River Road from County Road 22 southerly to existing 600-mm river crossing.	$500,000	2014	A+
400-mm along Renaud Line from County Road 22 to St. Clair Ave.	$350,000	2015	A+
300-mm along Little Baseline Road from West Pike Creek Road westerly to existing 150-mm watermain.	$550,000	2016	A+
150-mm along 13-14 Sideroad from 9th Conc. Road to 10th Conc. Road	$190,000	2016	A+
400-mm along County Road 22 from West Puce River Road to Patillo Road	$1,780,000	2016	A+
400-mm along County Rd. 22 (Belle River crossing) from First St. to West River St.	$260,000	2017	A+
250-mm along Notre Dame St. from Ducharme St. to Saint Peter St.	$250,000	2017	A+
400-mm along Rourke Line from County Road 22 to Caille Ave.	$400,000	2017	A+

WATER PROJECTS	***PROBABLE COST***	***YEAR REQUIRED***	***CLASS EA SCHEDULE***
BELLE RIVER WATER SUPPLY SYSTEM (cont'd)			
Storage Facilities			
New 1.25 MIG elevated water storage tank to replace existing Belle River tower	$4,500,000	2011	B
New 1.25 MIG elevated water storage tank to replace existing Maidstone tower	$4,500,000	2013	B

STONEY POINT WATER SUPPLY SYSTEM			
Watermains			
300-mm along St. Clair Ave. from Comber Sideroad approx. 700m easterly	$313,000	Completed in 2007	A+
300-mm along Saint Clair Ave. from Saint Peter St. westerly approx. 700m	$319,000	2008	A+
200-mm along Gracie Sideroad from Couture Beach Road to 2nd Conc. Road	$350,000	2009	A+
150-mm along County Road 2 (Tecumseh Road) from Gracie Sideroad to existing 50-mm watermain	$115,000	2009	A+
300-mm from Couture Beach Road to Martin Drive (connection to Lighthouse Cove)	$625,000	2009	A+ / B
300-mm along Comber Sideroad from St. Clair Ave. to Tecumseh Road	$320,000	2010	A+
100-mm connections along 3rd Concession Road, County Road 37 and 5th Concession Road (includes two crossings of Highway 401).	$770,000	2013	A+

WATER PROJECTS	***PROBABLE COST***	***YEAR REQUIRED***	***CLASS EA SCHEDULE***
STONEY POINT WATER SUPPLY SYSTEM (Watermains cont'd)			
100-mm connections along Rochester Townline Road generally between County Road 2 and 5th Concession Road	$450,000	2013	A+
300-mm along County Road 35 from Tecumseh Road to Highway 401	$2,600,000	2017	A+
Storage Facilities			
New 0.7 MIG elevated water storage tank	$2,500,000	2010	B
Treatment			
1.0 MIGD expansion of Stoney Point WTP	$3,500,000	2011	C

Table ES.4 Summary of Identified 20-Year Wastewater Projects

WASTEWATER PROJECTS	*PROBABLE COST*	*YEAR REQUIRED*	*CLASS EA SCHEDULE*
BELLE RIVER / MAIDSTONE WASTEWATER SYSTEM			
Treatment			
Expand Belle River / Maidstone WPCP to 4.0 MIGD	$12,800,000	2022	C
Conveyance			
Oakwood trunk sewer extension from Puce River to Pike Creek area.	$8,500,000	2010	A+
Belle River Road corridor - sewer system including trunk sewer, pumping station and forcemain to BRMWPCP.	$9,000,000*	2015	A+
401 Employment Lands – pumping station and forcemain to Belle River / Maidstone collection system	$3,900,000	2010	A+
Local Collection			
New gravity sewer collection system to service Belle River Road Corridor	* Included in conveyance	2015	A+
New gravity sewer collection system to service North Woodslee area	$4,700,000	2015	A+
New gravity sewer collection system to service South Woodslee area	$1,200,000	2015	A+
New gravity sewer collection system to service Pike Creek Area	$3,900,000	2010	A+
New gravity sewer collection system to service 401 Employment Lands	$2,800,000	2010	A+

WASTEWATER PROJECTS	***PROBABLE COST***	***YEAR REQUIRED***	***CLASS EA SCHEDULE***
STONEY POINT WASTEWATER SYSTEM			
Treatment			
Upgrade and expand Stoney Point Wastewater Treatment Facility to 5,990 m^3/d	$12,530,000	2010	C
Conveyance			
Pumping station and forcemain from Stoney Point service area to expanded treatment facility in Stoney Point	$200,000	2010	A+ / C
Pumping station and forcemain from Comber service area to expanded treatment facility in Stoney Point	$3,500,000	2010	A+ / C
Pumping station and forcemain from Lighthouse Cove service area to expanded treatment facility in Stoney Point	$1,800,000	2010	A+ / C
Pumping station and forcemain from Rochester Place service area to expanded treatment facility in Stoney Point	$2,500,000	2010	A+ / C
Local Collection			
New gravity sewer collection system to service Lighthouse Cove area	$24,000,000	2010	A+ / C
New gravity sewer collection system to service Rochester Place area	$16,000,000	2010	A+ / C

WASTEWATER PROJECTS	***PROBABLE COST***	***YEAR REQUIRED***	***CLASS EA SCHEDULE***
ESSEX FRINGE SERVICE AREA			
Treatment			
Acquire treatment capacity at existing Town of Essex wastewater treatment facility.	$1,400,000	2017	n/a
Conveyance			
Pumping station and forcemain from Essex Fringe service area to Town of Essex treatment facility.	$2,600,000	2017	A+ / C
Local Collection			
New gravity sewer collection system to service Essex Fringe area	$2,600,000	2017	A+ / C

APPENDIX B-3

Water and Wastewater Master Plan Update - Executive Summary

Executive Summary

Introduction

Purpose of the Master Plan

The Town of Lakeshore retained CH2M Hill Canada Limited (CH2M) and Stantec Consulting Ltd. (Stantec) to update the original Water and Wastewater Master Plan Study completed in February 2009 in accordance with the Municipal Class Environmental Assessment (EA) process. The goal is to provide an updated consolidated framework to continue guiding the planning and implementation of strategic water and wastewater infrastructure improvements over the next 20-year planning horizon with an integrated consideration of the natural, social and economic environments.

The Lakeshore Water and Wastewater Master Plan Update is intended to provide timely and cost effective solutions to better manage the increased amount of infrastructure required to service growth within the municipality utilizing sound environmental assessment planning principles.

Background and Service Areas

Water Service Areas

The Town of Lakeshore is presently serviced by five separate water supply systems. They include the Belle River, Stoney Point, Union, Tecumseh, and Tilbury-Wheatley water supply systems.

Wastewater Service Areas

There are presently five existing wastewater service area in the Town of Lakeshore. They include the Belle River/Maidstone, Stoney Point, Comber, South Woodslee and North Woodslee Sewage Works.

Future Wastewater Service Areas

As part of the study, residential areas currently not serviced with municipal sewer collection and treatment were identified for evaluation. These areas, listed below, are serviced by individual on-site private septic systems (typically a septic tank with leaching bed):

- **Lighthouse Cove Area** (Including shoreline area West of Lighthouse Cove i.e. Laforet Beach, Crystal Beach and Couture Beach Roads).
- **Rochester Place Area** (Including Deerbrook, St. Joachim and shoreline areas generally between Charron Line Road and Rochester Town Line Road including along the Ruscom River).
- **Belle River Road Area** (North of North Woodslee hamlet and south of Belle River urban area)
- **Essex Fringe Area** (South-west corner of the Town along County Road 35 including adjacent side streets)

Environmental Assessment Process

The work undertaken in preparation of the Lakeshore Water and Wastewater Master Plan Update Study follows according to the phases defined in the Municipal Engineers Association (MEA) Class EA document (MEA, 2000 amended in 2007, 2011, and 2015).

Master Plans are long range plans with broader scopes which integrate infrastructure requirements for existing and future land use with environmental assessment planning principles. These plans examine infrastructure systems or groups of related projects in order to define a framework for planning subsequent projects and/or developments. Master Plans address Phases 1 and 2 of the Municipal Class EA process.

Existing Environmental Conditions

Projects identified through the Master Plan process must be evaluated on the basis of the potential impact on the existing environmental conditions of the study area. The Master Plan report provides a general description of the existing natural, social and economic environmental conditions in the Town of Lakeshore.

With respect to the natural environment, the Master Plan report includes a discussion on the local climate, geology and physiology, soils, water resources, natural vegetation, terrestrial and aquatic life throughout the Town of Lakeshore.

Growth, Water Demand and Wastewater Flow Projections

Community Growth Projections

The growth projections for the Lakeshore Water and Wastewater Master Plan Update Study form the basis of establishing water demand and wastewater flow rate assumptions and ultimately future servicing plans. Community growth projections were established for the 20 year (2015 – 2035) planning horizon along with corresponding projected water demands and wastewater flows.

Residential and non-residential growth projections are based on estimates prepared for the Town of Lakeshore by Watson & Associates Economists Ltd. (Watson, 2015).

Existing and Projected Water Demands

Prediction and planning for water demand is one of the most important elements of water supply master planning. Historical water supply and consumption records for the Belle River and Stoney Point water supply systems were evaluated to established current water demands. Table ES-1 summarizes the present and future water demand projections for the Belle River and Stoney Point water supply systems.

Table ES-1. Existing and Projected Water Demands

	Total Calculated Maximum Day Water Demand, m^3/day	
Water Supply System	**Existing (2015)**	**20 Year (2035)**
Belle River WSS	18,000	24,680
Stoney Point WSS	3,990	4,854

Existing and Projected Wastewater Flow

Sanitary sewage flows are made up of waste discharges from residential, commercial, industrial and institutional establishments plus extraneous non-waste flow components from sources such as groundwater and surface runoff. Existing and projected wastewater flows are presented in Table ES-2.

For areas which are not presently serviced by a municipal sewage system, an average per capita sewage flow of 455 Lpcpd has been assumed.

Table ES-2. Existing and Projected Average Daily Wastewater Flows

Service Areas	Wastewater Flow (m^3/d)	
	Existing (2015)	20-year (2035)
Denis St. Pierre (Belle River / Maidstone)	11,698	14,601
Stoney Point	1,197	1,547
Comber	334	519
South Woodslee	90	106
North Woodslee	115	133
Lighthouse Cove	273	487
Rochester Place	126	141
Highway 401 Corridor (Hamlet communities of St. Joachim, Ruscom and Staples)	228	255
Essex Fringe	118	168

Problem Statements

Water

The primary focus of the water component of the Master Plan Update is to evaluate the ability of the water treatment, storage and distribution systems within the Belle River and Stoney Point water supply systems to meet both existing and projected future water demands and identify any constraints, improvements and/or modifications.

The following problems have been identified for the Belle River and Stoney Point water supply systems to satisfy the needs of existing consumers and provide sufficient capacity to accommodate future growth based on projected 20 year demands.

Belle River Water Supply System

- Additional clear water storage capacity of approximately 1,440 m3 by Year 2030 will be required to meet MOECC Guidelines.
- Improvements to the existing water distribution system will be required to augment the existing pipeline network to convey the increased flows needed to meet projected water demand as well as improve the level of fire protection.

Stoney Point Water Supply System

- Additional treatment plant capacity of approximately 455 m3/day by Year 2026 will be required.
- Additional clear water storage capacity of approximately 540 m3 will be required today to meet MOECC Guidelines.
- Improvements to the existing water distribution system will be required to augment the existing pipeline network to convey the increased flows needed to meet projected water demand as well as improve the level of fire protection.

Wastewater

The following problems have been identified for the existing and potential wastewater service areas throughout the Town of Lakeshore to satisfy the needs of existing development and provide sufficient capacity to accommodate future growth based on projected demands. *Problem statements carried forward from the 2009 WWWMP are excerpted and italicized.*

Denis St. Pierre (Belle River / Maidstone) Wastewater System

1. *Additional treatment capacity at the Denis St. Pierre WPCP is required to support the existing services areas and the anticipated future growth through 2035.*

   The projected population growth for the Denis St. Pierre WPCP indicates the capacity of the WPCP will be met prior to 2035, around 2028, assuming linear growth. Design and construction of the upgrade needs to start prior to this date to ensure capacity is available when needed. Generally, facilities begin design of upgrades once the facility reaches 80% of its rated capacity and the Denis St. Pierre WPCP has already reached 85% of its rated capacity, more if current flow data is used (i.e. see Post-Master Plan Update Revision).

2. *Extension of the Oakwood trunk sanitary sewer westerly to service existing development and future growth within the existing service area and anticipated growth areas including provision of a new local collection system within the Pike Creek area to address pollution concerns. (Stantec, 2009)*

Peak Wet Weather Capacity Issues within the Existing Belle River / Maidstone Conveyance System

Sanitary sewer modelling conducted by CH2M in 2013 identified surcharging issues along old Tecumseh Road. The Town has implemented a long-term inflow and infiltration reduction program focusing on main line sewer repairs. In September 2016, the Town experienced a 1:100 year storm event. Surcharging and basement flooding issues were significant during this event. (CH2M, 2013)

3. *There are peak wet weather flow (WWF) capacity issues within the Denis St. Pierre system.*

Patillo Road / Advance Area Servicing Options

In 2013 CH2M HILL (CH2M) developed a sanitary system hydraulic model to assess sanitary sewer performance, specifically on the system tributary to the Denis St. Pierre WPCP. This exercise found that the system has adequate capacity during dry weather flow (DWF) conditions but surcharging occurs along the Old Tecumseh Road sewer during 2- and 5-year design rainfall wet weather flow (WWF) conditions.

Typically, sewer system analysis for new development is based on available dry weather capacity unless there are exceptional circumstances, such as chronic basement flooding. The 2013 modelling effort identified areas of this sewer which experience basement flooding, pipe surcharging, and surface flooding. Therefore, WWF should be considered when planning or approving future development in this area. This could affect the ability of the Town to approve new development requests in the area unless economical alternatives are possible to mitigate WWF concerns.

4. *Wet weather flow along the Old Tecumseh Road imposes servicing limitations within the Patillo Road / Advance areas.*

Eastern Communities

Servicing of the Eastern Communities has been explored since the 2009 WWWMP in detail in the Eastern Communities EA completed in 2012 (Stantec, 2012). Therefore, this Master Plan Update will not develop problem statements for these areas further. The problem statement developed for the Eastern Communities is excerpted below and applies to Stoney Point, Comber, and Unserviced Settlement areas (Rochester Place and Lighthouse Cove).

> *Additional sewage treatment capacity is required in Stoney Point and Comber to service growth in the service area. Inflow and infiltration problems exist in the Stoney Point sewer system and to a lesser degree in the Comber system. The Lighthouse Cove and Rochester Place areas require sanitary sewage servicing to address pollution problems related to existing malfunctioning septic systems and to address development pressures. (Stantec, 2012)*

I&I is ongoing issue within the Comber and Stoney Point collection systems.

North Woodslee Wastewater System

The North Woodslee collection system does not currently service the eastern portion of the North Woodslee hamlet (east of the Belle River). There is sufficient capacity at the North Woodslee STF to receive additional flows.

South Woodslee Wastewater System

The South Woodslee community is serviced by a low pressurized sewage collection system with a mechanical sewage treatment plant. This system uses individual septic tanks each with an effluent grinder pump. The Town has ongoing operational issues with the individual tanks and related pumps and check valves. In addition, these tanks accumulate solids and require regular cleaning.

Essex Fringe Area

The Town of Essex (Essex) owns two lagoons, both operated by OCWA, one of which is located within the Town of Lakeshore. Essex recently built a new tertiary treatment plant. This presents the opportunity to service the surrounding residences (currently on individual private septic systems) within the Town of Lakeshore at the newly constructed Essex WWTP.

Development and Evaluation of Alternatives Solutions

Planning Level Conceptual Alternative Solutions

Several conceptual alternative solutions were identified to address the problems and needs of the water and wastewater systems. The following broad planning level alternative solutions were considered for providing adequate water and wastewater servicing in the Town of Lakeshore:

1. Do Nothing
2. Restrict Community Growth
3. Implement water use reduction and inflow/infiltration control measures.
4. Undertake projects to construct, expand or augment water and wastewater system capacity as needed to service existing and future development.

The advantages and disadvantages of each alternative together with their effects on the socio-economic and natural environment were evaluated. The results of the preliminary screening clearly indicate that the recommended alternative solutions which address the identified problems and study objectives are as follows:

- Expand the capacity of the existing water and wastewater system components (treatment, storage, distribution, collection, etc.) including the provision of additional capacity at new or existing facilities to meet existing and future servicing requirements.
- Implement water efficiency and expand inflow and infiltration mitigation programs.

Servicing Alternatives

Alternative servicing solutions were identified and evaluated to address the specific problems and needs of the water and wastewater systems and the unserviced settlement areas. A detailed evaluation of the various alternative solutions is included in the Master Plan Update Report.

Public and Review Agency Consultation

Consultation is a key feature of a successful environmental assessment. The Municipal Class EA process identifies mandatory consultation requirements. The Master Plan has provided several opportunities for participation to date including:

- Notice of Study Commencement advertised to public and issued to review agencies.
- One Public Information Session under Phase 2 of the Class EA process.
- Two Town Council Information Sessions under Phase 2 of the Class EA process.
- Notice of Completion advertised to public and review agencies.

Recommended Servicing Plan

Servicing Plan

A servicing plan was developed outlining the recommended water and wastewater infrastructure works required within the Town of Lakeshore to service the needs of the community to 2035 and beyond.

Following Tables ES-3 and ES-4 summarizes the identified water and wastewater projects and associated capital budget estimates (in 2017 dollars), anticipated timing and Class EA Schedule.

Table ES-3. Summary of Identified Water Supply Projects to 2035

Water Projects	Capital Cost[a]	Year Required	Class EA Schedule
BELLE RIVER WATER SUPPLY SYSTEM			
Storage Facilities			
Replace existing Maidstone Elevated Water Tower with a new 5,800 m^3 elevated water tower in general vicinity of the Patillo Road / Little Baseline Road corridor and connect to proposed future 600 mm diameter trunk watermain through Wallace Woods Area	$7,500.000	2030	B
Watermain Infrastructure			
Construct new 200 & 300 mm dia. trunk watermains along 11th Street from Broadway Street to St. Louis Street (200 - 225 meters ; 300 – 300 meters)	$500,000	2018	A+
Construct new 250 & 300 mm dia. trunk watermains along Notre Dame Street from 11th Street to Duck Creek Blvd (250 dia - 225 meters ; 300 dia – 300 meters)	$600,000	2018	A+
Construct new 400 mm dia. trunk watermains along Rourke Line Road from County Road 22 to Caille Avenue (290 meters)	$650,000	2018	A+
Construct new 400 mm dia. trunk watermains along Renaud Line Road from County Road 22 to Caille Avenue (230 meters)	$600,000	2018	A+
Construct new 600 mm dia. trunk watermain along West Puce River Road from County Road 22 southerly to existing 600 mm dia. trunk watermain (590 meters)	$750,000	2019	A+
Construct new 600 mm dia. trunk watermain through Wallace Woods area from West Puce River Road to Patillo Road (3,000 meters)	$3,000,000	2019 to 2030	A+

Table ES-3. Summary of Identified Water Supply Projects to 2035

Water Projects	Capital Cost[a]	Year Required	Class EA Schedule
Construct new 400 mm dia. trunk watermain along County Road 22 from West Puce River Road to Wallace Line Road (1,675 meters)	$1,250,000	2019	A+
Construct new 400 mm dia. trunk watermain along Wallace Line Road from County Road 22 southerly to proposed 600 mm dia. trunk watermain through Wallace Woods area (1,000 meters)	$650,000	2020	A+
Construct new 400 mm dia. trunk watermain along County Road 22 from Wallace Line Road to Patillo Road (1,450 meters)	$1,000,000	2020	A+
Construct new 400 mm dia. trunk watermain along County Road 22 from Patillo Road to West Pike Creek Road (County Road 21) (2,200 meters)	$1,400,000	2021	A+
Construct new 500 mm dia. trunk watermain along Little Baseline Road from existing 500 mm dia. trunk watermain west of Patillo Road to existing 400 mm dia. trunk watermain at Stonebrook Road (780 meters)	$750,000	2022	A+
Construct new 400 mm dia. trunk watermain along Little Baseline Road from West Pike Creek Road (County Road 21) westerly to existing 150 mm dia. watermain near Manning Road (County Road 19) (1,430 meters)	$1,000,000	2022 to 2035	A+
STONEY POINT WATER SUPPLY SYSTEM			
Treatment Facilities			
Monitor Stoney Point WTP capacity and initiate an Environmental Study Report (ESR) at 80% of treatment capacity to evaluate the following two alternative solutions:			
Alternative 1 - Expand Stoney Point WTP to next modular size from 4,545 m^3/day to 9,090 m^3/day on present site	$6,500,000	2026	C
Alternative 2 - Supply 9,090 m^3/day from Belle River WSS via new trunk watermains and convert Stoney Point WTP into a reservoir and booster pump station	$11,500,000	2026	B
Storage Facilities			
Construct a new 3,200 m^3 elevated water tower located in the Community of Stoney Point in the general area of Comber Sideroad (County Road 35) and Tecumseh Road (County Road 2)	$5,000,000	Today	B
Watermain Infrastructure			
Construct new 300-mm dia. trunk watermain along Comber Sideroad (County Road 35) from St. Clair Road to existing 300 mm dia. trunk watermain immediately north of Tecumseh Road (County Road 2) – 730 meters	$450,000	Today	A+
Construct new 300-mm dia. trunk watermain along Comber Sideroad (County Road 35) from Tecumseh Road (County Road 2) to existing 200 mm dia. trunk watermain immediately south of the Canadian National Railway – 210 meters	$200,000	Today	A+
Construct new 200 mm dia. watermain along Gracie Sideroad (County Road 37) from Couture Beach Road to Lakeshore Road 302 – 1,635 meters	$650,000	2018	A+
Construct new 200 mm dia. watermain along Tecumseh Road (County Road 2) from Gracie Sideroad (County Road 37) westerly – 700 meters	$350,000	2018	A+
Construct new 100 or 150 mm dia. watermain looping interconnection along Tecumseh Road (County Road 2) near Rochester Townline - 640 meters	$300,000	2019	A+

Table ES-3. Summary of Identified Water Supply Projects to 2035

Water Projects	Capital Cost[a]	Year Required	Class EA Schedule
Construct new 100 or 150 mm dia. watermain looping interconnection along Tecumseh Road (County Road 2) and Rochester Townline – 1,015 meters	$475,000	2019	A+
Construct new 100 or 150 mm dia. watermain looping interconnection and check valve facility along Rochester Townline from Lakeshore Road 302 southerly – 335 meters	$225,000	2019	A+
Construct new 100 or 150 mm dia. watermain looping interconnection along Lakeshore Road 303 from Gracie Sideroad (County Road 37) westerly plus check valve facility on Gracie Sideroad from Lakeshore Road 303 southerly – 645 meters	$350,000	2020	A+
Construct new 100 or 150 mm dia. watermain looping interconnection along Rochester Townline from County Road 42 northerly – 420 meters	$250,000	2020	A+
Construct new 100 or 150 mm dia. watermain looping interconnection along County Road 42 from Rochester Townline easterly – 2,150 meters	$700,000	2021	A+
Construct new 100 or 150 mm dia. watermain looping interconnection along Rochester Townline from Lakeshore Road 305 southerly – 550 meters	$275,000	2021	A+
Construct new 100 or 150 mm dia. watermain looping interconnection along Rochester Townline from Auction Side Road northerly across Kings Highway 401 – 435 meters	$450,000	2022	A+
Construct new 100 or 150 mm dia. watermain looping interconnection along Gracie Sideroad (County Road 37) across Kings Highway 401 – 380 meters	$500,000	2022	A+
Construct new 100 or 150 mm dia. watermain looping interconnection along Lakeshore Road 305 across Kings Highway 401 – 260 meters	$400,000	2023	A+
Construct new 100 or 150 mm dia. watermain looping interconnection along Gracie Sideroad (County Road 37) from Middle Road (County Road 46) southerly plus isolation valve facility on Middle Road (County Road 46) 650 m west of Gracie Sideroad (County Road 37) – 800 meters	$400,000	2023	A+
Construct new 100 or 150 mm dia. watermain looping interconnection along Gracie Sideroad (County Road 37) from Lakeshore Road 309 northerly – 740 meters	$325,000	2024	A+
Construct new 100 or 150 mm dia. watermain looping interconnection along Gracie Sideroad (County Road 37) from County Road 8 northerly – 740 meters	$325,000	2024	A+
Construct new 100 or 150 mm dia. watermain looping interconnection along Lakeshore Road 311 from Kings Highway 77 westerly – 1,100 meters	$475,000	2025	A+
Construct new 100 or 150 mm dia. watermain looping interconnection along South Middle Road from Rochester Townline easterly – 1,200 meters	$500,000	2025	A+
Construct new 100 or 150 mm dia. watermain looping interconnection along South Middle Road from Lakeshore Road 309 easterly – 1,100 meters	$475,000	2026	A+
Consider construction of new 400 mm dia. watermain along Comber Sideroad (County Road 35) from CN Railway southerly as conditions dictate to south of Hwy 401 in Comber to replace existing 200 mm dia. watermain – 7,200 meters	$5,000,000	2018 to 2035	A+

Notes:

[a] Capital costs represent conceptual level planning estimates and based on factors and reasoning discussed in Appendix E.

Table ES-4. Summary of Identified Wastewater Projects to 2035

Wastewater Projects	Capital Cost	Year Required	Class EA Schedule
North and South Woodslee			
Expand gravity sewers to service the Eastern portion of the North Woodslee hamlet.	$5,300,000 [a]	Far Future	A+
Continue to repair and upgrade the existing South Woodslee pressurized system.	$9,100 per system [b]	Ongoing	A+
Denis St. Pierre WPCP Wastewater Collection System			
Expand the Denis St. Pierre WPCP by one SBR treatment train (increase of approximately 1 MIGD)	$14,500,000 [a]	2020 [e]	C
Oakwood trunk sewer extension from Puce River to Pike Creek area	$9,600,000 [a]	2025	A+
New gravity sewer collection system to service Pike Creek area	$4,400,000	Far Future	A+
Belle River Road Corridor – sewer system including trunk sewer, pumping station and forcemain to Denis St. Pierre WPCP	$10,200,000 [a]	2025+	A+
Eastern Communities			
Construct a new sewage treatment facility in Stoney Point to treat sewage from both Stoney Point and Comber (Phase 1)	$15,576,000 [c]	2020	N/A [d]
Pump Station and Forcemain to transmit wastewater from Stoney Point to the new STF (Phase 1)	$500,000 [c]	2020	
Pump Station Upgrade and new Forcemain to transmit wastewater from Comber to the new STF (Phase 1)	$3,795,000 [c]	2020	
Construct gravity sewer collection system to service Lighthouse Cove (Phase 1)	$23,725,000 [c]	2020	
New Pumping Station and forcemain to transmit sewage from Lighthouse Cove to the new STF (Phase 1)	$904,000 [c]	2020	
Construct new gravity sewer collection system to service Rochester Place (Phase 2)	$30,753,000 [c]	2030	
New Pumping Station and forcemain to transmit sewage from Rochester Place to the new STF (Phase 2)	$3,135,000 [c]	2030	
Decommission the existing sewage lagoons located in Stoney Point and Comber (Phase 2)	$3,163,000 [c]	2030	
Expand Stoney Point STF to receive flows from Lighthouse Cove and Rochester Place (Phase 2)	$3,921,000 [c]	2030	
Studies			
Initiate a private source control inflow and infiltration program in addition to the ongoing public source control program. Review the existing inflow and infiltration program.	$80,000	2017	N/A
Conduct a study of the Patillo Road Package Plant to evaluate (1) the ability of the plant to relieve wet weather flows (2) ability of the plant to increase available capacity at the Denis St. Pierre WPCP and (3) assess the capital cost and feasibility of bringing this plant back online from standby.	$50,000	2017	N/A

Table ES-4. Summary of Identified Wastewater Projects to 2035

Wastewater Projects	Capital Cost	Year Required	Class EA Schedule
Explore opportunities with the Town of Essex to expand service from the Essex WWTP to the Essex Fringe Area within the Town of Lakeshore.	N/A	2017	N/A

Notes:

All costs exclude HST and represent conceptual level planning cost estimates.

[a] Original costs were developed in 2009 WWWMP. Costs presented here have been escalated to 2017 dollars using the Consumer Price Index (CPI) with details provided in Appendix E.2.
[b] Per system costs are presented here as the number of systems replaced per year may vary depending on conditions. These costs are escalated to 2017 dollars from 2009 costs presented in the 2009 WWWMP as detailed in Appendix E.2.
[c] Costs presented are from the 2012 Eastern Communities ESR (Stantec, 2012), see Appendix E.2 for details.
[d] The Eastern Communities ESR completes the planning phases of the Class EA process and its projects are approved and may proceed to detailed design and construction.
[e] Design and construction should potentially start in early 2018 based on current 2016 flows, see Post-Master Plan Update Revision

Next Steps

To complete the Lakeshore Water and Wastewater Master Plan Update Study process, the following activities will need to be undertaken:

- Advertise a "Notice of Completion" and place the Master Plan Update report on the public record for the required 30-day review period.
- Upon completion of the 30-day review period and assuming no Part II Order requests are submitted to the MOECC, the Master Plan Update report can be adopted by Lakeshore Council in the form of a Council Resolution.

Monitoring

The scheduling of planned projects is related to the anticipated growth in demand for water and sewer services.

Accordingly, the Town should closely monitor actual growth, water demand and wastewater flows and adjust the scheduling and implementation of related infrastructure projects as needed.

Specifically, the following actions are recommended:

1. Monitor actual water plant production records, wastewater treatment plan flows, and development growth annually and compare to Master Plan projections.
2. Establish and annually track the uncommitted reserve capacity of the Town's existing water and wastewater treatment facilities in accordance with MOECC Guideline D-5-1 – Calculating and Reporting Uncommitted Reserve Capacity at Sewage and Water Treatment Plants, March 1995.
3. Collect water distribution system and wastewater collection system component attribute data on new installations as they are constructed and update the Town's geographic information systems (GIS) database.
4. Implement a watermain and sewer rehabilitation / replacement program including water use and inflow and infiltration measures and review priorities based on data collected and results of studies.
5. The Town of Lakeshore Water and Wastewater Master Plan should be reviewed annually and updated every five (5) years to adjust to changing local conditions, new problems, and system

improvements which have been implemented and incorporated these changes into long-term planning for water and wastewater infrastructure.

Post-Master Plan Update Revision

Subsequent to the Master Plan Update review, the Denis St. Pierre WPCP flows for 2016 were reviewed (OCWA 2016 Annual Performance Report). They indicate an average treated flow of 12,292 m^3/d for 2016, which is greater than expected from the projected population forecast. If the 2016 recorded flows increase at a similar rate, the WPCP would reach capacity around 2024. If the future flows increase at a rate greater than the population forecast, the available WPCP capacity may be consumed even sooner than this.

To prevent the WPCP reaching its capacity, optimization and upgrade activities need to proceed. Currently, the plant is treating 91% of its rated capacity (based on 2016 treated flows). Generally, upgrades are initiated once a plant reaches 80% of its rated capacity. It is expected that upgrades could require two to three years to complete (to accommodate design, approvals, and construction), and therefore, even if upgrades start in 2018, the plant could reach 96% of its rated capacity prior to the completion of the new works. Simultaneous efforts to further optimize processes at the WPCP and continued pursuit of I/I reductions in the sewer system can free up some capacity at the plant, but an upgrade should be initiated in the near term.

APPENDIX B-4

Appendix G of Essex Region Source Protection Plan

Map 4: Highly Vulnerable Aquifers

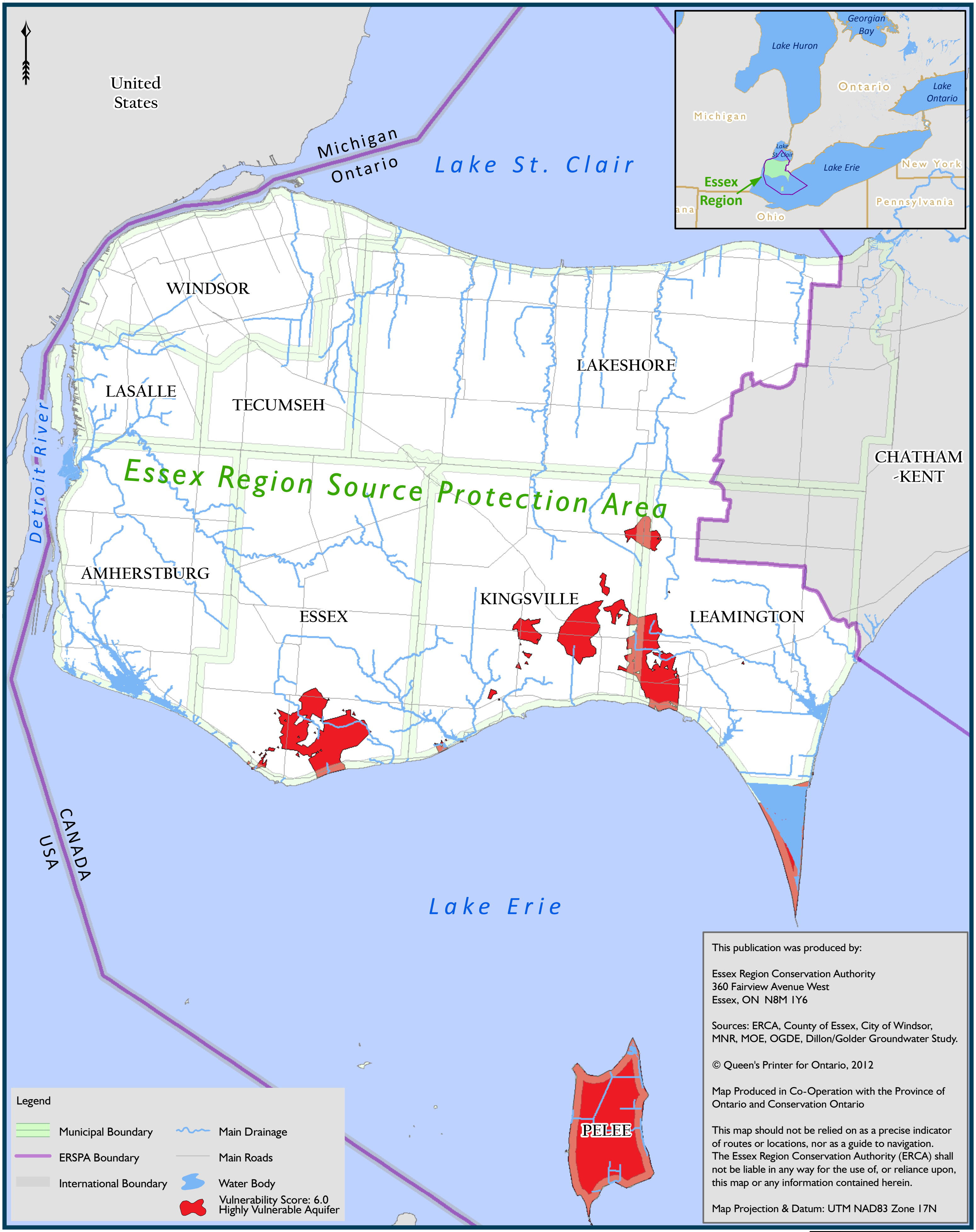
Map 5: Significant Groundwater Recharge Areas

Map 7: Lakeshore (Belle River) Water Treatment Plant IPZs and Vulnerability Scoring

DRINKING WATER SOURCE PROTECTION
ACT FOR CLEAN WATER
Essex Region Conservation Authority

Map 4: Highly Vulnerable Aquifers

Made possible by the Government of Ontario
Ontario



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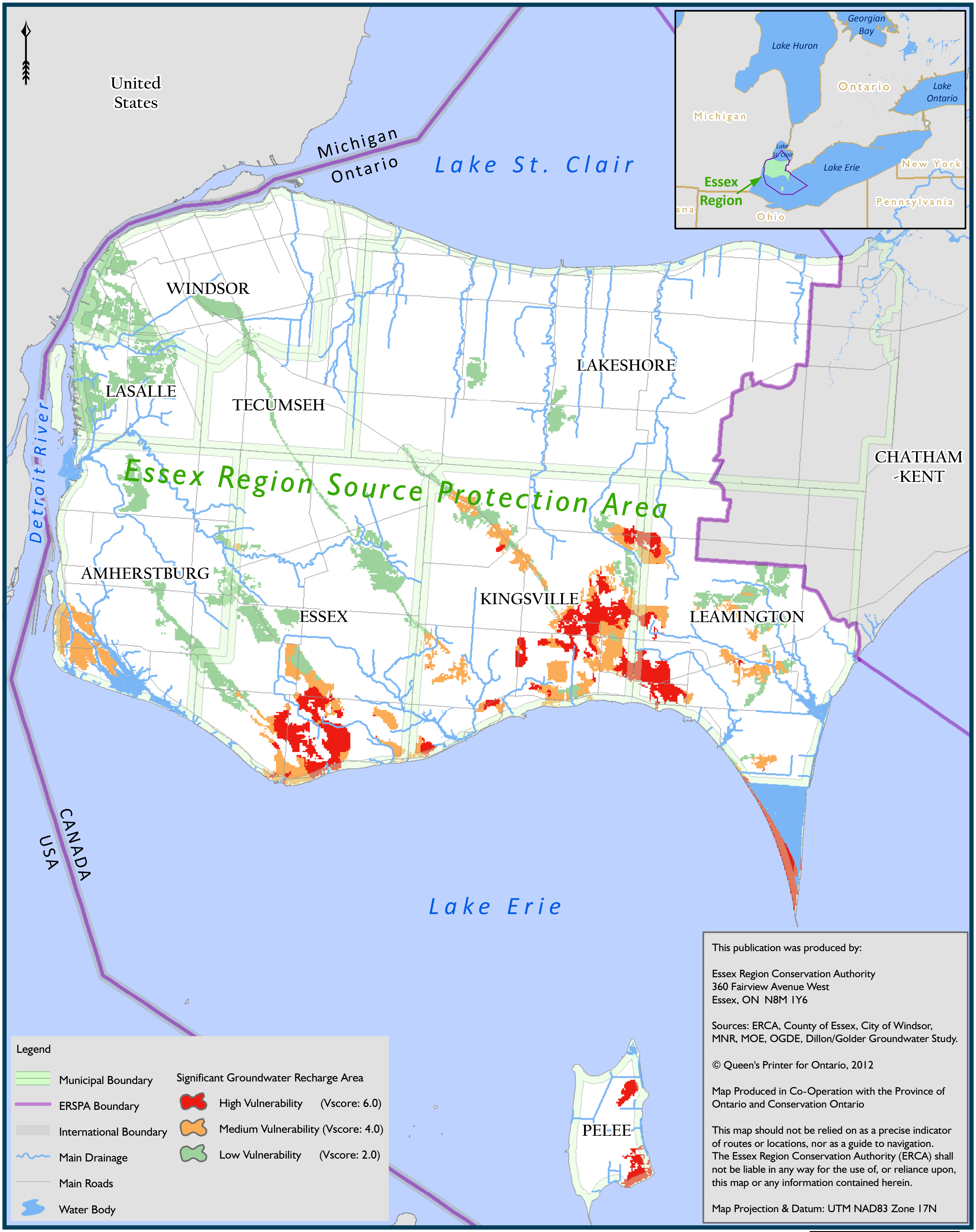
Kilometers

Map 5: Significant Groundwater Recharge Areas

Made possible by the Government of Ontario



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360 Fairview Avenue West
Essex, ON N8M 1Y6

Sources: ERCA, County of Essex, City of Windsor, MNR, MOE, OGDE, Dillon/Golder Groundwater Study.

Map Produced in Co-Operation with the Province of Ontario and Conservation Ontario

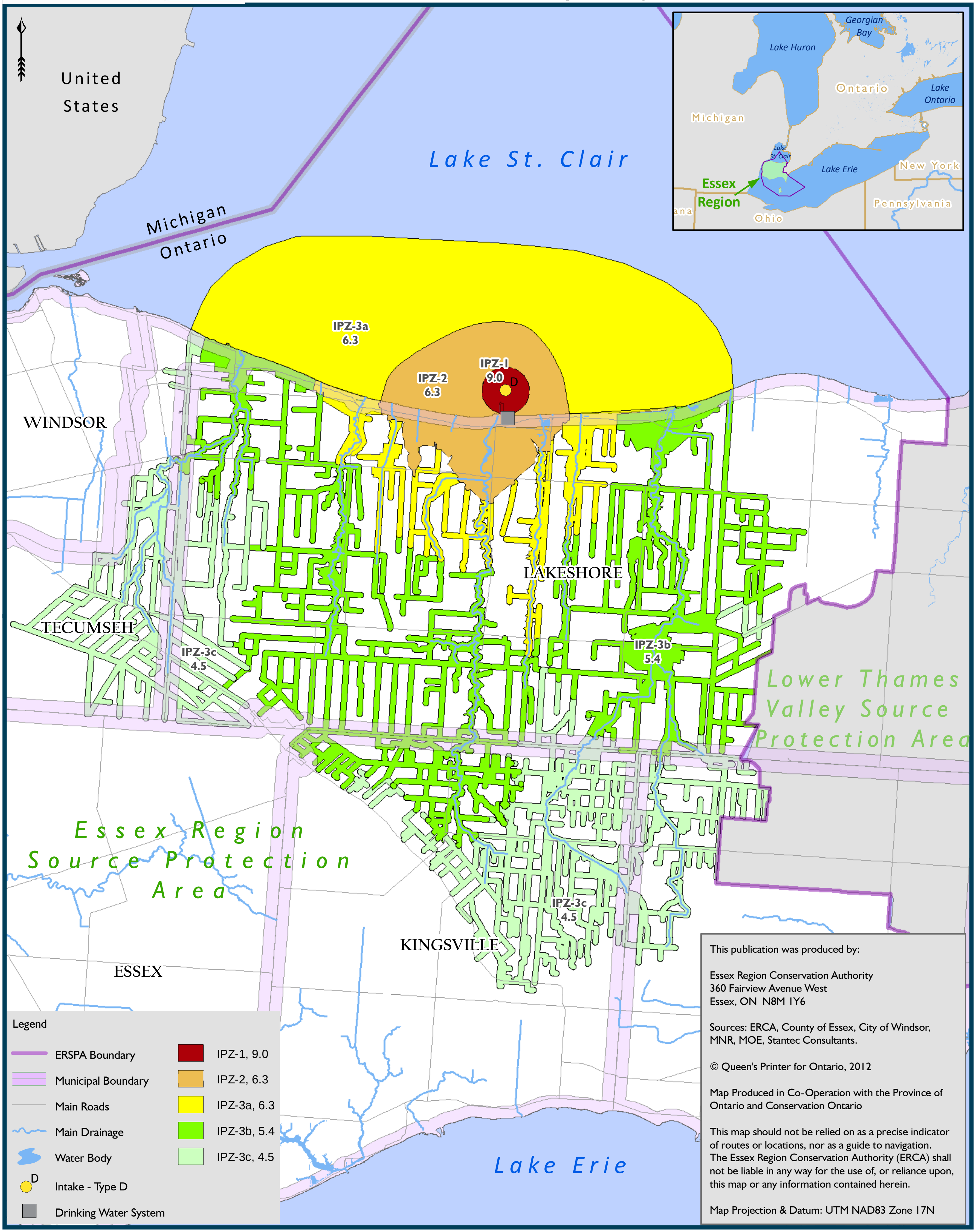
This map should not be relied on as a precise indicator of routes or locations, nor as a guide to navigation. The Essex Region Conservation Authority (ERCA) shall not be liable in any way for the use of, or reliance upon, this map or any information contained herein.

Map Projection & Datum: UTM NAD83 Zone 17N

1:320,000

Map 7: Lakeshore (Belle River) Water Treatment Plant IPZs and Vulnerability Scoring

Made possible by the Government of Ontario



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APPENDIX C

Assimilative Capacity Study Report

Assimilative Capacity Study Denis St. Pierre Water Pollution Control Plant Expansion, Town of Lakeshore

Final

January 2, 2020

Prepared for:

Town of Lakeshore

Prepared by:

Stantec Consulting Ltd.

Revision	Description	Author		Quality Check		Independent Review	

This document entitled Assimilative Capacity Study Denis St. Pierre Water Pollution Control Plant Expansion, Town of Lakeshore was prepared by Stantec Consulting Ltd. ("Stantec") for the account of Town of Lakeshore (the "Client"). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

Prepared and Approved by ______________________
(signature)

Dr. Igor Iskra, P.Eng., Senior Water Resource Engineer

Reviewed by ________________________________
(signature)

Dr. Jian Li, P.Eng., PE, Senior Environmental Engineer

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Executive Summary

This assimilative capacity study (ACS) describes the approach and results of the dilution mixing assessment of Lake St. Clair in response to the effluent being discharged from the Denis St. Pierre Water Pollution Control Plant (WPCP) servicing the Belle River and Maidstone communities, Town of Lakeshore. The Town of Lakeshore proposes to expand a plant capacity from 14,500 m^3/day to an ultimate design of 30,000 m^3/day to serve the existing needs and future growth requirements of the Belle River and Maidstone communities.

This ACS comprises of six (6) Sections two (2) Appendices. Section 1 provides introduction and study objectives. Section 2 discusses background information, proposed plant expansion, regulatory framework and study approach. Section 3 presents ambient hydrodynamic conditions and receiver water quality as well as effluent characteristics. Modeling results and their discussion are presented in Section 4. Section 5 provides study conclusions and Section 6 lists cited references.

Abbreviations

°C	degrees Celsius
7Q20	seven-day average low flow that can be expected once in 20 years
ACS	assimilative capacity study
BOD	biochemical oxygen demand
$CBOD_5$	carbonaceous biochemical oxygen demand
CFU	colony-forming unit
ECA	environmental compliance approval
IGLD	International Great Lakes Datum
IPZ	Intake Protection Zone
kg/d	kilogram(s) per day
m^3	cubic metres
m^3/d	cubic metres per day
mg/L	milligrams per litre
MECP	Ministry of the Environment, Conservation and Parks, formerly known as MOECC, MOE
MPN	Most Probable Number
TP	total phosphorus
TSS	total suspended solids

1.0 INTRODUCTION AND STUDY OBJECTIVES

This report describes the approach and results of the assimilative capacity study of Lake St. Clair in response to the effluent being discharged from the Denis St. Pierre Water Pollution Control Plant (WPCP) servicing the Belle River and Maidstone communities, Town of Lakeshore.

The Denis St. Pierre Wastewater System consists of sanitary sewers, pumping stations, the Denis St. Pierre WPCP and an outfall discharging to Lake St. Clair. Location of the WPCP plant and outfall pipe is shown on **Figure 1**.

The Denis St. Pierre WPCP is located on Rourke Line Road south of County Road 22 and provides secondary level biological treatment. The most recent upgrades of the existing Denis St. Pierre WPCP were completed in 2008. The plant was originally rated for an average daily sewage flow of 13,640 m^3/day and a peak flow capacity of 35,069 m^3/d, and then re-rated for an average daily sewage flow of 14,500 m^3/day in January 2019. Effluent from the existing plant is discharged to an outfall located about 600 meters offshore in Lake St. Clair (**Figure 2**). Effluent discharges through nozzles in the end section of the outfall to assist in dispersing the effluent.

The outfall, which is located within the Intake Protection Zone (IPZ) of the Lakeshore Water Treatment Plant (WTP), is approximately 2,250 m away from the Lakeshore WTP intake (**Figure 3**). An IPZ is an area around a municipal intake pipe that contributes source water to a drinking water system. IPZ-2 is the area where water (and pollutants) can reach the intake within 2 hours. However, vulnerability score of the Lakeshore IPZ-2 is 6.3 which is the lowest score for IPZ-2.

The Town of Lakeshore proposes to expand a plant capacity from 14,500 m^3/day to an ultimate design of 30,000 m^3/day to serve the existing needs and future growth requirements of the Belle River and Maidstone communities.

The objectives of the assimilative capacity study are to:

- Characterize the receiving water quantity and quality;
- Build a 3D near-field dilution and mixing model for Lake St. Clair at the outfall;
- Apply the model to several scenarios which involve different rates of effluent discharge;
- Conduct dilution mixing modeling and mixing zone analysis;
- Assess the potential impact of the discharge on Lake St. Clair; and
- Make recommendations on effluent limits.

The near-field modelling and effluent dispersion analysis of the treated wastewater from the WPCP were undertaken under conservative effluent and ambient conditions. The scale of the near-field modelling is on the order of several metres to a few hundred metres, which allows for a detailed prediction of the effluent plume discharging from the diffuser.

Available water quality data for Lake St. Clair were used to characterize the background water quality of the lake where the plant outfall is located.

The water quality parameters of concern include biological oxygen demand (BOD), total suspended solids (TSS), total phosphorus (TP), total ammonia (TAM), E. coli and pH.

2.0 BACKGROUND

2.1 EXISTING TREATMENT AND COMPLIANCE REQUIREMENTS

The treatment plant operates under an Amended Environmental Compliance Approval (ECA) No. 1087-B7FLRU issued on January 29, 2019. The design capacity of the plant is 14,500 m^3/day. A copy of the current ECA is presented in **Appendix A**. The current ECA outlines the effluent compliance limits and objectives for the facility, which are summarized in **Table 2.1** .

Table 2.1. Effluent Objectives and Compliance Limits

	Compliance Limits		Effluent Objectives
Parameter	**Monthly Average Concentration**	**Annual Average Loading**	**Monthly Average Concentration**
$cBOD_5$	14 mg/L	203 kg/d	10 mg/L
TSS	14 mg/L	203 kg/d	10 mg/L
Total Phosphorus	0.8 mg/L	11.6 kg/d	0.5 mg/L
Total Ammonia (Nitrogen)			
Summer (May 1 to Nov 31)	1.4 mg/L	20.3 kg/d	1.0 mg/L
Winter (Dec 1 to April 30)	2.8 mg/L	40.6 kg/d	2.0 mg/L
E. coli (1)	200 CFU/100 mL or 200 MPN / 100 mL	-	150 CFU/100 mL or 150 MPN / 100 mL
pH (2)	6.5 - 9.5 inclusive	-	6.5 - 8.5 inclusive

Notes:
(1) Monthly Geometric Mean Density
(2) Single Sample Result

2.2 REGULATORY FRAMEWORK

2.2.1 Provincial Water Quality Objectives

Long-term goals for water quality in Ontario are based on PWQOs provided in the MECP publication Water Management – Goals, Policies, Objectives and Implementation Procedures of Ministry of the Environment (MOE, 1994b). Procedures used by the MECP to establish receiving-water based effluent requirements for point source discharges to surface waterbodies are provided in the document Deriving Receiving-Water Based, Point-Source Effluent Requirements For Ontario Waters (MOE, 1994a).

PWQO are numerical and narrative criteria which serve as chemical and physical indicators representing a satisfactory level for surface waters. The PWQO are set at a level of water quality which is protective of all forms of aquatic life and all aspects of the aquatic life cycles during indefinite exposure to the water (MOE 1994a).

A receiving water-based approach is used to establish site-specific effluent criteria enforced through the Ontario Water Resources Act, Section 53 (Sewage Works) ECA.

The procedures for developing receiver-based effluent criteria through an assimilative capacity assessment are described in MOE Procedure B-1-5 (MOE 1994b). These procedures identify the following critical components for the analysis:

- receiving water low flow (e.g., for rivers 7Q20 - the minimum 7 day average low flow with a recurrence period of 20 years);
- receiving water quality background concentrations (e.g., 75th percentile);
- receiving water Policy Type (e.g., Policy 1 or Policy 2 Receiver);
- maximum expected effluent discharge rate;
- maximum expected effluent constituent concentrations;
- mixing zone criteria:
  - mixing zone size and extent to be kept as small as reasonably possible;
  - mixing zones must not be acutely toxic; and
  - mixing zone boundary is defined by the downstream point where effluent assimilation returns the receiver's water quality to either background concentrations or the PWQO and water is not chronically toxic.
- effluent criteria (flow rates and concentrations) to be developed from the results of a receiving water assimilative capacity assessment.

Thus, ECA effluent limits are established based on background conditions (PWQO or background concentrations), receiver assimilative capacity, Policy Type of the receiver, ecological sensitivity and the size and extent of a reasonable receiving water mixing zone.

2.2.2 Canada-Ontario Draft Action Plan for Lake Erie

To assist in reducing toxic and nuisance algal blooms in Lake Erie, the Great Lakes Water Quality Agreement (GLWQA, adopted in 2014) proposed a binational (i.e., Canada and the United States) load reduction target of 40% (from 2008 loads) of total phosphorus entering the Western and Central Basin of Lake Erie by 2025, with an "aspirational" interim goal of 20% by 2020 (Canada-Ontario Agreement Partners 2017). Domestic action plans will be developed by 2018 to outline strategies for meeting the targets. To this end, the proposed Canada-Ontario

Draft Action Plan (Action Plan) for Lake Erie was posted for comment in February 2017 and meets all of Ontario's binational and domestic commitments related to phosphorus reductions.

The Action Plan applies to tributaries, point and non-point sources entering Lake Erie. A phosphorus reduction target has been proposed for the Western and Central Basins of Lake Erie, however, a target for the Eastern Basin (into which the Grand River discharges) has not been established and requires further scientific assessment. The phosphorus loading to the Eastern Basin is notably lower than to the Western and Central Basins – 12% of the loading is to the Eastern Basin, while the remaining 88% discharges to the Western and Central Basin (Canada-Ontario Agreement Partners 2017). However, the phosphorus load from the Grand River is potentially a factor in nuisance Cladophora blooms in the nearshore zone of the Eastern Basin, since Canadian sources and specifically, the Grand River watershed, are the largest phosphorus contributor to the Eastern Basin. The mean load of total phosphorus from the Grand River between 2003 and 2013 was 340 tonnes per year. Canadian sources contribute 54% of the total phosphorus load to the Eastern Basin (Canada-Ontario Agreement Partners 2017). The finalization of the Action Plan will be based on comments on the draft Action Plan and engagement of key stakeholders, including First Nations and Metis communities, and the public.

Although the GLWQA targets do not apply to the Lake St. Clair watershed at this time, it is reasonable to assume many of the proposed actions in the Action Plan (for Lake Erie) will likely carry over as proposed actions for the Lake St. Clair watershed.

The proposed actions are organized into five categories: Reduce Phosphorus Loadings; Ensure Effective Policies, Programs and Legislation; Improve the Knowledge Base; Educate and Build Awareness; and Strengthen Leadership and Coordination.

Municipal point sources are now well controlled, with all wastewater treatment plants in the Ontario portion of the basin having at least secondary treatment. However, there are still opportunities to optimize the performance of treatment plants, and to reduce the volume and frequency of bypasses and overflows and to reduce loads from urban stormwater.

The key impact on the levels of treatment required for the Denis St. Pierre WPCP expansion is that point sources (which contribute 10% to 15% of total load to Lake Erie) establish a legal effluent discharge limit of 0.5 mg/L total phosphorus monthly average for all municipal WWTPs that have an average daily flow of 3.78 ML/d or more. The Draft Action Plan recognizes that these limits can be achieved using new technology retrofits and/or process modifications which can be made to existing secondary sewage treatment plants that can approach or match the effluent phosphorus concentrations attainable through conventional tertiary treatment (i.e., chemically-assisted filtration), but at a lower cost.

2.3 STUDY APPROACH

The WPCP treated effluent is not expected to meet the PWQO or existing background conditions at the outfall, therefore assimilative capacity modelling including dilution, assimilation and mixing zone analysis is required.

The standard MECP procedure for continuous point source discharges requires the use of conservative low flow conditions in the receiver (MOE 1994a). For the purpose of this study, the lowest observed water level in Lake St. Clair was used. Also, conservative low current velocities were applied in the modeling.

The plant effluent flow and quality were estimated based on the existing and future growth, and proposed treatment documented in the ESR for the Denis St. Pierre WPCP expansion.

Using the maximum design effluent flow in combination with conservative hydrodynamic conditions adds substantial conservatism to the assessment and will demonstrate a high level of confidence that the proposed effluent criteria are protective of the environment.

Following the MECP approved procedures (MOE 1994a), the ambient (background) water quality of the receiver was calculated based on a statistical analysis of the 75th percentile of observed water quality concentrations.

A 3D dilution mixing hydrodynamic model CORMIX was used in this ACS.

2.4 PROPOSED DENIS ST. PIERRE WPCP EXPANSION

The Denis St. Pierre WPCP is located on Rourke Line Road south of County Road 22 and provides secondary level biological treatment. Effluent from the existing plant is discharged via a 0.91 m diameter outfall pipe to a point approximately 600 meters offshore in Lake St. Clair. Effluent discharges through nozzles in the end section of the outfall to assist in dispersing the effluent. The Denis St. Pierre WPCP effluent flow rates are discussed in **Section 3.4**.

As part of the plant expansion, the existing diffuser ports will be modified to hydraulically accommodate increased flows from plant expansion. The existing sixteen ports with nozzle diameter of 0.125 m will be replaced with the same number of ports but nozzle diameter will be increased to 0.25 m. There will be no other changes to the lake portion of existing outfall pipe, the diffuser diameter will remain the same, i.e. 0.91 m. Schematic representation of the diffuser and ports is shown on **Figure 4**.

3.0 MIXING ZONE ANALYSIS

3.1 MODELLING SOFTWARE

The Cornell Mixing Zone Expert System (CORMIX, Version 11.0) was used to analyze and assess near-field mixing (conditions at and near the initial mixing zone). CORMIX is a software system for the analysis, prediction, and design of aqueous toxic or conventional pollutant discharges into diverse water bodies. The major emphasis is on the geometry and dilution characteristics of the initial mixing zone, but the system can also predict the behavior of the discharge plume at larger distances. CORMIX is a three-dimensional (3D) model which can be run in steady-state and tidal ambient conditions.

3.2 RECEIVING ENVIRONMENT HYDRODYNAMICS

The Denis St. Pierre WPCP outfall is located in Lake St. Clair, about 600 m offshore. The buried outfall pipe has a dimeter of 0.91 m (36”). As per the 1975 design drawings the invert and obvert elevations of the sewer pipe are correspondingly 169.77 m and 170.01 m referenced to the International Great Lakes Datum (IGLD), 1985. The bottom elevation of the Lake at the outfall is 171.85 m IGLD. Currently, the nozzles rise 0.75 m above lake bottom (**Appendix B**).

The Canadian Hydrographic Service in cooperation with the US Army Corps of Engineers and NOAA collects water level data in Lake St. Clair. Historical lake water levels referenced to IGLD (1985) are shown in **Table 3.1.**

Table 3.1. Historical Water Levels in Lake St. Clair

Water Levels	Elevation, m
Minimum Water Level (1964)	174.24 m
Maximum Water Level (2019)	176.03 m
Long-Term Average (1918-2018) *	174.92 m

* Long-Term Average (1918-2019) is not available at the time of this report's preparation.

The minimum observed Lake St. Clair water level of 174.24 m was used for the purpose of CORMIX modeling. At this water level, water depth at the outfall is 2.39 m. This water depth was conservatively assumed at the outfall location and used in CORMIX.

Hydrodynamic conditions at the outfall were characterized based on the modeling results presented in Baird & Associates (2010). Numerical modeling of Lake St. Clair was undertaken using Baird’s proprietary three-dimensional hydrodynamic model MISED. Calibration and validation of the model was done by comparing the modeled results with measured ADCP current data in Lake St. Clair in 2008. Wind data from the Windsor Airport was incorporated into the Baird hydrodynamic model.

Current velocities at the outfall location is an important input parameter in CORMIX. Due to wind forces, surface current velocities are substantially higher than velocities at the bottom (**Table 3.2**). Wave induced longshore currents on Lake St. Clair typically range from 0.05 to 0.1 m/s near shore to a few cm/s further offshore (Baird 2010). For the purpose of assimilative capacity analysis a measured depth - average velocity of 0.04 m/s was conservatively used in CORMIX.

Table 3.2. Current Velocities in Lake St. Clair near Belle River WTP (Baird 2010)

Surface Currents		Depth - Average Current	
Measured, m/s	Modelled, m/s	Measured, m/s	Modelled, m/s
0.27	0.22	0.04	0.03

3.3 BACKGROUND WATER QUALITY

Extensive background water quality data are available for Lake St. Clair for the parameters of concern (**Table 3.3**). Background water quality data was collected by Lakeshore Water Treatment Plan in compliance with Drinking-Water Systems Regulation O. Reg. 170/03.

The average and 75th percentile phosphorus concentration in the receiver is above PWQO (20 ug/L) for lakes. Therefore, Lake St. Clair is characterized as a Policy 2 receiver for phosphorus.

Table 3.3. Background Water Quality, Lake St. Clair, 2009-2018

	Number of Samples	Min	Max	Average	75th percentile
Alkalinity, mg/L	52	73.2	199.0	91.7	96.5
Total Ammonia (N), mg/L	179	0.013	0.144	0.057	0.067
Nitrite (N), mg/L	179	0.001	0.039	0.008	0.008
Nitrogen Total, mg/L	107	0.050	3.000	0.596	0.635
pH field	294	7.22	8.86	8.13	8.37
Phosphorus total, mg/L	160	0.005	0.314	0.025	0.030
Summer Temperature, May 1 to Nov 31, °C	278	0.5	27.0	19.5	23.6
Winter Temperature, Dec 1 to Apr 30, °C	13	0.3	16.0	3.9	5.8
Turbidity, Field, FTU	293	1.1	140.4	19.4	22.0

BOD concentrations in Lake St. Clair are relatively low, based on historical data the average BOD concentrations in the lake vary from 0.5 to 3.2 mg/L (USGS 2007) with an average value of 2 mg/L. For modeling purposes, the BOD concentration in the receiver was assumed 2.0 mg/L.

3.4 EFFLUENT CHARACTERISTICS

Existing, 20 year and ultimate design effluent flows for the WPCP are presented in **Table 3.4**. The ultimate design scenario with the maximum dry weather flow is considered the worst case in terms of effluent load and receiver assimilative capacity, therefore, the effluent flow of 77,000 m^3/day (0.89 m^3/s) was used in CORMIX modeling.

Effluent compliance limits, presented in **Table 2.1,** were used as a starting point for effluent water quality for the purpose of CORMIX modeling.

Table 3.4. Effluent Flows

Daily Flow	Existing	20 Year Design	Ultimate Design
Average Daily Flow, m^3/d	14,500	25,000	30,000
Maximum Dry Weather Flow, m^3/d	37,300	64,000	77,000
Maximum Wet Weather Flow, m^3/d	72,100	90,000	108,000

3.5 MODEL INPUTS

The CORMIX model requires three sets of input parameters to describe: 1) ambient conditions or receiving water body characteristics; 2) effluent discharge characteristics; and 3) diffuser specifications. Receiving water body characteristics were selected based on available literature and results of 3D modeling presented in Baird (2010). Effluent discharge characteristics and proposed diffuser design were provided by the Denis St. Pierre WPCP.

3.5.1 Receiver characteristic

The required model input for the ambient conditions includes water density, current velocity, and average and outfall water depths. These characteristics affect the near-field transport and shape of the resulting plume of the effluent discharge.

Results of 3D modeling (Baird 2010) indicate that circulation of water in the study area is complex and can be in any direction depending on the wind.

Average current velocity measured at surface is 0.27 m/s and depth-average measured velocity is 0.04 m/s (Baird 2010). For the purpose of assimilative capacity analysis a measured depth - average velocity of 0.04 m/s was conservatively used in CORMIX.

The water column at the outfall was assumed non-stratified as depth is relatively shallow. Ambient water density used in the model was 999.8 kg/m^3, which was calculated based on TDS of 100 mg/L and water temperature of 10° C.

Bottom sediments in south part of Lake St. Clair is mostly silty sand with remaining 25-35% of mud (Hawley and Lesht, 1992). For modelling purposes, the Manning's "n", which represents bottom roughness applied to the flow by the channel and dependent on the bottom substrate, was assumed to be 0.03.

Winds can affect the circulation, mixing and plume movement in Lake St. Clair. The dominant wind direction in the region is from the west (35-50%) and from the south (15-20%). Based on the 1980-2016 hourly data from the Windsor Airport (Station ID 8200774) the mean wind speed is 4.3 m/s.

The first-order decay option can be used in CORMIX, it characterizes exponential removal of a contaminant due to sedimentation, bioaccumulation or element transformation. However, to provide conservative estimates of water quality in the mixing zone, the decay (or removal) coefficient was not applied in CORMIX for all parameters.

For presentation purposes the initial effluent concentration for an arbitrary parameter prior to discharge was arbitrary assumed 100 mg/L. Based on this concentration the dilution factors in the near field mixing zone were derived. Then, the dilution factors were applied to the studied water quality parameters to derive the proposed effluent limit.

3.5.2 Diffuser Configuration

Schematic representation of the diffuser and ports which were modelled using CORMIX are presented in **Figure 4**. The ports were assumed to extend 0.5 m above the lakebed (i.e., port height). Port spacing is about 3 m and port diameter is 0.25 m.

The number of ports on the diffuser and port diameter are important characteristics as they determine the flow rate from each port and ultimately the resulting plume dilution. Generally, more ports provide better dilution and mixing with the ambient environment. However, a very large number of ports may be expensive to build and maintain, and a larger number of ports may create an undesirable diffuser footprint in the receiving environment as well as not bringing any measurable benefits to the receiving water quality. A 16-port diffuser was used in CORMIX modeling.

The discharge angle theta is the vertical angle of the discharge port relative to the lake bed. An angle of 90° indicates an upward vertical discharge, an angle 0° indicates a horizontal discharge. The latter configuration was used in CORMIX.

Port spacing is an important consideration for multi-port diffuser modelling. Generally, the bigger spacing the better dilution and the smaller the mixing zone. A spacing of 3 m between the ports was used.

Table 3.5. summarizes the CORMIX model input data for outfall location.

Table 3.5 CORMIX Input Data

Characteristics	Value
Port Diameter, m	0.25
Number of Ports [1]	16
Port Spacing, m	3
Vertical Pipe Angle (theta)[2], degree	0
Alignment Angle (gamma)[3], degree	90
Port Height Above Lakebed, m	0.5
Wastewater Flow Rate, m^3/s	0.89
Water Depth at Outfall, m	2.39
Average Depth in Mixing Zone, m	2.39
Ambient Velocity, m/s	0.04
Manning's n	0.03
Ambient Water Density, kg/m^3	999.8
Effluent Density, kg/m^3	999.8
Average Wind Speed, m/s	4.3

Notes:
[1] Ports have alternating orientation. Nozzles have same direction on each side of diffuser
[2] Vertical Pipe Angle (Theta) – angle between port centerline and a horizontal plain
[3] Alignment Angle (Gamma) – angle measured counterclockwise from the ambient flow direction to the diffuser axis.

4.0 RESULTS AND DISCUSSIONS

The objective of near-field modelling is to undertake effluent dispersion analysis of the treated wastewater from the WPCP under conservative effluent and ambient conditions. The scale of the near-field modelling is on the order of several metres to a few hundred metres, which allows for a detailed prediction of the effluent plume discharging from the diffuser.

The near-field modelling was performed to determine the acceptability of expected maximum effluent water quality for a number of parameters. The acceptability was defined as compliance with applicable provincial water quality guidelines at the end of the mixing zone in the receiving environment.

4.1 EFFLUENT DILUTION RATIOS

The results of CORMIX modeling for three flow scenarios for the 16 ports diffuser are presented in **Table 4.1**. The maximum dry weather flow is the most conservative flow in terms of load from the plant, therefore, the following discussion is focused on results obtained with effluent flow of 0.89 m^3/s.

Table 4.1. Effluent Dilution Ratios for Various Flows

Scenario	Distance from Diffuser and Dilution Ratio					
	2 m	5 m	10 m	50 m	100 m	200 m
Ultimate Design: Average Daily Flow, 0.35 m^3/s	5.6	8.3	11.3	15.9	21.1	32.9
Ultimate Design: Maximum Dry Weather Flow, 0.89 m^3/s	2.6	3.5	4.5	6.3	8.3	12.9
Ultimate Design: Maximum Wet Weather Flow, 1.25 m^3/s	2.0	2.6	3.2	4.5	5.9	9.2

The plume from the 16 ports diffuser with an effluent flow of 0.89 m^3/s reaches the surface at about 12 m from the diffuser. The dilution ratio is 3.5 times at 5 m from the diffuser and 8.3 times at 100 m from the diffuser. **Figure 5** presents the plan and side view of the plume, as well as dilution isolines for the 16 ports diffuser.

Due to configuration of the ports and a 0.5 m port height, the plume interacts with the lakebed after about 8 m where the effluent concentration reduces substantially, and therefore not likely to result in potential adverse effects on the benthic environment.

4.2 WATER QUALITY MODELING RESULTS

Water quality parameters studied in the WPCP treated effluent are BOD, TSS, TP, total ammonia, E. coli and pH.

4.2.1 BOD

BOD refers to the amount of oxygen that would be consumed if all organic material in one liter of a sample were oxidized. BOD directly affects the amount of dissolved oxygen in the mixing zone. Because organic matter needs varying time spans to be oxidized, a standard procedure is to use a 5-day incubation at 20ºC which is referred to as BOD_5. There are no CCME or provincial guidelines for BOD. McNeeley et al. (1979) consider waters with BOD_5 less than 4 mg/L to be reasonably clean.

BOD concentration in the receiver is 2.0 mg/L. Proposed maximum BOD_5 concentration in the effluent is 14 mg/L. Conservatively assuming no decay, sedimentation or any other form of transformation of organic matter, the modeling result shows that BOD_5 concentration will reduce to 5.1 mg/L within 10 m from the diffuser and to less than 3.7 mg/L within 100 m. Therefore, effects of BOD on water environment and dissolved oxygen concentrations in the mixing zone is very small.

4.2.2 TSS

Total suspended solids (TSS) consist of silt, clay, fine particles of organic and inorganic matter, plankton, and other microscopic organisms. In near shore waters a substantial proportion of suspended particles come from the resuspension of fine, unconsolidated sediments and detritus by wave action and currents.

The PWQOs do not contain references to TSS criteria. A TSS monthly average of 14 mg/L is proposed at the point of discharge. This is expected to be achievable based on treatment technology of the plant.

4.2.3 Total Phosphorus

Total phosphorus (TP) is a measure of both inorganic and organic forms of phosphorus. Both forms are essential nutrients for plant growth, however high concentrations of total phosphorus may result in excessive algal growth followed by their settling and decay in sediments.

The PWQO for TP is 0.02 mg/L and it is intended to prevent the nuisance growth of algae in the lakes. TP is not toxic to aquatic life but excess concentrations can lead to undesirable changes in aquatic ecosystems (e.g., reduced biodiversity, reduced oxygen conditions, toxic algae blooms, impaired aesthetics and recreational opportunities).

Ambient concentrations of TP in Lake St. Clair vary between 0.005 mg/L to 0.314 mg/L, with an average of 0.25 mg/L. The 75th percentile of background TP concentration in Lake St. Clair is 0.03 mg/L (**Table 3.3**). Therefore, Lake St. Clair is a Policy 2 receiver for phosphorus. Water quality in Policy 2 receivers shall not be further degraded and all practical measures shall be undertaken to upgrade the water quality to the provincial objectives (MOE 1994a).

To meet the dilution requirements of 20:1 (MECP Procedure B-1-5, Section 4.4.2), a maximum effluent TP concentration shall be limited to be 0.6 mg/L so sufficient dilution is achieved to meet background TP level of 0.03 mg/L. This dilution ratio is achieved in the far-field zone, approximately 350 m from the outfall diffusers. This resulting mixing zone does not interfere with other water uses (e.g. water supply intakes and beaches). Effluent from the existing plant is discharged to an outfall with diffusers, which are located approximately 600 meters offshore in Lake St. Clair (Figure 2), and 2,250 m away from the Lakeshore WTP intake (Figure 3).

As per the Lake Erie Action Plan (February 2018) for phosphorus reduction, the total phosphorus in a treated effluent of a larger-sized sewage plant should be limited 0.5 mg/L. Although the Denis St. Pierre WPCP discharges the effluent to Lake St. Clair, the Lake Erie Action Plan shall be considered to maintain the plant effluent TP objective at 0.5 mg/L. A dilution ratio of 17 times is required to reduce the effluent concentration to background levels (0.03 mg/L). This dilution ratio is achieved in the far-field zone, approximately 300 m from the diffuser.

4.2.4 Ammonia

Total ammonia is the sum of un-ionized ammonia (NH_3) and ionized ammonia (NH_4). Typically, an equilibrium exists between NH_3 and NH_4, which is governed mostly by pH and water temperature. In assimilative capacity studies, un-ionized ammonia is of primary interest as it can be toxic in small concentrations. Raising the pH by one unit can cause the un-ionized ammonia concentration to increase nearly ten-fold, while a 5ºC temperature increase can cause an increase in un-ionized ammonia of 40-50% (Environment Canada 1999). Other factors which could indirectly affect un-ionized ammonia include water hydraulics (velocities, cross-sections), meteorological conditions and alkalinity.

In summer, the 75th percentile of water temperature in the lake is 23.6ºC and pH is 8.37. In wintertime, water temperature in the lake is 5.8 ºC and pH is 8.37. The ambient 75th percentile concentration of total ammonia is 0.067 mg/L (**Table 3.3**).

Unionized ammonia in the receiver was calculated based on modelled dilution ratios (**Table 4.1**) and baseline water quality.

In summertime, unionized ammonia will drop from 0.15 mg/L in the effluent, to 0.065 mg/L at 2 m from the diffuser and to the PWQO limit within 100 m from the diffuser.

In wintertime, unionized ammonia will drop from 0.082 mg/L in the effluent, to 0.033 mg/L at 2 m from the diffuser and to the PWQO limit within 10 m from the diffuser.

As previously discussed, it is very conservative estimation as it uses maximum effluent flow, maximum ammonia concentration, worst case ambient conditions and ignores nitrification, and other in-lake processes (e.g. bioaccumulation, sedimentation, decay).

4.2.5 E.Coli

E.coli refers to a large group of bacteria that are commonly found in the intestines of mammals. Proposed effluent concentration for E.coli is 200 counts /100 ml which is an achievable target for the sanitary treatment plant. Background concentration of E.coli in Lake St. Clair is non-detect in most cases.

The PWQO limit for E.coli is 100 counts/100 mL. A dilution ratio of 2 times is required to reduce the effluent concentration to the PWQO limit. The results from CORMIX show that the PWQO limit for E.coli is achieved within the immediate vicinity (<2 m) of the treated effluent discharge location.

4.2.6 pH

The PWQO range for pH to protect aquatic life should be maintained from 6.5 to 8.5. Background pH concentrations in the lake vary from 7.22 to 8.86 with the average value of 8.13.

The effluent criteria for pH was selected as the PWQO range.

4.3 PROPOSED EFFLUENT LIMITS

Based on the modelling results and discussion in Sections 4.1 to 4.2, the proposed plant effluent criteria were developed (**Table 4.2**). The proposed effluent criteria are intended to meet the PWQO concentrations or background conditions within either the immediate vicinity of the diffuser or within a reasonable mixing zone. They are believed to be achievable for the proposed plant expansion.

Table 4.2. Proposed Effluent Limits

Parameter	Monthly Average Concentration	
	Effluent Limits	Effluent Objectives
$cBOD_5$	14 mg/L	10 mg/L
TSS	14 mg/L	10 mg/L
Total Phosphorus	0.6 mg/L	0.5 mg/L
Total Ammonia (Nitrogen)		
Summer (May 1 to Nov 31)	1.4 mg/L	1.0 mg/L
Winter (Dec 1 to April 30)	2.8 mg/L	2.0 mg/L
E. coli (monthly geometric mean)	200 organisms/100 mL	150 organisms/100 mL
pH (grab sample)	6.5 - 8.5 inclusive	6.5 - 8.5 inclusive

5.0 CONCLUSION

Effluent dispersion analysis of the treated wastewater under conservative ambient conditions was undertaken using a 3D near-field hydrodynamic model.

Effluent dilution ratios for the 16-port diffuser and three different effluent flow scenarios are presented in **Table 4.1. Figures 5** presents the plan and side view of the discharged plume, as well as dilution isolines for the maximum dry weather flow of 0.89 m^3/s.

The plume from the diffuser reaches the surface water at about 12 m from the diffuser. The dilution ratio is 3.5 times at 5 m from the diffuser and 8.3 times at 100 m from the diffuser. Due to configuration of the ports, the plume interacts with the lakebed after about 8 m where the effluent concentration reduces substantially, and therefore not likely to result in potential adverse effects on the benthic environment.

The proposed maximum effluent limits are presented in **Table 4.2.** They are derived based on the conservative modelling conditions (e.g., low lake levels, low velocities in the receiver, high effluent rate, and ignoring decay, sedimentation and bioaccumulation).

6.0 REFERENCES

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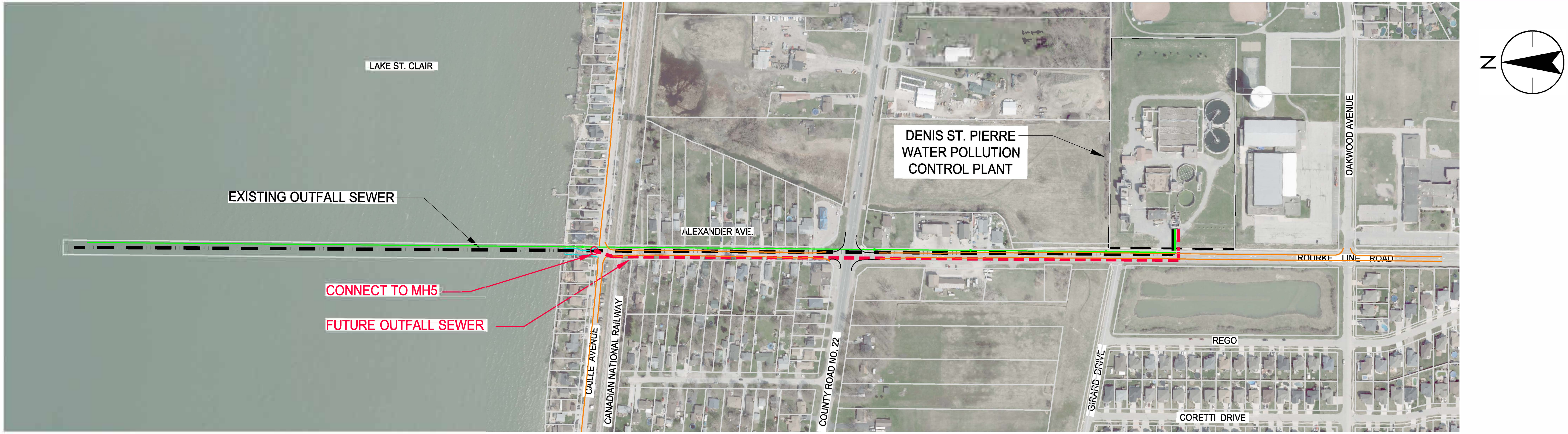
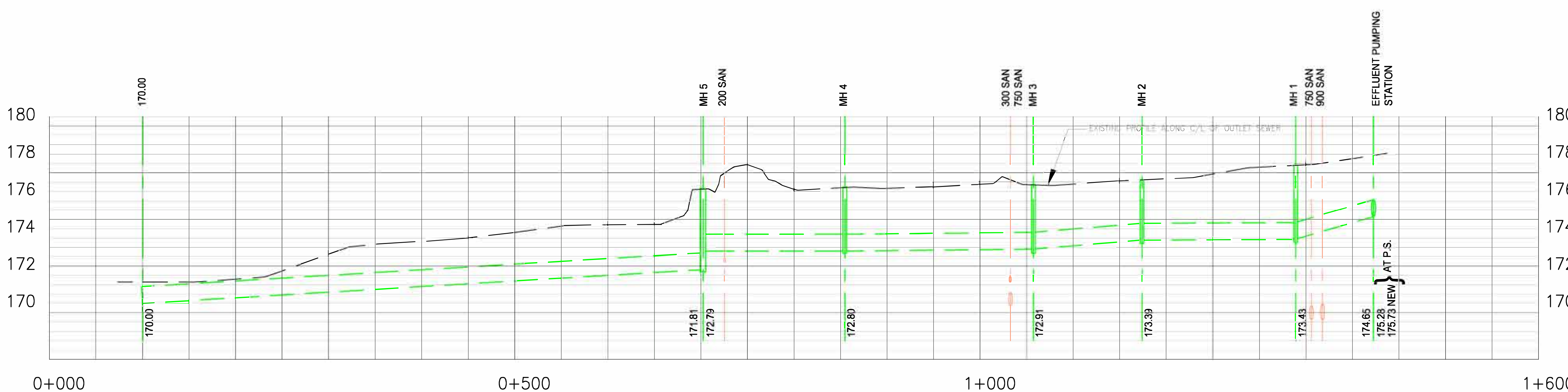
Figure 1. Lakeshore Water Pollution Control Plan





NOTES:

1. NEW OUTFALL SEWER CONNECTED TO EXISTING OUTFALL AT MH No.5.
2. MODIFY OUTFALL DIFFUSER TO SUIT FUTURE FLOWS.

Lakeshore

Stantec

TOWN OF LAKESHORE
DENIS ST. PIERRE WPCP EXPANSION
CLASS ENVIRONMENTAL ASSESSMENT

OUTFALL LOCATION

PROJECT NO. 165620173

DATE 2019.8.21

1:5000 0 50 150 250m

DRAWING NO. 2

W:\active\165620173\planning\ESR Report\Drawings\20173_FIGURE_4.6.dwg
2019-9-10 11:50am BY: jholmes

Lakeshore (Belle River) Water Treatment Plant Vulnerablity Scoring for IPZ1, 2 and 3

DRINKING WATER SOURCE PROTECTION
ACT FOR CLEAN WATER

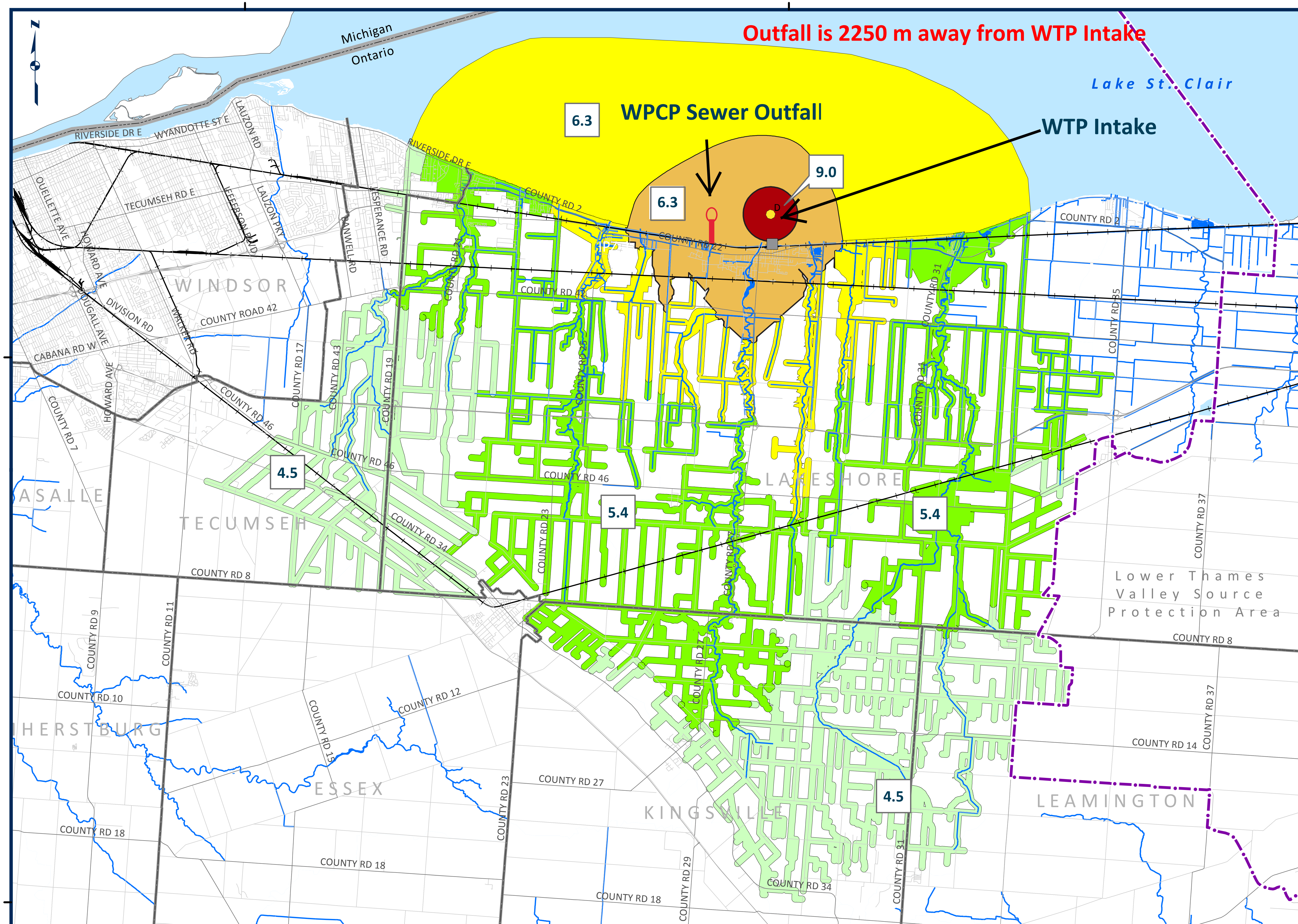
Essex Region Conservation Authority

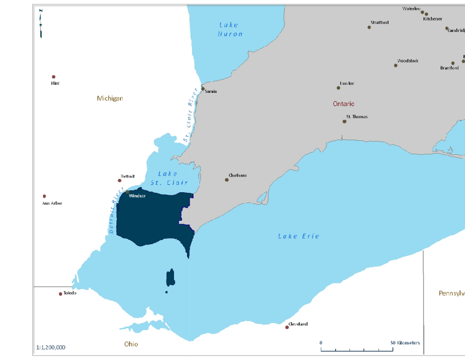
1:140,000

0 5 Kilometers

Made possible by the Government of Ontario

Ontario





Essex Region Source Protection Area Assessment Report Map 4.19b

Legend

- Intake - Type D
- Drinking Water System
- Source Protection Area Boundary
- Municipal, Lower Tier
- International Boundary
- Road
- Railway
- Water and Drainage

Intake Protection Zones

- IPZ-1, 9.0
- IPZ-2, 6.3
- IPZ-3a, 6.3
- IPZ-3b, 5.4
- IPZ-3c, 4.5

This publication was produced by:

Essex Region Conservation Authority
360 Fairview Avenue West
Essex, ON N8M 1Y6

Sources: ERCA, County of Essex, City of Windsor, MNR, MOE, Stantec Consultants, StatsCanada

Map Produced in Co-Operation with the Province of Ontario and Conservation Ontario

This map should not be relied on as a precise indicator of routes or locations, nor as a guide to navigation. The Essex Region Conservation Authority (ERCA) shall not be liable in any way for the use of, or reliance upon, this map or any information contained herein.

Map Projection & Datum: UTM NAD83 Zone 17N

Figure 4. Schematic Representation of Diffuser and Ports

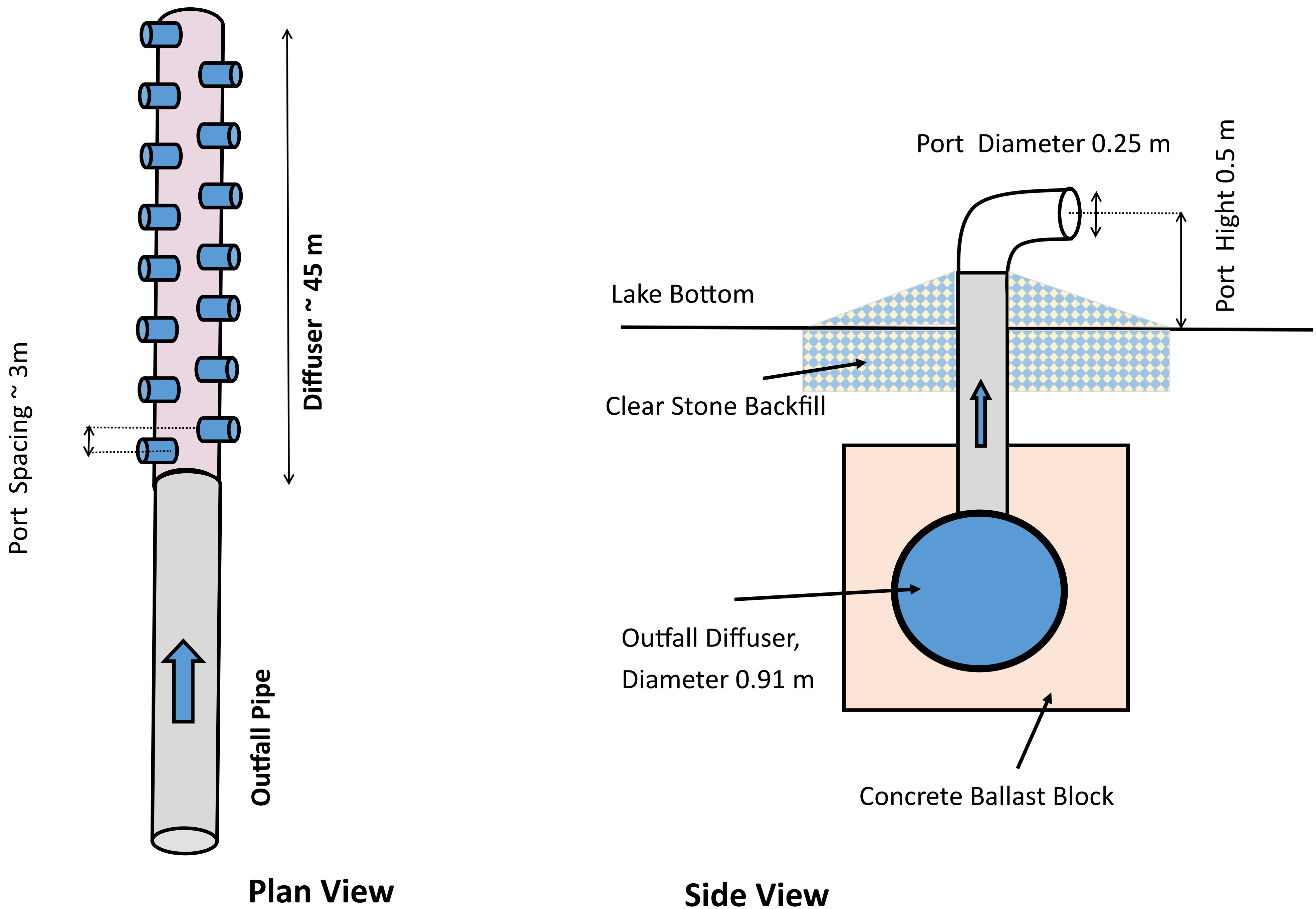
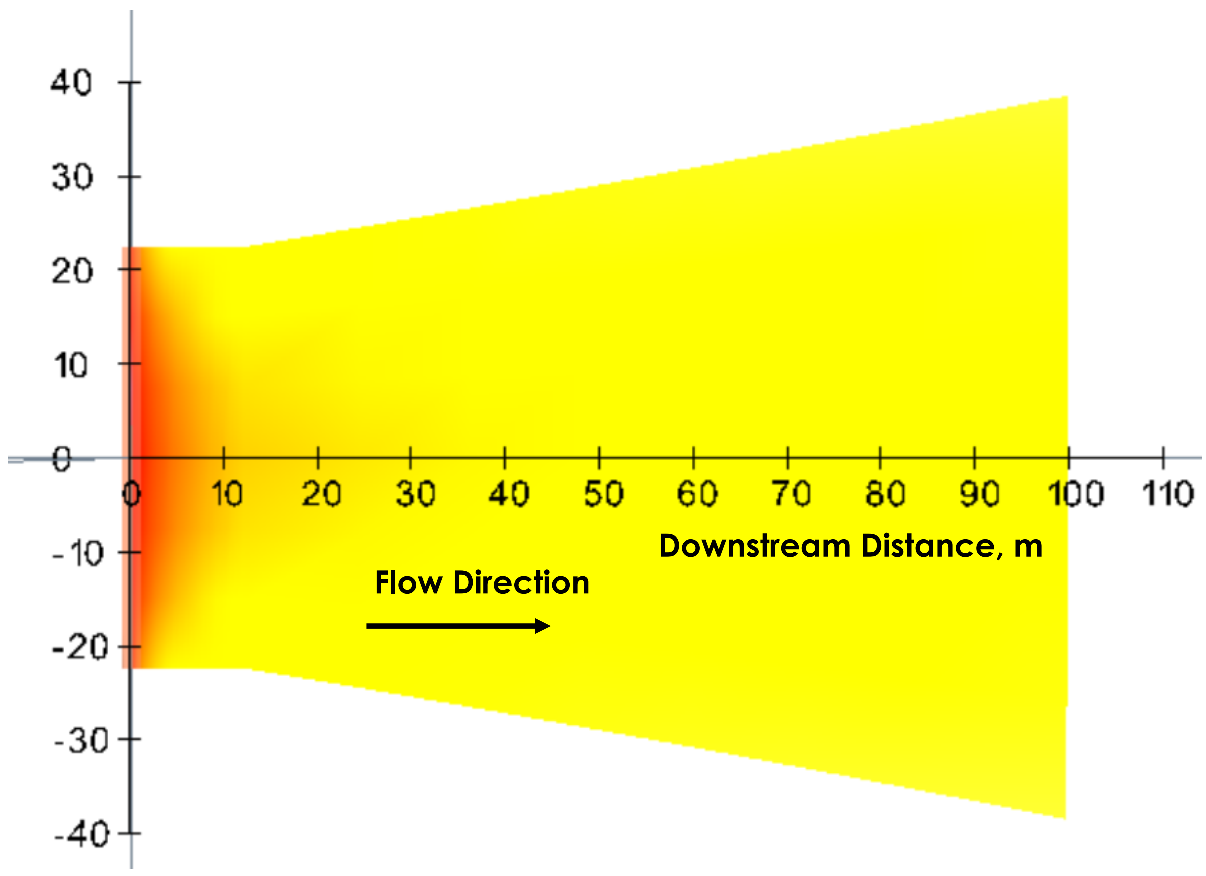
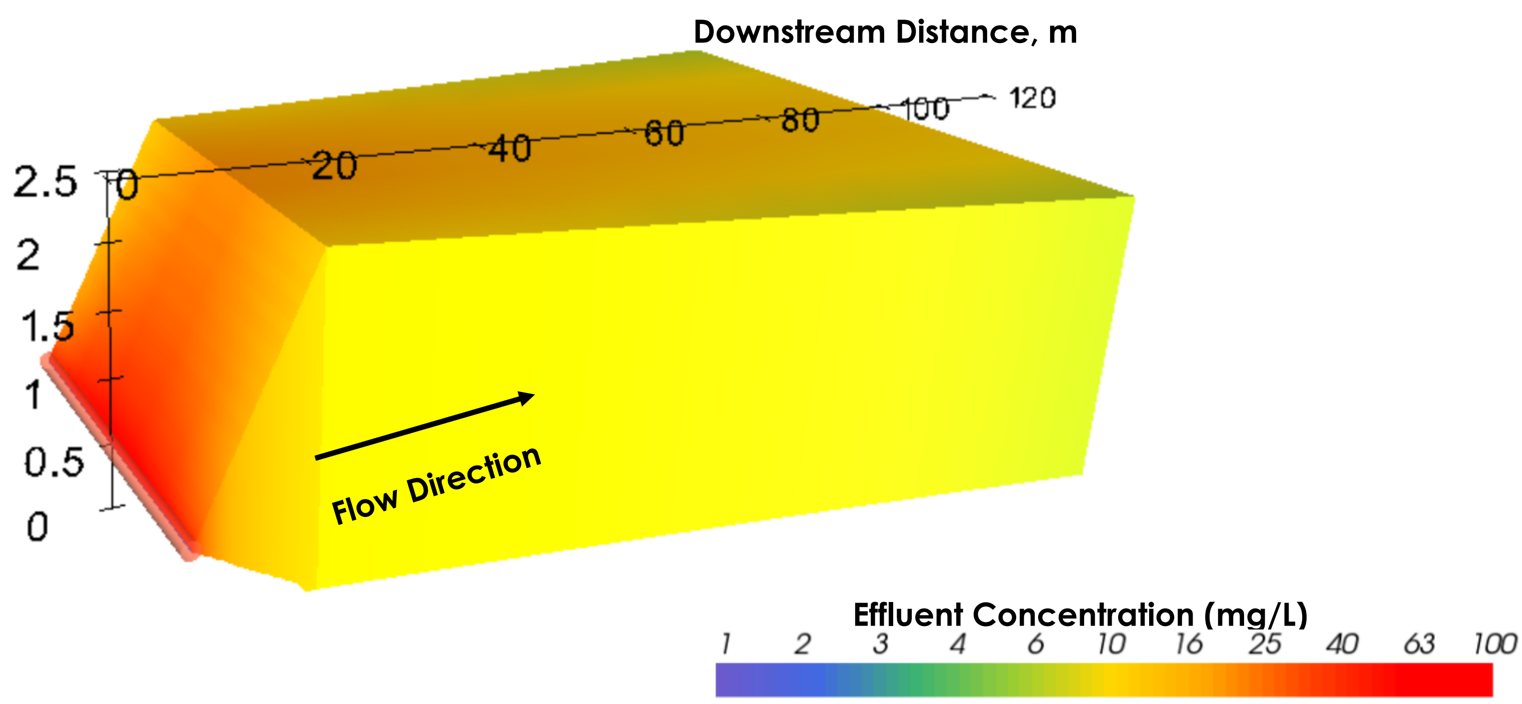


Figure 5. CORMIX RESULTS. Effluent Flow 0.89 m³/s

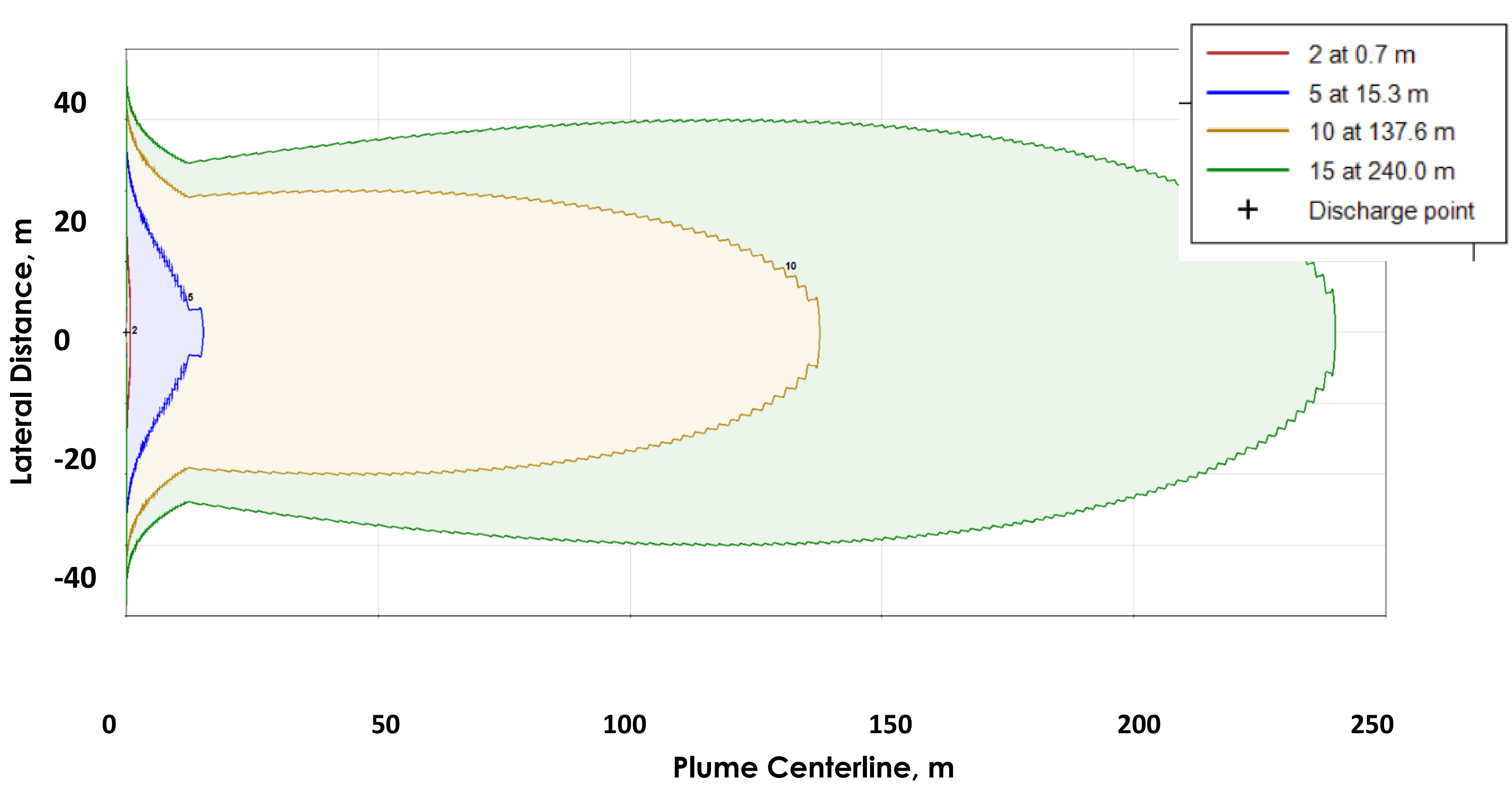
Plan View



Side View



Dilution Isolines



Appendix A ENVIRONMENTAL COMPLIANCE APPROVAL

Content Copy Of Original

Ministry of the Environment, Conservation and Parks
Ministère de l'Environnement, de la Protection de la nature et des Parcs

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL
NUMBER 1087-B7FLRU
Issue Date: January 29, 2019

The Corporation of the Town of Lakeshore
419 Notre Dame St
Belle River, Ontario
N0R 1A0

Site Location: The Denis St. Pierre Water Pollution Control Plant
276 Rourke Line Rd Belle River
Town of Lakeshore, Ontario

You have applied under section 20.2 of Part II.1 of the Environmental Protection Act , R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:

re-rating, usage and operation of existing municipal sewage works, for the treatment of sanitary sewage and disposal of effluent to Lake St. Clair River via a Sewage Treatment Plant (the Denis St. Pierre Wastewater Treatment Plant) and Final Effluent disposal facilities as follows:

Classification of Collection System: Separate Sewer System

Classification of Sewage Treatment Plant: Secondary

Design Capacity of Sewage Treatment Plant

Design Capacity with All Treatment Trains in Operation	Prior to Completion of Re-Rating	Upon Completion of Re-Rating
Rated Capacity	13,640 m3/d	14,500 m3/d

Influent, Imported Sewage and Processed Organic Waste

Receiving Location	Types
In Collection System	Sanitary Sewage
At Sewage Treatment Plant	Holding Tank, Processed Organic Waste

Existing Works:

Sanitary Sewage Pumping Stations

Denis St. Pierre Sewage Pumping Station

- a two-stage screw pump station with two (2) screw pumps per stage each pump having a rated capacity of 23,560 m^3/d, discharging via an elevated channel to the existing screening and grit removal facility;

Denis St. Pierre

Influent Sewers

- inlet sewers from the Maidstone sewage collection system discharging to Pumping Station No. 8 (on-site);
-
- elevated channel redirecting discharge from the existing Pumping Station No. 8 to the elevated inlet chamber of the screening and grit removal facility;
-
- two (2) 300 mm diameter forcemains from Belle River Pumping Station No. 2 to discharging to the elevated inlet chamber of the new screening and grit removal facility;

Emergency Storage Facilities - Wet Weather Overflow

- one (1) 900 m^3 capacity wastewater holding tank for wet weather overflows to be returned later to the inlet of the plant for treatment;
-
- one (1) additional 900 m^3 capacity wastewater holding tank converted from the existing sludge thickening tank for wet weather overflows to be returned later to the inlet of the plant for treatment;

Preliminary Treatment System

- Screening
  - one (1) screening channel equipped with a mechanically cleaned 6 mm fine screen with a peak flow rate of 67,855 m^3/d, complete with screw wash press
  -
  - one (1) screening channel equipped with a manually cleaned 12 mm spacing bar screen for emergency and maintenance bypass;
- Grit Removal
  - one (1) vortex type grit removal tank with a hydraulic peak flow rate of 67,855 m^3/d, complete with grit pump, grit blower, cyclone and classifier;
  -

Influent Flow Measurement and Sampling Point

- influent Parshall flume;
- automatic composite sampler in the headworks building;

Primary Treatment System

Primary Effluent Distribution

- a primary effluent distribution chamber with three compartments, one common receiving compartment for the screened and degritted effluent and two discharge compartments, one with piping to the aeration selector tank and one with only the drop portion of the piping and capped for future extension;
-

Secondary Treatment Systems

- **Aeration Selector Tank**

- an aeration selector tank with an inlet chamber and three aeration selection zones and an outlet chamber to distribute effluent to the three extended aeration tanks;
-
- one (1) mixer in the inlet chamber
-
- three (3) mixers and fine bubble diffusion systems in the aeration zones for operation in anoxic or aerated mode;
-

- Biological Treatment

- three (3) 15.0 m x 45.1 m x 4.23 m SWD extended aeration tanks converted from the existing sequencing batch reactors and upgraded with a longitudinal baffle wall to provide a plug flow pattern and retrofitted with fine bubble diffusion system;

- one (1) air blower for the aeration selector tank with a capacity of 232 L/s;

- four (4) air blowers for the extended aeration tanks (one standby), each with a capacity of 1,000 L/s;
-
- two (2) air blowers to supply the stage-one aerobic digester (one standby), each with a capacity of 645 L/s;
-
- six (6) existing air blowers to supply the stage-two aerobic digesters (two standby), four (4) with a capacity of 425 L/s each and two (2) with a capacity of 350 L/s each

- Secondary Sedimentation
  - two (2) 30.3 m diameter x 4.0 m SWD secondary clarifiers each equipped with sludge and scum collection mechanism;
  -
  - three (3) return activated sludge pumps (one standby), each with a capacity of 13,640 m^3/d and equipped with VFD;
  -
  - two (2) waste activated sludge pumps (one standby), each with a capacity of 1,728 m^3/d;
  -
  - two (2) scum pumps (one installed and one shelf spare), each with a capacity of 5.0 L/s;

Supplementary Treatment Systems

- Phosphorus Removal
  - one (1) 46,000 L capacity chemical storage tank and two (2) chemical metering pumps (one standby) each having a capacity range of 20 - 108 L/h;

Disinfection System

- a UV disinfection system with a peak flow rate of 35,070 m^3/d comprising one (1) contact channel equipped with two (2) banks of UV lamps;
-

Final Effluent Flow Measurement and Sampling Point

- effluent Parshall flume following UV;
- automatic composite sampler at outlet of in UV disinfection channel;

Sludge Management System

- Sludge Thickening
  - one (1) sludge holding/thickening tank, equipped with coarse bubble diffuser system and two (2) sludge transfer pumps (one standby) for the centrifuges;

- Sludge Digestion

  Primary Digesters

  - a two-stage aerobic sludge digestion system comprising one (1) 935 m^3 stage-one digester and one (1) 810 m^3 stage-two digester, both equipped with coarse bubble diffuser system, sludge transfer pump, telescopic supernatant withdrawal valve;
  -
  - one (1) 2,620 m^3 stage-one aerobic digester with additional jet aeration header;

- Digested Sludge Dewatering
  - two (2) centrifuges each with a solids loading rate of 140 kg/h and a hydraulic loading rate of 2.8 L/s;
  -
  - a polymer system for dry/emulsion polymer, a 2,500 L mixing tank and metering pump with a capacity range of 0.08 - 0.58 L/s;

Final Effluent Disposal Facilities

- an effluent pumping station equipped with three (3) submersible pumps (one standby), each with a capacity of 35,070 m^3/d to discharge the effluent by pumping when necessary;

- approximately 1,350 m of 900 mm diameter outfall sewer with diffuser section discharging to Lake St. Clair;
-

including all other mechanical system, electrical system, instrumentation and control system, standby power system, piping, pumps, valves and appurtenances essential for the proper, safe and reliable operation of the Works in accordance with this Approval, in the context of process performance and general principles of wastewater engineering only;

all in accordance with the submitted supporting documents listed in Schedule A.

For the purpose of this environmental compliance approval, the following definitions apply:

1. "Annual Average Effluent Concentration" is the mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar year, calculated and reported as per the methodology specified in Schedule F;

2. "Annual Average Daily Effluent Flow" means the cumulative total Final Effluent discharged during a calendar year divided by the number of days during which Final Effluent was discharged that year;

3. "Approval" means this environmental compliance approval and any schedules attached to it, and the application;

4. "BOD5" (also known as TBOD5) means five day biochemical oxygen demand measured in an unfiltered sample and includes carbonaceous and nitrogenous oxygen demands;

5. "Bypass" means diversion of sewage around one or more treatment processes, excluding Preliminary Treatment System, within the Sewage Treatment Plant with the diverted sewage flows being returned to the Sewage Treatment Plant treatment train upstream of the Final Effluent sampling point(s) and discharged via the approved effluent disposal facilities;

6. "CBOD5" means five day carbonaceous (nitrification inhibited) biochemical oxygen demand measured in an unfiltered sample;

7. "Director" means a person appointed by the Minister pursuant to section 5 of the EPA for the purposes of Part II.1 of the EPA;

8. "District Manager" means the District Manager of the appropriate local district office of the Ministry where the Works is geographically located;

9. "*E. coli*" refers to the thermally tolerant forms of Escherichia that can survive at 44.5 degrees Celsius;

10. "EPA" means the *Environmental Protection Act*, R.S.O. 1990, c.E.19, as amended;

11. "Equivalent Equipment" means alternate piece(s) of equipment that meets the design requirements and performance specifications of the piece(s) of equipment to be substituted;

12. "Event" means an action or occurrence, at a given location within the Works that causes a Bypass or Overflow. An Event ends when there is no recurrence of Bypass or Overflow in the 12-hour period following the last Bypass or Overflow. Overflows and Bypasses are separate Events even when they occur concurrently;

13. “Existing Works” means those portions of the Works included in the Approval that have been constructed previously;

14. "Final Effluent" means effluent that is discharged to the environment through the approved effluent disposal facilities, including all Bypasses, that are required to meet the compliance limits stipulated in the Approval for the Sewage Treatment Plant at the Final Effluent sampling point(s);

15. "Imported Sewage" means sewage hauled to the Sewage Treatment Plant by licensed waste management system operators of the types and quantities approved for co-treatment in the Sewage Treatment Plant, including hauled sewage and leachate within the meaning of R.R.O. 1990, Regulation 347: General – Waste Management, as amended;

16. "Influent" means flows to the Sewage Treatment Plant from the collection system;

17. "Limited Operational Flexibility” (LOF) means the conditions that the Owner shall follow in order to undertake any modification that is pre-authorized as part of this Approval;

18. "Ministry" means the ministry of the government of Ontario responsible for the EPA and OWRA and includes all officials, employees or other persons acting on its behalf;

19. "Monthly Average Effluent Concentration" is the mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar month, calculated and reported as per the methodology specified in Schedule F; (use only if monthly averaging period is used in the effluent concentration requirement for a contaminant)

20. "Monthly Geometric Mean Density" is the mean of all Single Sample Results of *E.coli* measurement in the samples taken during a calendar month, calculated and

reported as per the methodology specified in Schedule F;

21. “Normal Operating Condition” means the condition when all unit process(es), excluding Preliminary Treatment System, in a treatment train is operating within its design capacity;

22. “Operating Agency” means the Owner or the entity that is authorized by the Owner for the management, operation, maintenance, or alteration of the Works in accordance with this Approval;

23. "Overflow" means a discharge to the environment from the Works at designed location(s) other than the approved effluent disposal facilities or via the effluent disposal facilities downstream of the Final Effluent sampling point;

24. "Owner" means the Corporation of the Town of Lakeshore and its successors and assignees;

25. "OWRA" means the *Ontario Water Resources Act*, R.S.O. 1990, c. O.40, as amended;

26. "Peak Daily Flow Rate" (also referred to as maximum daily flow or maximum day flow) means the largest volume of flow to be received during a one-day period for which the sewage treatment process unit or equipment is designed to handle;

27. “Preliminary Treatment System” means all facilities in the Sewage Treatment Plant associated with screening and grit removal;

28. “Primary Treatment System” means all facilities in the Sewage Treatment Plant associated with the primary sedimentation unit process and includes chemically enhanced primary treatment;

29. "Processed Organic Waste" means organic waste within the meaning of R.R.O. 1990, Regulation 347:General - Waste Management, as amended, that is hauled to the Sewage Treatment Plant of the types and quantities approved for co-processing in the sludge management system;

30. "Professional Engineer” means a person entitled to practice as a Professional Engineer in the Province of Ontario under a licence issued under the Professional Engineers Act;

31. "Rated Capacity" means the Annual Average Daily Influent Flow for which the Sewage Treatment Plant is designed to handle;

32. "Sanitary Sewers" means pipes that collect and convey wastewater from residential, commercial, institutional and industrial buildings, and some infiltration and inflow from extraneous sources such as groundwater and surface runoff through means other than stormwater catch basins;

33. “Separate Sewer Systems" means wastewater collection systems that comprised of Sanitary Sewers while runoff from precipitation and snowmelt are separately collected in Storm Sewers;

34. “Sewage Treatment Plant" means all the facilities related to sewage treatment within the sewage treatment plant site excluding the Final Effluent disposal facilities;

35. “Single Sample Result" means the test result of a parameter in the effluent discharged on any day, as measured by a probe, analyzer or in a composite or grab sample, as required;

36. "Storm Sewers" means pipes that collect and convey runoff resulting from precipitation and snowmelt (including infiltration and inflow);

37. "Works" means the approved sewage works, and includes Existing Works and modifications made under Limited Operational Flexibility.

You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. **GENERAL PROVISIONS**

2. The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Works is notified of this Approval and the terms and conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

3. The Owner shall design, construct, operate and maintain the Works in accordance with the conditions of this Approval.

4. Where there is a conflict between a provision of any document referred to in this Approval and the conditions of this Approval, the conditions in this Approval shall take precedence.

5. **CHANGE OF OWNER AND OPERATING AGENCY**

6. The Owner shall, within thirty (30) calendar days of issuance of this Approval, prepare/update and submit to the District Manager the Municipal and Local Services Board Wastewater System Profile Information Form, as amended (Schedule G) under any of the following situations:

a. the form has not been previously submitted for the Works;
b. this Approval is issued for extension, re-rating or process treatment upgrade of the Works;
c. when a notification is provided to the District Manager in compliance with requirements of change of Owner or Operating Agency under this condition.

7. The Owner shall notify the District Manager and the Director, in writing, of any of the following changes within thirty (30) days of the change occurring:

a. change of address of Owner;
b. change of Owner, including address of new owner;
c. change of partners where the Owner is or at any time becomes a partnership, and a copy of the most recent declaration filed under the *Business Names Act, R.S.O. 1990, c. B.17*, as amended, shall be included in the notification;
d. change of name of the corporation where the Owner is or at any time becomes a corporation, and a copy of the most current information filed under the *Corporations Information Act, R.S.O. 1990, c. C.39*, as amended, shall be included in the notification.

8. The Owner shall notify the District Manager, in writing, of any of the following changes within thirty (30) days of the change occurring:

a. change of address of Operating Agency;
b. change of Operating Agency, including address of new Operating Agency.

9. In the event of any change in ownership of the Works, the Owner shall notify the succeeding owner in writing, of the existence of this Approval, and forward a copy of the notice to the District Manager.

10. The Owner shall ensure that all communications made pursuant to this condition refer to the environmental compliance approval number.

11. **RECORD DRAWINGS**

12. A set of record drawings of the Works shall be kept up to date through revisions undertaken from time to time and a copy shall be readily accessible for reference at the

Works.

13. **BYPASSES**

14. Any Bypass is prohibited, except:

a. an emergency Bypass when a structural, mechanical or electrical failure causes a temporary reduction in the capacity of a treatment process or when an unforeseen flow condition exceeds the design capacity of a treatment process that is likely to result in personal injury, loss of life, health hazard, basement flooding, severe property damage, equipment damage or treatment process upset, if a portion of the flow is not bypassed;

b. a planned Bypass that is a direct and unavoidable result of a planned repair and maintenance procedure or other circumstance(s), the Owner having notified the District Manager in writing at least fifteen (15) days prior to the occurrence of Bypass, including an estimated quantity and duration of the Bypass, an assessment of the impact on the quality of the Final Effluent and the mitigation measures if necessary, and the District Manager has given written consent of the Bypass;

15. Notwithstanding the exceptions given in Paragraph 1, the Operating Agency shall undertake everything practicable to maximize the flow through the downstream treatment process(es) prior to bypassing.

16. At the beginning of a Bypass Event, the Owner shall immediately notify the Spills Action Centre (SAC) and the local Medical Officer of Health. This notice shall include, at a minimum, the following information:

a. the type of the Bypass as indicated in Paragraph 1 and the reason(s) for the Bypass;

b. the date and time of the beginning of the Bypass;

c. the treatment process(es) gone through prior to the Bypass and the treatment process(es) bypassed;

d. the effort(s) done to maximize the flow through the downstream treatment process(es) and the reason(s) why the Bypass was not avoided.

17. Upon confirmation of the end of a Bypass Event, the Owner shall immediately notify the Spills Action Centre (SAC) and the local Medical Officer of Health. This notice shall include, at a minimum, the following information:

a. the date and time of the end of the Bypass;

b. the estimated or measured volume of Bypass.

18. For any Bypass Event, the Owner shall collect daily sample(s) of the Final Effluent, inclusive of the Event and analyze for all effluent parameters outlined in Compliance Limits condition, except for *E. coli* , toxicity to Rainbow Trout and Daphnia magna, total residual chlorine / bisulphite residual, dissolved oxygen, pH, temperature and unionized ammonia, following the same protocol specified in the Monitoring and Recording condition as for the regular samples. The sample(s) shall be in addition to the regular Final Effluent samples required under the monitoring and recording condition, except when the Event occurs on a scheduled monitoring day.

19. The Owner shall submit a summary report of the Bypass Event(s) to the District Manager on a quarterly basis, no later than each of the following dates for each calendar year: February 15, May 15, August 15, and November 15. The summary reports shall contain, at a minimum, the types of information set out in Paragraphs (3), (4) and (5) and either a statement of compliance or a summary of the non-compliance notifications submitted as required under Paragraph 1 of Condition 11. If there is no Bypass Event during a quarter, a statement of no occurrence of Bypass is deemed sufficient.

20. The Owner shall develop a notification procedure in consultation with the District Manager and SAC and notify the public and downstream water users that may be adversely impacted by any Bypass Event.

21. **OVERFLOWS**

22. Any Overflow is prohibited, except:

a. an emergency Overflow in an emergency situation when a structural, mechanical or electrical failure causes a temporary reduction in the capacity of the Works or when an unforeseen flow condition exceeds the design capacity of the Works that is likely to result in personal injury, loss of life, health hazard, basement flooding, severe property damage, equipment damage or treatment process upset, if a portion of the flow is not overflowed;
b. a planned Overflow that is a direct and unavoidable result of a planned repair and maintenance procedure or other circumstance(s), the Owner having notified the District Manager in writing at least fifteen (15) days prior to the occurrence of Overflow, including an estimated quantity and duration of the Overflow, an assessment of the impact on the environment and the mitigation measures if necessary, and the District Manager has given written consent of the Overflow;

23. Notwithstanding the exceptions given in Paragraph 1, the Operating Agency shall undertake everything practicable to maximize the flow through the downstream

treatment process(es) and Bypass(es) prior to overflowing.

24. At the beginning of an Overflow Event, the Owner shall immediately notify the Spills Action Centre (SAC) and the local Medical Officer of Health. This notice shall include, at a minimum, the following information:

a. the type of the Overflow as indicated in Paragraph 1 and the reason(s) for the Overflow;
b. the date and time of the beginning of the Overflow;
c. the point of the Overflow from the Works, the treatment process(es) gone through prior to the Overflow, the disinfection status of the Overflow and whether the Overflow is discharged through the effluent disposal facilities or an alternate location;
d. the effort(s) done to maximize the flow through the downstream treatment process(es) and Bypass(es) and the reason(s) why the Overflow was not avoided.

25. Upon confirmation of the end of an Overflow Event, the Owner shall immediately notify the Spills Action Centre (SAC) and the local Medical Officer of Health. This notice shall include, at a minimum, the following information:

a. the date and time of the end of the Overflow;
b. the estimated or measured volume of the Overflow.

26. For any Overflow Event

a. in the Sewage Treatment Plant, the Owner shall collect grab sample(s) of the Overflow, one near the beginning of the Event and one every eight (8) hours for the duration of the Event, and have them analyzed at least for CBOD5, total suspended solids, total phosphorus, total ammonia nitrogen, total Kjeldahl nitrogen, E. coli.except that raw sewage and primary treated effluent Overflow shall be analyzed for BOD5, total suspended solids, total phosphorus and total Kjeldahl nitrogen only.
b. at a sewage pumping station in the collection system, the Owner shall collect at least one (1) grab sample representative of the Overflow Event and have it analyzed for BOD5, total suspended solids, total phosphorus and total Kjeldahl nitrogen.

27. The Owner shall submit a summary report of the Overflow Event(s) to the District Manager on a quarterly basis, no later than each of the following dates for each calendar year: February 15, May 15, August 15, and November 15. The summary report shall contain, at a minimum, the types of information set out in Paragraphs (3), (4) and (5). If there is no Overflow Event during a quarter, a statement of no occurrence of Overflow is deemed sufficient.

28. The Owner shall develop a notification procedure in consultation with the District Manager and SAC and notify the public and downstream water users that may be adversely impacted by any Overflow Event.

29. **DESIGN OBJECTIVES**

30. The Owner shall design and undertake everything practicable to operate the Sewage Treatment Plant in accordance with the following objectives:

a. Final Effluent parameters design objectives listed in the table(s) included in Schedule B.
b. Final Effluent is essentially free of floating and settleable solids and does not contain oil or any other substance in amounts sufficient to create a visible film or sheen or foam or discolouration on the receiving waters.
c. Annual Average Daily Influent Flow is within the Rated Capacity of the Sewage Treatment Plant.

31. **COMPLIANCE LIMITS**

1. The Owner shall operate and maintain the Sewage Treatment Plant such that compliance limits for the Final Effluent parameters listed in the table(s) included in Schedule C are met.

2. The Owner shall operate and maintain the Sewage Treatment Plant such that the Final Effluent is disinfected continuously year-round.

32.

OPERATION AND MAINTENANCE

1. The Owner shall ensure that, at all times, the Works and the related equipment and appurtenances used to achieve compliance with this Approval are properly operated and maintained. Proper operation and maintenance shall include effective performance, adequate funding, adequate staffing and training, including training in all procedures and other requirements of this Approval and the OWRA and regulations, adequate laboratory facilities, process controls and alarms and the use of process chemicals and other substances used in the Works.

2. The Owner shall update the operations manual for the Works within six (6) months of completion of the plant re-rating, that includes, but not necessarily limited to, the following information:

a. operating procedures for the Works under Normal Operating Conditions;

b. inspection programs, including frequency of inspection, for the Works and the methods or tests employed to detect when maintenance is necessary;

c. repair and maintenance programs, including the frequency of repair and maintenance for the Works;

d. procedures for the inspection and calibration of monitoring equipment;

e. operating procedures for the Works to handle situations outside Normal Operating Conditions and emergency situations such as a structural, mechanical or electrical failure, or an unforeseen flow condition, including procedures to minimize Bypasses and Overflows;

f. a spill prevention and contingency plan, consisting of procedures and contingency plans, including notification to the District Manager, to reduce the risk of spills of pollutants and prevent, eliminate or ameliorate any adverse effects that result or may result from spills of pollutants;

g. procedures for receiving, responding and recording public complaints, including recording any followup actions taken.

3. The Owner shall maintain the operations manual up-to-date and make the manual readily accessible for reference at the Works.

4. The Owner shall ensure that the Operating Agency fulfills the requirements under O. Reg. 129/04, as amended for the Works, including the classification of facilities, licensing of operators and operating standards.

33. **MONITORING AND RECORDING**

34. The Owner shall, upon commencement of operation of the Works, carry out a scheduled monitoring program of collecting samples at the required sampling points, at the frequency specified or higher, by means of the specified sample type and analyzed for each parameter listed in the tables under the monitoring program included in Schedule D and record all results, as follows:

a. all samples and measurements are to be taken at a time and in a location characteristic of the quality and quantity of the sewage stream over the time period being monitored.

b. a schedule of the day of the week/month for the scheduled sampling shall be created. The sampling schedule shall be revised and updated every year through rotation of the day of the week/month for the scheduled sampling program, except when the actual scheduled monitoring frequency is three (3) or more times per week.

c. definitions and preparation requirements for each sample type are included in document referenced in Paragraph 3.b.

d. definitions for frequency:
    i. Weekly means once every week; and
    ii. Monthly means once every month;

35. In addition to the scheduled monitoring program required in Paragraph 1, the Owner shall collect daily sample(s) of the Final Effluent, on any day when there is any situation outside Normal Operating Conditions, by means of the specified sample type and analyzed for each parameter listed in the tables under the monitoring program included in Schedule D, except for *E. coli* , toxicity to Rainbow Trout and Daphnia magna, total residual chlorine / bisulphite residual, dissolved oxygen, pH, temperature and unionized ammonia.

36. The methods and protocols for sampling, analysis and recording shall conform, in order of precedence, to the methods and protocols specified in the following documents and all analysis shall be conducted by a laboratory accredited to the ISO/IEC:17025 standard or as directed by the District Manager:

a. the Ministry's Procedure F-10-1, “Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works (Liquid Waste Streams Only), as amended;

b. the Ministry's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater Version 2.0" (January 2016), PIBS 2724e02, as amended;

c. the publication "Standard Methods for the Examination of Water and Wastewater", as amended.

37. The Owner shall monitor and record the flow rate and daily quantity using flow measuring devices or other methods of measurement as approved below calibrated to an accuracy within plus or minus 15 per cent (+/- 15%) of the actual flowrate of the following:

a. Influent flow to the Sewage Treatment Plant by continuous flow measuring devices and instrumentations/pumping rates/details of other methods (e.g. top water elevation of lagoons), or in lieu of an actual installation of equipment, adopt the flow measurements of the Final Effluent for the purpose of estimating Influent flows if the Influent and Final Effluent streams are considered not significantly different in flow rates and quantities;

b. Final Effluent discharged from the Sewage Treatment Plant by continuous flow measuring devices and instrumentations/pumping rates/details of other methods (e.g. level of lagoons), or in lieu of an actual installation of equipment, adopt the flow measurements of the Influent for the purpose of estimating Final Effluent flows if the Influent and Final Effluent streams are considered not significantly different in flow rates and quantities;

c. each type of Imported Sewage received from co-treatment at the Sewage Treatment Plant by flow measuring devices/pumping rates/haul manifests;
d. Processed Organic Waste received for co-processing at the Sewage Treatment Plant by flow measuring devices/pumping rates/haul truck manifests;

38. The Owner shall retain for a minimum of five (5) years from the date of their creation, all records and information related to or resulting from the monitoring activities required by this Approval.

39.

LIMITED OPERATIONAL FLEXIBILITY

1. The Owner may make pre-authorized modifications to the sewage pumping stations and Sewage Treatment Plant in Works in accordance with the document “Limited Operational Flexibility - Protocol for Pre-Authorized Modifications to Municipal Sewage Works” (Schedule E), as amended, subject to the following:

a. the modifications will not involve the addition of any new treatment process or the removal of an existing treatment process, including chemical systems, from the liquid or solids treatment trains as originally designed and approved.
b. the scope and technical aspects of the modifications are in line with those delineated in Schedule E and conform with the Ministry’s publication “Design Guidelines for Sewage Works 2008”, as amended, Ministry’s regulations, policies, guidelines, and industry engineering standards;
c. the modifications shall not negatively impact on the performance of any process or equipment in the Works or result in deterioration in the Final Effluent quality;
d. where the pre-authorized modification requires notification, a "Notice of Modifications to Sewage Works" (Schedule E), as amended shall be completed with declarations from a Professional Engineer and the Owner and retained on-site prior to the scheduled implementation date. All supporting information including technical memorandum, engineering plans and specifications, as applicable and appropriate to support the declarations that the modifications conform with LOF shall remain on-site for future inspection.

2. The following modifications are not pre-authorized under Limited Operational

Flexibility:

a. Modifications that involve addition or extension of process structures, tankages or channels;
b. Modifications that involve relocation of the Final Effluent outfall or any other discharge location or that may require reassessment of the impact to the receiver or environment;
c. Modifications that involve addition of or change in technology of a treatment process or that may involve reassessment of the treatment train process design;
d. Modifications that require changes to be made to the emergency response, spill prevention and contingency plan; or
e. Modifications that are required pursuant to an order issued by the Ministry.

40. **REPORTING**

1. The Owner shall report to the District Manager orally as soon as possible any non-compliance with the compliance limits, and in writing within seven (7) days of non-compliance.

2. The Owner shall, within fifteen (15) days of occurrence of a spill within the meaning of Part X of the EPA, submit a full written report of the occurrence to the District Manager describing the cause and discovery of the spill, clean-up and recovery measures taken, preventative measures to be taken and schedule of implementation, in addition to fulfilling the requirements under the EPA and O. Reg. 675/98 "Classification and Exemption of Spills and Reporting of Discharges".

3. The Owner shall, upon request, make all manuals, plans, records, data, procedures and supporting documentation available to Ministry staff.

4. The Owner shall prepare performance reports on a calendar year basis and submit to the District Manager by March 31 of the calendar year following the period being reported upon. The reports shall contain, but shall not be limited to, the following information pertaining to the reporting period:

a. a summary and interpretation of all Influent, Imported Sewage and Processed Organic Waste monitoring data, and a review of the historical trend of the sewage characteristics and flow rates;
b. a summary and interpretation of all Final Effluent monitoring data, including concentration, flow rates, loading and a comparison to the design objectives and compliance limits in this Approval, including an overview of the success and adequacy of the Works;

c. a summary of any deviation from the monitoring schedule and reasons for the current reporting year and a schedule for the next reporting year;

d. a summary of all operating issues encountered and corrective actions taken;

e. a summary of all normal and emergency repairs and maintenance activities carried out on any major structure, equipment, apparatus or mechanism forming part of the Works;

f. a summary of any effluent quality assurance or control measures undertaken;

g. a summary of the calibration and maintenance carried out on all Influent, Imported Sewage and Final Effluent monitoring equipment to ensure that the accuracy is within the tolerance of that equipment as required in this Approval or recommended by the manufacturer;

h. a summary of efforts made to achieve the design objectives in this Approval, including an assessment of the issues and recommendations for pro-active actions if any are required under the following situations:

    i. when any of the design objectives is not achieved more than 50% of the time in a year, or there is an increasing trend in deterioration of Final Effluent quality;

    ii. when the Annual Average Daily Influent Flow reaches 80% of the Rated Capacity;

i. a tabulation of the volume of sludge generated, an outline of anticipated volumes to be generated in the next reporting period and a summary of the locations to where the sludge was disposed;

j. a summary of any complaints received and any steps taken to address the complaints;

k. a summary of all Bypasses, Overflows, other situations outside Normal Operating Conditions and spills within the meaning of Part X of EPA and abnormal discharge events;

l. a summary of all Notice of Modifications to Sewage Works completed under Paragraph 1.d. of Condition 10, including a report on status of implementation of all modification.

m. a summary of efforts made to achieve conformance with Procedure F-5-1 including but not limited to projects undertaken and completed in the sanitary sewer system that result in overall Bypass/Overflow elimination including expenditures and proposed projects to eliminate Bypass/Overflows with estimated budget forecast for the year following that for which the report is submitted.

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The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 regarding general provisions is imposed to ensure that the Works are constructed and operated in the manner in which they were described and upon which approval was granted.

2. Condition 2 regarding change of Owner and Operating Agency is included to ensure that the Ministry records are kept accurate and current with respect to ownership and Operating Agency of the Works and to ensure that subsequent owners of the Works are made aware of the Approval and continue to operate the Works in compliance with it.

3. Condition 3 regarding record drawings is included to ensure that the Works are constructed in accordance with the Approval and that record drawings of the Works "as constructed" are updated and maintained for future references.

4. Condition 4 regarding Bypasses is included to indicate that Bypass is prohibited, except in circumstances where the failure to Bypass could result in greater damage to the environment than the Bypass itself. The notification and documentation requirements allow the Ministry to take action in an informed manner and will ensure the Owner is aware of the extent and frequency of Bypass Events.

5. Condition 5 regarding Overflows is included to indicate that Overflow of untreated or partially treated sewage to the receiver is prohibited, except in circumstances where the failure to Overflow could result in greater damage to the environment than the Overflow itself. The notification and documentation requirements allow the Ministry to take action in an informed manner and will ensure the Owner is aware of the extent and frequency of Overflow Events.

6. Condition 6 regarding design objectives is imposed to establish non-enforceable design objectives to be used as a mechanism to trigger corrective action proactively and voluntarily before environmental impairment occurs.

7. Condition 7 regarding compliance limits is imposed to ensure that the Final Effluent discharged from the Works to the environment meets the Ministry's effluent quality requirements.

8. Condition 8 regarding operation and maintenance is included to require that the Works be properly operated, maintained, funded, staffed and equipped such that the environment is protected and deterioration, loss, injury or damage to any person or property is prevented. As well, the inclusion of a comprehensive operations manual governing all significant areas of operation, maintenance and repair is prepared, implemented and kept up-to-date by the Owner. Such a manual is an integral part of

the operation of the Works. Its compilation and use should assist the Owner in staff training, in proper plant operation and in identifying and planning for contingencies during possible abnormal conditions. The manual will also act as a benchmark for Ministry staff when reviewing the Owner's operation of the Works.

9. Condition 9 regarding monitoring and recording is included to enable the Owner to evaluate and demonstrate the performance of the Works, on a continual basis, so that the Works are properly operated and maintained at a level which is consistent with the design objectives and compliance limits.

10. Condition 10 regarding Limited Operational Flexibility is included to ensure that the Works are constructed, maintained and operated in accordance with the Approval, and that any pre-approved modification will not negatively impact on the performance of the Works.

11. Condition 11 regarding reporting is included to provide a performance record for future references, to ensure that the Ministry is made aware of problems as they arise, and to provide a compliance record for this Approval.

Schedule A

1. Application for Environmental Compliance Approval submitted by Mr Mike Newbigging, P.Eng. of Jacobs received on September 4, 2018 for the proposed rerating of the Denis St Pierre WPCP, including design report, final plans and specifications.

Schedule B

Final Effluent Design Objectives

Concentration Objectives prior to rerating the Works

Final Effluent Parameter	Averaging Calculator	Objective (milligrams per litre unless otherwise indicated)
CBOD5	Monthly Average Effluent Concentration	10.0 mg/L
Total Suspended Solids	Monthly Average Effluent Concentration	10.0 mg/L
Total Phosphorus	Monthly Average Effluent Concentration	0.8 mg/L
Total Ammonia Nitrogen	Monthly Average Effluent Concentration	1.0 mg/L (May 1 to Nov 30) 2.0 mg/L (Dec 1 to April 30)
E. coli	Monthly Geometric Mean Density	*150 CFU/100 mL

pH	Single Sample Result	6.5 - 8.5 inclusive

*If the MPN method is utilized for *E.coli* analysis the objective shall be 150 MPN/100 mL

Concentration Objectives after rerating the Works

Final Effluent Parameter	Averaging Calculator	Objective
CBOD5	Monthly Average Effluent Concentration	10.0 mg/L
Total Suspended Solids	Monthly Average Effluent Concentration	10.0 mg/L
Total Phosphorus	Monthly Average Effluent Concentration	0.5 mg/L
Total Ammonia Nitrogen	Monthly Average Effluent Concentration	1.0 mg/L (May 1 to Nov 30) 2.0 mg/L (Dec 1 to April 30)
E. coli	Monthly Geometric Mean Density	*150 CFU/100 mL
pH	Single Sample Result	6.5 - 8.5 inclusive

*If the MPN method is utilized for *E.coli* analysis the objective shall be 150 MPN/100 mL

Schedule C

Final Effluent Compliance Limits

Concentration Limits prior to rerating the Works

Final Effluent Parameter	Averaging Calculator	Limit (maximum unless otherwise indicated)
CBOD5	Monthly Average Effluent Concentration	15.0 mg/L
Total Suspended Solids	Monthly Average Effluent Concentration	15.0 mg/L
Total Phosphorus	Monthly Average Effluent Concentration	1.0 mg/L
Total Ammonia Nitrogen	Monthly Average Effluent Concentration	1.5 mg/L (May 1 - Nov 30) 3.0 mg/L (Dec 1 - April 30)
E. coli	Monthly Geometric Mean Density	*200 CFU/100 mL

*If the MPN method is utilized for *E.coli* analysis the limit shall be 200 MPN/100 mL

Concentration Limits after rerating the Works

Final Effluent Parameter	Averaging Calculator	Limit (maximum unless otherwise indicated)

CBOD5	Monthly Average Effluent Concentration	14.0 mg/L
Total Suspended Solids	Monthly Average Effluent Concentration	14.0 mg/L
Total Phosphorus	Monthly Average Effluent Concentration	0.8 mg/L
Total Ammonia Nitrogen	Monthly Average Effluent Concentration	1.4 mg/L (May 1- Nov 30) 2.8 mg/L (Dec 1 - April 30)
E. coli	Monthly Geometric Mean Density	*200 CFU/100 mL
pH	Single Sample Result	between 6.0 - 9.5 inclusive

*If the MPN method is utilized for *E.coli* analysis the limit shall be 200 MPN/100 mL

Loading Limits prior to rerating the Works

Final Effluent Parameter	Averaging Calculator	Limit (maximum unless otherwise indicated)
CBOD5	Monthly Average Daily Effluent Loading	204.6 kg/d
Total Suspended Solids	Monthly Average Daily Effluent Loading	204.6 kg/d
Total Phosphorus	Monthly Average Daily Effluent Loading	13.6 kg/d
Total Ammonia Nitrogen	Monthly Average Daily Effluent Loading	20.5 kg/d (May 1 - Nov 30) 40.9 kg/d (Dec 1 - Apr 30)

Loading Limits after rerating the Works

Final Effluent Parameter	Averaging Calculator	Limit (maximum unless otherwise indicated)
CBOD5	Monthly Average Daily Effluent Loading	203.0 kg/d
Total Suspended Solids	Monthly Average Daily Effluent Loading	203.0 kg/d
Total Phosphorus	Monthly Average Daily Effluent Loading	11.6 kg/d
Total Ammonia Nitrogen	Monthly Average Daily Effluent Loading	20.3 kg/d (May 1- Nov 30) 40.6 kg/d (Dec 1- Apr 30)

Schedule D

Monitoring Program

Influent - Influent sampling point

Parameters	Sample Type	Minimum Frequency
BOD5	24 hour composite	Monthly
Total Suspended Solids	24 hour composite	Monthly
Total Phosphorus	24 hour composite	Monthly
Total Kjeldahl Nitrogen	24 hour composite	Monthly

Imported Sewage - Sampled from hauled sewage truck

Parameters	Sample Type	Minimum Frequency
BOD5	Grab	Monthly
Total Suspended Solids	Grab	Monthly
Total Phosphorus	Grab	Monthly
Total Kjeldahl Nitrogen	Grab	Monthly

Final Effluent - Final Effluent sampling point

Parameters	Sample Type	Minimum Frequency
CBOD5	24 hour composite	Weekly
Total Suspended Solids	24 hour composite	Weekly
Total Phosphorus	24 hour composite	Weekly
Total Ammonia Nitrogen	24 hour composite	Weekly
E. coli	Grab	Weekly
pH*	Grab/Probe/Analyzer	Weekly
Temperature*	Grab/Probe/Analyzer	Weekly

*pH and temperature of the Final Effluent shall be determined in the field at the time of sampling for Total Ammonia Nitrogen.

**The concentration of un-ionized ammonia shall be calculated using the total ammonia concentration, pH and temperature using the methodology stipulated in "Ontario's Provincial Water Quality Objectives" dated July 1994, as amended.

Sludge/Biosolids – holding tank/truck loading bay

Parameters	Sample Type	Minimum Frequency
Total Solids	Grab	Quarterly
Total Phosphorus	Grab	Quarterly
Total Ammonia Nitrogen	Grab	Quarterly
Nitrate as Nitrogen	Grab	Quarterly
Metal Scan - Arsenic - Cadmium	Grab	Quarterly

- Cobalt - Chromium - Copper - Lead - Mercury - Molybdenum - Nickel - Potassium - Selenium - Zinc		

Schedule E

Limited Operational Flexibility

Protocol for Pre-Authorized Modifications to Municipal Sewage Works

1. **General**

2. Pre-authorized modifications are permitted only where Limited Operational Flexibility has already been granted in the Approval and only permitted to be made at the pumping stations and sewage treatment plant in the Works, subject to the conditions of the Approval.

3. Where there is a conflict between the types and scope of pre-authorized modifications listed in this document, and the Approval where Limited Operational Flexibility has been granted, the Approval shall take precedence.

4. The Owner shall consult the District Manager on any proposed modifications that may fall within the scope and intention of the Limited Operational Flexibility but is not listed explicitly or included as an example in this document.

5. The Owner shall ensure that any pre-authorized modifications will not:

f. adversely affect the hydraulic profile of the Sewage Treatment Plant or the performance of any upstream or downstream processes, both in terms of hydraulics and treatment performance;

g. result in new Overflow or Bypass locations, or any potential increase in frequency or quantity of Overflow(s) or Bypass(es).

h. result in a reduction in the required Peak Flow Rate of the treatment process or equipment as originally designed.

9. **Modifications that do not require pre-authorization:**

10. Sewage works that are exempt from Ministry approval requirements;

11. Modifications to the electrical system, instrumentation and control system.

12. **Pre-authorized modifications that do not require preparation of "Notice of Modification to Sewage Works"**

13. Normal or emergency maintenance activities, such as repairs, renovations, refurbishments and replacements with Equivalent Equipment, or other improvements to an existing approved piece of equipment of a treatment process do not require pre-authorization. Examples of these activities are:

a. Repairing a piece of equipment and putting it back into operation, including replacement of minor components such as belts, gear boxes, seals, bearings;

b. Repairing a piece of equipment by replacing a major component of the equipment such as motor, with the same make and model or another with the same or very close power rating but the capacity of the pump or blower will still be essentially the same as originally designed and approved;

c. Replacing the entire piece of equipment with Equivalent Equipment.

14. Improvements to equipment efficiency or treatment process control do not require pre-authorization. Examples of these activities are:

a. Adding variable frequency drive to pumps;

b. Adding on-line analyzer, dissolved oxygen probe, ORP probe, flow measurement or other process control device.

15. **Pre-Authorized Modifications that require preparation of "Notice of Modification to Sewage Works"**

16. Pumping Stations

q. Replacement, realignment of existing sewers including manholes, valves, gates, weirs and associated appurtenances provided that the modifications will not add new influent source(s) or result in an increase in flow from existing sources as originally approved.

r. Extension or partition of wetwell to increase retention time for emergency response and improve station maintenance and pump operation;

s. Replacement or installation of inlet screens to the wetwell;

t. Replacement or installation of flowmeters, construction of station bypass;

u. Replacement, reconfiguration or addition of pumps and modifications to pump suctions and discharge pipings including valve, gates, motors, variable frequency drives and associated appurtenances to maintain firm pumping capacity or modulate the pump rate provided that the modifications will not result in a reduction in the firm pumping capacity or discharge head or an increase in the peak pumping rate of the pumping station as originally designed;

v. Replacement, realignment of existing forcemain(s) including valves, gates, and associated appurtenances provided that the modifications will not reduce the flow capacity or increase the total dynamic head and transient in the forcemain.

23. Sewage Treatment Plant

24. Sewers and appurtenances

   a. Replacement, realignment of existing sewers (including pipes and channels) or construction of new sewers, including manholes, valves, gates, weirs and associated appurtenances within the a sewage treatment plant, provided that the modifications will not add new influent source(s) or result in an increase in flow from existing sources as originally approved and that the modifications will remove hydraulic bottlenecks or improve the conveyance of sewage into and through the Works.

25. Flow Distribution Chambers/Splitters

   a. Replacement or modification of existing flow distribution chamber/splitters or construction of new flow distribution chamber/splitters, including replacements or installation of sluice gates, weirs, valves for distribution of flows to the downstream process trains, provided that the modifications will not result in a change in flow distribution ratio to the downstream process trains as originally designed.

26. Imported Sewage Receiving Facility

   a. Replacement, relocation or installation of loading bays, connect/disconnect hook-up systems and unloading/transferring systems;

b. Replacement, relocation or installation of screens, grit removal units and compactors;

c. Replacement, relocation or installation of pumps, such as dosing pumps and transfer pumps, valves, piping and appurtenances;

d. Replacement, relocation or installation of storage tanks/chambers and spill containment systems;

e. Replacement, relocation or installation of flow measurement and sampling equipment;

f. Changes to the source(s) or quantity from each source, provided that changes will not result in an increase in the total quantity and waste loading of each type of Imported Sewage already approved for co-treatment.

27. Preliminary Treatment System

a. Replacement of existing screens and grit removal units with equipment of the same or higher process performance technology, including where necessary replacement or upgrading of existing screenings dewatering washing compactors, hydrocyclones, grit classifiers, grit pumps, air blowers conveyor system, disposal bins and other ancillary equipment to the screening and grit removal processes.

b. Replacement or installation of channel aeration systems, including air blowers, air supply main, air headers, air laterals, air distribution grids and diffusers.

28. Primary Treatment System

a. Replacement of existing sludge removal mechanism, including sludge chamber;

b. Replacement or installation of scum removal mechanism, including scum chamber;

c. Replacement or installation of primary sludge pumps, scum pumps, provided that:the modifications will not result in a reduction in the firm pumping capacity or discharge head that the primary sludge pump(s) and scum pump(s) are originally designed to handle.

29. Secondary Treatment System

1. Biological Treatment
    a. Conversion of complete mix aeration tank to plug-flow multi-pass aeration tank, including modifications to internal structural configuration;
    b. Addition of inlet gates in multi-pass aeration tank for step-feed operation mode;

c. Partitioning of an anoxic/flip zone in the inlet of the aeration tank, including installation of submersible mixer(s);

d. Replacement of aeration system including air blowers, air supply main, air headers, air laterals, air distribution grids and diffusers, provided that the modifications will not result in a reduction in the firm capacity or discharge pressure that the blowers are originally designed to supply or in the net oxygen transferred to the wastewater required for biological treatment as originally required.

2. Secondary Sedimentation
   a. Replacement of sludge removal mechanism, including sludge chamber;
   b. Replacement or installation of scum removal mechanism, including scum chamber;
   c. Replacement or installation of return activated sludge pump(s), waste activated sludge pump(s), scum pump(s), provided that the modifications will not result in a reduction in the firm pumping capacity or discharge head that the activated sludge pump(s) and scum pump(s) are originally designed to handle.

30. Post-Secondary Treatment System

a. Replacement of filtration system with equipment of the same filtration technology, including feed pumps, backwash pumps, filter reject pumps, filtrate extract pumps, holding tanks associated with the pumping system, provided that the modifications will not result in a reduction in the capacity of the filtration system as originally designed.

31. Disinfection System

1. UV Irradiation
   a. Replacement of UV irradiation system, provided that the modifications will not result in a reduction in the design capacity of the disinfection system or the radiation level as originally designed.

2. Chlorination/Dechlorination and Ozonation Systems
   a. Extension and reconfiguration of contact tank to increase retention time for effective disinfection and reduce dead zones and minimize short-circuiting;
   b. Replacement or installation of chemical storage tanks, provided that the tanks are provided with effective spill containment.

32. Supplementary Treatment Systems

1. Chemical systems
    a. Replacement, relocation or installation of chemical storage tanks for existing chemical systems only, provided that the tanks are sited with effective spill containment;
    b. Replacement or installation of chemical dosing pumps provided that the modifications will not result in a reduction in the firm capacity that the dosing pumps are originally designed to handle.
    c. Relocation and addition of chemical dosing point(s) including chemical feed pipes and valves and controls, to improve phosphorus removal efficiency;
    d. Use of an alternate chemical provided that it is a non-proprietary product and is a commonly used alternative to the chemical approved in the Works, provided that the chemical storage tanks, chemical dosing pumps, feed pipes and controls are also upgraded, as necessary..

33. Sludge Management System

1. Sludge Holding and Thickening
    a. Replacement or installation of sludge holding tanks, sludge handling pumps, such as transfer pumps, feed pumps, recirculation pumps, provided that modifications will not result in reduction in the solids storage or handling capacities;
2. Sludge Digestion
    a. Replacement or installation of digesters, sludge handling pumps, such as transfer pumps, feed pumps, recirculation pumps, provided that modifications will not result in reduction in the solids storage or handling capacities;
    b. replacement of sludge digester covers.
3. Sludge Dewatering and Disposal
    a. Replacement of sludge dewatering equipment, sludge handling pumps, such as transfer pumps, feed pumps, cake pumps, loading pumps, provided that modifications will not result in reduction in solids storage or handling capacities.
4. Processed Organic Waste
    a. Changes to the source(s) or quantity from each source, provided that changes will not result in an increase in the total quantity already approved for co-processing.

34. Standby Power System

1. Replacement or installation of standby power system, including feed from alternate power grid, emergency power generator, fuel supply and storage systems, provided that the existing standby power generation capacity is not reduced.

35. Pilot Study

1. Small side-stream pilot study for existing or new technologies, alternative treatment process or chemical, provided:
    a. all effluent from the pilot system is hauled off-site for proper disposal or returned back to the sewage treatment plant for at a point no further than immediately downstream of the location from where the side-stream is drawn;
    b. no proprietary treatment process or propriety chemical is involved in the pilot study;
    c. the effluent from the pilot system returned to the sewage treatment plant does not significantly alter the composition/concentration of or add any new contaminant/inhibiting substances to the sewage to be treated in the downstream process;
    d. the pilot study will not have any negative impacts on the operation of the sewage treatment plant or cause a deterioration of effluent quality;
    e. the pilot study does not exceed a maximum of two years and a notification of completion shall be submitted to the District Manager within one month of completion of the pilot project.

36. Lagoons

a. installing baffles in lagoon provided that the operating capacity of the lagoon system is not reduced;
b. raise top elevation of lagoon berms to increase free-board;
c. replace or install interconnecting pipes and chambers between cells, provided that the process design operating sequence is not changed;
d. replace or install mechanical aerators, or replace mechanical aerators with diffused aeration system provided that the mixing and aeration capacity are not reduced;
e. removal of accumulated sludge and disposal to an approved location offsite.

37. Final Effluent Disposal Facilities

al. Replacement or realignment of the Final Effluent channel, sewer or forcemain, including manholes, valves and appurtenances from the end of the treatment train to the discharge outfall section, provided that the sewer conveys only effluent discharged from the Sewage Treatment Plant and that the replacement or re-aligned sewer has similar dimensions and performance criteria and is in the same or approximately the same location and that the hydraulic capacity will not be reduced.

This page contains an image of the form entitled "Notice of Modification to Sewage Works". A digital copy can be obtained from the District Manager.

Ontario

Ministry of the Environment, Conservation and Parks

Notice of Modification to Sewage Works

RETAIN COPY OF COMPLETED FORM AS PART OF THE ECA ON-SITE PRIOR TO THE SCHEDULED IMPLEMENTATION DATE.

Part 1 – Environmental Compliance Approval (ECA) with Limited Operational Flexibility
(Insert the ECA's owner, number and issuance date and notice number, which should start with "01" and consecutive numbers thereafter)

ECA Number	Issuance Date (mm/dd/yy)	Notice number (if applicable)
ECA Owner	Municipality	

Part 2: Description of the modifications as part of the Limited Operational Flexibility
(Attach a detailed description of the sewage works)

Description shall include:
1. A detail description of the modifications and/or operations to the sewage works (e.g. sewage work component, location, size, equipment type/model, material, process name, etc.)
2. Confirmation that the anticipated environmental effects are negligible.
3. List of updated versions of, or amendments to, all relevant technical documents that are affected by the modifications as applicable, i.e. submission of documentation is not required, but the listing of updated documents is (design brief, drawings, emergency plan, etc.)

Part 3 – Declaration by Professional Engineer

I hereby declare that I have verified the scope and technical aspects of this modification and confirm that the design:
1. Has been prepared or reviewed by a Professional Engineer who is licensed to practice in the Province of Ontario;
2. Has been designed in accordance with the Limited Operational Flexibility as described in the ECA;
3. Has been designed consistent with Ministry's Design Guidelines, adhering to engineering standards, industry's best management practices, and demonstrating ongoing compliance with s.53 of the Ontario Water Resources Act; and other appropriate regulations.

I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate

Name (Print)	PEO License Number
Signature	Date (mm/dd/yy)
Name of Employer	

Part 4 – Declaration by Owner

I hereby declare that:
1. I am authorized by the Owner to complete this Declaration;
2. The Owner consents to the modification; and
3. This modifications to the sewage works are proposed in accordance with the Limited Operational Flexibility as described in the ECA.
4. The Owner has fulfilled all applicable requirements of the *Environmental Assessment Act*.

I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate

Name of Owner Representative (Print)	Owner representative's title (Print)
Owner Representative's Signature	Date (mm/dd/yy)

Schedule F

Methodology for Calculating and Reporting

Monthly Average Effluent Concentration, Annual Average

Effluent Concentration and Monthly Geometric Mean Density

1. Monthly Average Effluent Concentration

Step 1: Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar month and proceed as follows depending on the result of the calculation:

a. If the arithmetic mean does not exceed the compliance limit for the contaminant, then report and use this arithmetic mean as the Monthly Average Effluent Concentration for this parameter where applicable in this Approval;

b. If the arithmetic mean exceeds the compliance limit for the contaminant and there was no Bypass Event during the calendar month, then report and use this arithmetic mean as the Monthly Average Effluent Concentration for this parameter where applicable in this Approval;

c. If the arithmetic mean exceeds the compliance limit for the contaminant and there was Bypass Event(s) during the calendar month, then proceed to Step 2;

d. If the arithmetic mean does not exceed the compliance limit for the contaminant and there was Bypass Event(s) during the calendar month, the Owner may still elect to proceed to Step 2 calculation of the flow-weighted arithmetic mean.

Step 2: Calculate the flow-weighted arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar month and proceed depending on the result of the calculation:

a. Group No Bypass Days (**NBPD**) data and Bypass Days (**BPD**) data during a calendar month separately;

b. Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured on all NBPD during a calendar month and record it as **Monthly Average NBPD Effluent Concentration**;

c. Obtain the “**Total Monthly NBPD Flow**” which is the total amount of Final Effluent discharged on all NBPD during the calendar month;

d. Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured on all BPD during a calendar month and record it as **Monthly Average BPD Effluent Concentration**;

e. Obtain the "**Total Monthly BPD Flow**" which is the total amount of Final Effluent discharged on all BPD during the calendar month;

f. Calculate the flow-weighted arithmetic mean using the following formula:

[(Monthly Average NBPD Effluent Concentration × Total Monthly NBPD Flow) + (Monthly Average BPD Effluent Concentration × Total Monthly BPD Flow)] ÷ (Total Monthly NBPD Flow + Total Monthly BPD Flow)

It should be noted that in this method, if there are no Bypass Event for the month, the calculated result would be the same as the non-flow-weighted arithmetic mean method;

g. Report and use the lesser of the flow-weighted arithmetic mean obtained in Step 2 and the arithmetic mean obtained in Step 1 as the Monthly Average Effluent Concentration for this parameter where applicable in this Approval.

2. Annual Average Effluent Concentration

Step 1: Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar year and proceed as follows depending on the result of the calculation:

a. If the arithmetic mean does not exceed the compliance limit for the contaminant, then report and use this arithmetic mean as the Annual Average Effluent Concentration for this parameter where applicable in this Approval;

b. If the arithmetic mean exceeds the compliance limit for the contaminant and there was no Bypass Event during the calendar year, then report and use this arithmetic mean as the Annual Average Effluent Concentration for this parameter where applicable in this Approval;

c. If the arithmetic mean exceeds the compliance limit for the contaminant and there was Bypass Event(s) during the calendar year, then proceed to Step 2;

d. If the arithmetic mean does not exceed the compliance limit for the contaminant and there was Bypass Event(s) during the calendar year, the Owner may still elect to proceed to Step 2 calculation of the flow-weighted arithmetic mean.

Step 2: Calculate the flow-weighted arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar year and proceed depending on the result of the calculation:

a. Group No Bypass Days (**NBPD**) data and Bypass Days (**BPD**) data during a calendar year separately;

b. Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured on all NBPD during a calendar year and record it as **Annual Average NBPD Effluent Concentration**;

c. Obtain the "**Total Annual NBPD Flow**" which is the total amount of Final Effluent discharged on all NBPD during the calendar year;

d. Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured on all BPD during a calendar year and record it as **Annual Average BPD Effluent Concentration**;

e. Obtain the "**Total Annual BPD Flow**" which is the total amount of Final Effluent discharged on all BPD during the calendar year;

f. Calculate the flow-weighted arithmetic mean using the following formula:

[(Annual Average NBPD Effluent Concentration × Total Annual NBPD Flow) + (Annual Average BPD Effluent Concentration × Total Annual BPD Flow)] ÷ (Total Annual NBPD Flow + Total Annual BPD Flow)

It should be noted that in this method, if there are no Bypass Event for the calendar year, the calculated result would be the same as the non-flow-weighted arithmetic mean method;

g. Report and use the lesser of the flow-weighted arithmetic mean obtained in Step 2 and the arithmetic mean obtained in Step 1 as the Annual Average Effluent Concentration for this parameter where applicable in this Approval.

3. Monthly Geometric Mean Density

Geometric mean is defined as the n^{th} root of the product of *n* numbers. In the context of calculating Monthly Geometric Mean Density for *E.coli*, the following formula shall be used:

$$\sqrt[n]{x_1 x_2 x_3 \cdots x_n}$$

in which,

"*n*" is the number of samples collected during the calendar month; and

"*x*" is the value of each Single Sample Result.

For example, four weekly grab samples were collected and tested for *E.coli* during the calendar month. The *E.coli* densities in the Final Effluent were found below:

Sample Number	***E.coli* Densities* (CFU/100 mL)**
1	10
2	100
3	300
4	50

The Geometric Mean Density for these data:

$$\sqrt[4]{10 \times 100 \times 300 \times 50} = 62$$

*If a particular result is zero (0), then a value of one (1) will be substituted into the calculation of the Monthly Geometric Mean Density. If the MPN method is utilized for E.coli analysis, values in the table shall be MPN/100 mL.

Schedule G

Municipal and Local Services Board Wastewater System

Profile Information Form

(For reference only, images of the form are attached on the next four pages. A digital copy can be obtained from the District Manger.)

Ministry of the Environment, Conservation and Parks

Municipal and Local Services Board Wastewater System Profile Information Form

The information in this form is necessary to administer the Ministry's approvals, compliance and enforcement programs with respect to wastewater treatment and collection systems owned by municipalities and local services boards. These programs are authorized under the *Ontario Water Resources Act*, the *Environmental Protection Act*, the *Nutrient Management Act* and their respective regulations.

Email the completed form to: waterforms@ontario.ca
For any questions call 1-866-793-2588.

[A] SYSTEM PROFILE INFORMATION

Wastewater System Number *(if assigned)*	☐ New Profile ☐ Update Existing Profile
Name of System	Level of Treatment (select one*) ☐ Primary ☐ Secondary ☐ Tertiary ☐ Secondary Equivalent ☐ Other (specify): **See Terms and Concepts on page 4*
Name of Municipality or Local Services Board	

Population Served	Population (Design)	Type of System ☐ Treatment & Collection System ☐ Collection System Only

Design Rated Capacity (m^3/day)	Peak Flow Rate (m^3/day)	Current Environmental Compliance Approval (ECA) Number	Current ECA Issue Date (yyyy/mm/dd):

The treatment plant receives sewage from: (Check all that applies.* If you have checked more than one option below, indicate the approximate %)

☐ Sanitary Sewer ☐ Combined Sewer
☐ Nominally Separated Sewer ☐ Partially Separated Sewer **See Terms and Concepts on page 4*

[B] OWNER INFORMATION

Legal Name of Municipality or Local Services Board

Unit No	Street No.	Street Name.	Street Type (St, Rd, etc)	Street Direction (N,S,E,W)

PO Box	City/Town	Postal Code

☐ Dr ☐ Miss ☐ Mr ☐ Mrs ☐ Ms	Owner Contact First Name	Owner Contact Last Name	Owner Contact Job Title

Tel. No.	Fax Number	Email address
( ) - ext.	( ) -	

[C] OPERATING AUTHORITY ☐ Check if same as owner

Legal Name of Operator

Unit No	Street No.	Street Name.	Street Type (St, Rd, etc)	Street Direction (N,S,E,W)

PO Box	City/Town	Postal Code

☐ Dr ☐ Miss ☐ Mr ☐ Mrs ☐ Ms	Operator Contact First Name	Operator Contact Last Name	Operator Contact Job Title

Tel. No.	Fax Number	Email address
( ) - ext.	( ) -	

[D] 24/7 CONTACT

☐ Dr ☐ Miss ☒ Mr ☐ Mrs ☐ Ms	First Name	Last Name	Job Title
Tel. No. ( ) - ext.	Fax Number ( ) -	Email address	

[E] SYSTEM CIVIC LOCATION ADDRESS (I.E. ADDRESS OF TREATMENT PLANT)

Unit No	Street No.	Street Name.	Street Type (St, Rd, etc)	Street Direction (N,S,E,W)
PO Box	City/Town	Postal Code		

If the Wastewater System has no street address

Geographical Township	Lot	Concession

Geographical Referencing (if known, enter the Geographical Reference Information for this Wastewater System)

Map Datum	Geo-Referencing Method	Accuracy Estimate	Location Reference	
Latitude	Longitude	Zone	Easting	Northing

[F] TREATMENT PROCESS

Preliminary	Primary	Secondary	Secondary Equivalent	Post-Secondary	Additional Treatment
☐ Screening ☐ Shredding/ grinding ☐ Grit Removal ☐ Other(specify):	☐ Settling/sedimentation/ clarification ☐ Scum Removal ☐ Polymer Addition ☐ Other(specify):	☐ Conventional Activated Sludge (CAS) ☐ Extended Aeration ☐ Membrane Bioreactor (MBR) ☐ Sequencing Batch Reactor (SBR) ☐ Rotating Biological Contactor (RBC) ☐ Trickling Filter (TF) ☐ Biological Aerated Filter (BAF) ☐ Other(specify):	☐ Aerated Lagoon ☐ Facultative Lagoon ☐ Anaerobic Lagoon ☐ Aerobic Lagoon ☐ Other(specify):	☐ Filtration ☐ Clarification ☐ Intermittent Sand Filter (after lagoons) ☐ Polishing Wetlands ☐ Polishing Lagoons ☐ Other(specify):	☐ Phosphorous Removal ☐ Biological ☐ Chemical If chemical is used, specify: ☐ Nitrification ☐ Denitrification ☐ Other(specify):

[G] DISINFECTION

Method of Disinfection	Disinfection Period
☐ Chlorination If you chlorinate, do you practice de-chlorination? ☐ Yes ☐ No	☐ Continuous ☐ Seasonal
☐ Ultraviolet Irradiation	☐ Continuous ☐ Seasonal
☐ Other (specify):	☐ Continuous ☐ Seasonal

[H] SLUDGE	
Sludge Stabilization Process	Method of Sludge Disposal/Utilization
☐ Aerobic Digestion	☐ Agricultural
☐ Anaerobic Digestion	☐ Landfill
☐ Drying & Pelletization	☐ Incineration
☐ Lime Treatment	☐ Other (specify):
☐ Composting	
☐ Other (specify):	
Available Sludge Storage Capacity (m^3):	

[I] EFFLUENT	
Effluent Disposal Method	Effluent Discharge Frequency
☐ Surface Water Receiving Water Body Name:	☐ Continuous ☐ Seasonal
☐ Subsurface	☐ Continuous ☐ Seasonal
☐ Other (specify):	☐ Continuous ☐ Seasonal
Is the effluent discharged in a vulnerable area identified in the local source protection assessment report approved under the Clean Water Act, 2006? ☐ Yes ☐ No	

[J] INFLUENT

Does the plant receive sewage from another municipality or local services board either through an interconnected collection system or hauled sewage?

☐ Yes ☐ No

(if yes, name(s) of other municipality or local services board):

Plant receives: ☐ Leachate (approximate annual volume in m^3):

☐ Septage (approximate annual volume in m^3):

☐ Industrial input (approximate annual volume in m^3):

or (approximate volume in %):

Terms and Concepts

The following Terms and Concepts are provided to assist you when completing Wastewater System Profile Information Form.

In order to determine the level of treatment that applies to the wastewater system, the effluent quality objectives that the wastewater treatment plant was designed to meet must be considered. The process based approach often used in the past has led to confusion and is open to interpretation due to recent developments and practices in the wastewater treatment industry. For example, a plant with a high rate filter (often referred to as a tertiary filter) after its secondary treatment was considered a tertiary treatment in the past since the filter was designed and operated to produce a tertiary quality effluent. However, secondary plants are now being constructed with these filters as a safeguard against any potential secondary clarifier performance degradation and not for the purpose of ensuring tertiary treatment performance. Also, new technologies have evolved that can produce tertiary quality effluent without having these high rate filters (e.g., membrane bioreactors). Lagoons were considered in the past as being capable of providing only secondary equivalent treatment. However, with add-on treatment after the lagoons (e.g. intermittent sand filters), many lagoon treatment systems are capable of producing secondary or tertiary quality effluent.

During the establishment of sewage works, site-specific effluent limits (including averaging periods) are provided by the Ministry's Regional Technical Support Section, considering the assimilative capacity of the receivers and the minimum treatment requirements provided in Procedure F-5-1. The designer of the sewage works then selects objective values that are acceptable to the Ministry and are less (i.e. more stringent) than the effluent limits , in order to provide an adequate safety factor based on the designer's confidence/experience with the technology chosen and other site-specific conditions. The sewage works are then designed (and operated) to meet these design objectives in a reliable and consistent manner. Therefore, the values that are to be used in the determination of the level of treatment that applies to the sewage works must be based on the design objectives, and not the effluent limits.

Two common parameters used in almost all sewage works designs and performance evaluations are $CBOD_5$ (carbonaceous biochemical oxygen demand) (BOD_5 – biochemical oxygen demand - for primary sewage works) and total suspended solids (TSS). Therefore, it is logical that the **objective values** of these two parameters are used to determine the level of treatment at the sewage works.

Level of Treatment:

Primary:
Wastewater treatment plants that have only settling/sedimentation (with or without chemical addition) and providing 30% and 50% or better reduction of BOD_5 and TSS respectively are considered primary plants (MOE Procedures F-5-1 and F-5-5).

Secondary:
Wastewater treatment plants that have biological processes (e.g. activated sludge process and its variations, fixed film processes) or physical-chemical processes producing an effluent quality of $CBOD_5$ and TSS of 15 mg/L or better are considered secondary plants (MOE Design Guidelines for Sewage Works, 2008).

Secondary Equivalent:
Wastewater treatment plants producing an effluent quality of $CBOD_5$ of 25 mg/L and TSS of 30 mg/L or better are considered as secondary equivalent plants.

Note: Wastewater treatment plants that provide only primary settling of solids and the addition of chemicals to improve the removal of TSS (and phosphorus) are not considered as secondary treatment plants or secondary equivalent plants (MOE Design Guidelines for Sewage Works, 2008).

Tertiary:
Wastewater treatment plants that have biological processes (e.g. activated sludge process and its variations, fixed film processes) and/or physical-chemical processes producing an effluent quality of $CBOD_5$ and TSS of 5 mg/L or better are considered tertiary plants.

Note: Biological processes such as nitrification, denitrification and enhanced biological phosphorus removal can be part of either a secondary or tertiary treatment plant. They may be described as secondary treatment plant with nitrification, secondary treatment plant with enhanced biological phosphorus removal, tertiary treatment plant with nitrification etc.

Sewer System Type:

Sanitary Sewers:
Pipes that convey sanitary sewage flows made up of wastewater discharges from residential, commercial, institutional and industrial establishments plus extraneous flow components from such sources as groundwater and surface run off.

Combined Sewers:
Pipes that convey both sanitary sewage and stormwater runoff through a single-pipe system.

Partially Separated Sewers:
Exist when either a portion of the combined sewer area was retrofitted to separate (sanitary and storm) sewers and/or a service area with combined sewers has had a new development area with separate sewers added to the service area; whatever the case may be, the final flows will be combined sewage.

Nominally Separated Sewers:
These sewers are constructed as separate sewers, but the sanitary sewers accept stormwater from roof and foundation drains (i.e., these are separated sewers in name only).

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). 9475-AP5RQG issued on July 31, 2017.

In accordance with Section 139 of the Environmental Protection Act, you may by written

Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

a. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;
5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary* Environmental Review Tribunal 655 Bay Street, Suite 1500 Toronto, Ontario M5G 1E5	AND	The Director appointed for the purposes of Part II.1 of the Environmental Protection Act Ministry of the Environment, Conservation and Parks 135 St. Clair Avenue West, 1st Floor Toronto, Ontario M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or** www.ert.gov.on.ca

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 29th day of January, 2019

Fariha Pannu, P.Eng.
Director

appointed for the purposes of Part II.1 of the *Environmental Protection Act*

WS/
c: Area Manager, MECP Windsor
c: District Manager, DWECD, MECP Sarnia
Mike Newbigging, Jacobs Engineering Group, Inc.

Appendix B WPCP OUTFALL BATHYMETRY


SURVEY FOR LOCATION OF DIFFUSER Nº 1
SCALE: N.T.S.
LAKE ST. CLAIR
CAILLE AVE.
ROURKE LINE RD.
KING'S HWY. Nº 2
Sta. 42+00
Sta. 37+00
Sta. 32+00
Sta. 22+00
Sta. 18+00
Sta. 21+22
ROURKE LINE ROAD
CONTRACT No. 2 PART "B"
CONTRACT No. 2 PART "A"
36" dia. Outfall Sewer
WATER LOT
DIFFUSER SECTION SEE SHEET Nº. 6 FOR DETAILS
N'LY PRODUCTION OF E'LY LIMIT OF ROURKE LINE ROAD 2000ft ±
N'LY PRODUCTION OF W'LY LIMIT OF ROURKE LINE ROAD 2000ft ±
OUTFALL CONTROL MANHOLE Nº 5
60" TUNNEL LINER 55'-6" LONG
SEE ENLARGEMENT FOR SURVEY INFORMATION (THIS SHEET)
CANADIAN NATIONAL RAILWAY
UNREGISTERED PLAN PART OF FARM LOT "1"
TOWNSHIP OF MAIDSTONE
PLAN
SCALE: 1"=100'
WATER LEVEL 1974 = 576.4 C.G.D. = 575.6 I.G.L.D.
LOW WATER DATUM = 572.5 C.G.D. = 571.7 I.G.L.D.
LAKE BOTTOM AT TIME OF CONSTRUCTION
PROFILE OF LAKE BOTTOM
EXIST. GRADE ELEV AT ℄ ROURKE LINE ROAD
Grade = 0.00 %
Grade = 0.09 %
Grade = 0.76 %
Grade = 0.18 %
Grade = 0.006 %
FOR OUTFALL STRUCTURE DETAILS SEE SHEET 6
CONCRETE BALLAST BLOCKS INSTALLED AT 20' INTERVALS ALONG ENTIRE LENGTH OF POLYETHYLENE PIPE.
FOR OUTFALL CONTROL M.H. DETAILS SEE SHEET 5
36" dia. Outfall Sewer
(Series 45 "Sclairpipe" Polyethylene Pipe)
36" dia. Outfall Sewer
(Concrete Pipe C76-II)
55'-6" of 60" Dia. 12 Ga. TUNNEL LINER
NOTE:-
1. INSTALLATION WAS MADE IN ACCORDANCE WITH GENERAL ORDER E-10 ISSUED BY CANADIAN TRANSPORT COMMISSION.
2. C.N.R. LONDON FILE No. 4715-C2-206
CANADIAN GEODETIC DATUM
PROFILE
SCALE: HORIZ. 1"=100' VERT. 1"=10'
SITE PLAN
SCALE: 1"=500'
W. B. R. R.
L. S. R.
BETWEEN E.P.R.R & W.B.R.R.
FARM LOT 1
FARM LOT 2
10 ACRE SITE SEWAGE TREATMENT PLANT
NORTH BRANCH BROWN'S CREEK DRAIN
LIMITS OF WATER LOT
OUTFALL DIFFUSER
UNDISTURBED SOIL
4000 P.S.I. CONCRETE GROUT
60" DIA. ARMCO 12 GAUGE STEEL TUNNEL LINER.
4000 P.S.I. CONCRETE
36" DIA. OUTFALL SEWER (CONC. PIPE C76-II)
HARDWOOD TIMBER WEDGES
DETAIL of TUNNEL LINER
SCALE: NONE
ONTARIO MINISTRY OF THE ENVIRONMENT
PROJECT Nº 1-0305-72
SEWAGE WORKS SYSTEM FOR THE TOWN OF BELLE RIVER
LA FONTAINE, COWIE, BURATTO & ASSOCIATES LIMITED
Consulting Engineers
Windsor, Ontario
DRAWN J.A.
DATE MAY 8, 1974
SCALE AS NOTED
SHEET TITLE
OUTFALL SEWER
SITE PLAN, DETAIL AND SURVEY PLAN
SHEET NO. 4
DRAWING NO. LA-1444
OFFICE FILE NO. BR-101
"AS CONSTRUCTED" DEC. 21, 76 DW
ISSUED FOR TENDER SEPT 11, 75 E.B.
REVISED JUNE 24, 1975 T.C.
REVISED APRIL 28, 1975 RR

APPENDIX D

- D-1 Culture Heritage Assessment Report
- D-2 MTCS Checklist
  - Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes

APPENDIX D-1

Culture Heritage Assessment Report

Ministry of Heritage, Sport, Tourism, and Culture Industries

Programs and Services Branch
401 Bay Street, Suite 1700
Toronto, ON M7A 0A7
Tel: 416.314.7643

Ministère des Industries du Patrimoine, du Sport, du Tourisme et de la Culture

Direction des programmes et des services
401, rue Bay, Bureau 1700
Toronto, ON M7A 0A7
Tél: 416.314.7643

February 7, 2020 Email Only

Frank Smith
Stantec Consulting Limited
600-171 Queens Avenue
London ON N6A 5J7
frank.smith@stantec.com

MHSTCI File	**:**	**0010508**
Your File	**:**	**165620173**
Proponent	**:**	**Town of Lakeshore**
Subject	**:**	**Technical Cultural Heritage Studies**
Project	**:**	**Denis St. Pierre Water Pollution Control Plant Expansion**
Location	**:**	**Rourke Line Road, Town of Lakeshore**

Dear Mr. Smith:

Thank you for providing the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI) with an Archaeological Assessment Report (Stantec, December 2019) and a Cultural Heritage Assessment Report (Stantec, December 2019) for the above-referenced project. MHSTCI has reviewed these documents with respect to the protection of cultural heritage resources, which include archaeological resources, built heritage resources and cultural heritage landscapes.

Project Summary

The Town of Lakeshore is proposing the expansion of the Denis St. Pierre Water Pollution Control Plant in anticipation of anticipated future growth and expansion through to 2035 for the former Belle River Community and the Maidstone Urban Area. The project is following Phases 3 and 4 of the Municipal Class EA, which began in 2008 as a Master Plan (completing Phases 1 and 2 in 2017) and had identified capacity issues this for plant.

Comments

MHSTCI finds that due diligence has been undertaken by:

- conducting a Stage 1 Archaeological Assessment and report (under Project Information Number P256-0601-2019), which concluded that no further archaeological assessment is required for this project. (Our Ministry found the report consistent with the 2011 Standards and Guidelines for Consultant Archaeologists and with the terms and conditions for archaeological licences and entered it into the Ontario Public Register of Archaeological Reports.)
- undertaking a Cultural Heritage Assessment Report (CHAR), which found one potential cultural heritage resource (the cultural heritage landscape of the former Great Western Railway corridor) and determined that mitigation measures are not required as no direct or indirect negative impacts would be experienced

MHSTCI has no further comments on this project.

Should you have any questions, please contact the undersigned.

Regards,

Katherine Kirzati
Heritage Planner
Heritage Planning Unit
katherine.kirzati@ontario.ca

c: Kevin Girard, Manager of Environmental Services, Town of Lakeshore
Craig Newton, Regional Environmental Planner, MECP

It is the sole responsibility of proponents to ensure that any information and documentation submitted as part of their EA report or file is accurate. MHSTCI makes no representation or warranty as to the completeness, accuracy or quality of the any checklists, reports or supporting documentation submitted as part of the EA process, and in no way shall MHSTCI be liable for any harm, damages, costs, expenses, losses, claims or actions that may result if any checklists, reports or supporting documents are discovered to be inaccurate, incomplete, misleading or fraudulent.

Please notify MHSTCI if archaeological resources are impacted by EA project work. All activities impacting archaeological resources must cease immediately, and a licensed archaeologist is required to carry out an archaeological assessment in accordance with the *Ontario Heritage Act* and the *Standards and Guidelines for Consultant Archaeologists*.

If human remains are encountered, all activities must cease immediately and the local police as well as the Registrar, Burials of the Ministry of Government and Consumer Services (416-326-8800) must be contacted. In situations where human remains are associated with archaeological resources, MHSTCI should also be notified to ensure that the site is not subject to unlicensed alterations which would be a contravention of the *Ontario Heritage Act*.

Cultural Heritage Assessment Report, Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion

Final Report

December 17, 2019

Prepared for:

Town of Lakeshore
419 Notre Dame Street
Belle River ON, N0R 1A0

Prepared by:

Stantec Consulting Ltd.
171 Queens Avenue
London ON N6A 5J7

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Executive Summary

The Town of Lakeshore retained Stantec Consulting to undertake an Environmental Assessment (EA) for the Denis St. Pierre Water Pollution Control Plan Expansion (the Project) in the Town of Lakeshore, Ontario. The purpose of the Project is to provide additional wastewater treatment capacity to the Denis St. Pierre Water Pollution Control Plant (WPCP) as the existing capacity is not adequate to accommodate the projected future flows from the Belle River and Maidstone wastewater service area.

The requirement to consider cultural heritage in Municipal Class Environmental Assessments (EA) is discussed in the *Municipal Class Environmental Assessment Manual* (MCEA Manual) ((Municipal Engineers Association 2015) and the revised 2014 *Provincial Policy Statement* (PPS) (Government of Ontario 2014). The MCEA Manual considers cultural heritage, including built heritage resources and cultural heritage landscapes, as well as archaeological resources, as one in a series of environmental factors to be considered when undertaking an MCEA, particularly when describing existing and future conditions, development alternatives, and determination of the preferred alternative.

As part of the EA, a Cultural Heritage Assessment Report (CHAR) has been completed to identify heritage resources, including built heritage and cultural heritage landscapes, present within, and adjacent to, the Study Area. The Study Area includes the existing Denis St. Pierre WPCP property and the right-of-way (RoW) of Rourke Line Road from the Denis St. Pierre WPCP to Caille Avenue as well as a 50 metre boundary around the aforementioned locations. The 50 metre Study Area boundary is used as a sufficient distance to encompass a buffer zone for potential vibration effects resulting from the Project. Although structures on a specific property may be situated outside the 50 metre buffer, in some instances the property boundary is within the buffer, and therefore resources on the property are required to be examined as they are within the Study Area.

The study methodology is broadly based on guidelines provided by Ministry of Tourism Culture and Sport (MTCS) within InfoSheet #5 in *Heritage Resources in the Land Use Planning Process, Cultural Heritage and Archaeology Policies of the Ontario Provincial Policy Statement, 2005* (Government of Ontario 2006a). This involves identification of heritage resources and the assessment of impacts of the Project on these resources.

Where a potential heritage resource was identified within the Study Area, an evaluation of the cultural heritage value or interest of the property, or properties, was undertaken. Where cultural heritage value or interest was identified, a structure or landscape was assigned a cultural heritage resource (CHR) number and the property was determined to contain a heritage resource. Evaluations for each property are contained within Appendix A. One heritage resource was identified within the Study Area following evaluation.

Where the heritage resource was identified within the Study Area, an assessment of potential impacts resulting from the Project was undertaken. The assessment of potential impacts was undertaken according to Info Sheet #5 (Government of Ontario 2006b).

Potential impacts were not identified for the cultural heritage resource within the Study Area. Construction related to twinning of the outfall sewer is not anticipated to alter the heritage attribute, that of the linear corridor of the railway line. Work within the project location is temporary and land would be returned to its pre-construction state. The proposed twinning of the outfall sewer is not anticipated to result in destruction or isolation of the heritage resource. Shadows affecting the heritage resource or obstruction of significant views are not anticipated. A change in land use from the railway corridor is not anticipated. Land disturbance at the site will occur to install the new sewers but is not anticipated to impact the linear corridor of the railway line. As such, no mitigation measures are recommended.

To assist in the retention of historic information, copies of this report should be deposited with local libraries and municipalities. Therefore, it is recommended that this report be deposited at the Essex County, Essex Branch Library.

The Executive Summary highlights key points from the report only; for complete information and findings the reader should examine the complete report.

Project Personnel

Project Manager:	Jian Li, Ph.D., P.Eng., PE
Heritage Consultant:	Lashia Jones, MA, CAHP
Report Writers:	Frank Smith, MA, Lashia Jones, MA, CAHP
GIS Specialist:	Kent Buchanan, H.B.Sc., OCGC Patrick Worsell, BES
Administrative Assistant:	Melissa Wrathell, BA
Quality Reviewer:	Jeffrey Muir, BA, CAHP
Independent Reviewer:	Colin Varley, MA, RPA

Abbreviations

BHR	Built Heritage Resource
CHAR	Cultural Heritage Assessment Report
CHL	Cultural Heritage Landscape
CHR	Cultural Heritage Resource
CHVI	Cultural Heritage Value or Interest
EA	Environmental Assessment
m^3/d	Metres Cubed a Day
MHSTCI	Ministry of Heritage, Sport, Tourism, and Culture Industries
O. Reg.	Ontario Regulation
OHA	*Ontario Heritage Act*
OHT	Ontario Heritage Trust
PPS	Provincial Policy Statement
RoW	Right-of-Way

1.0 INTRODUCTION

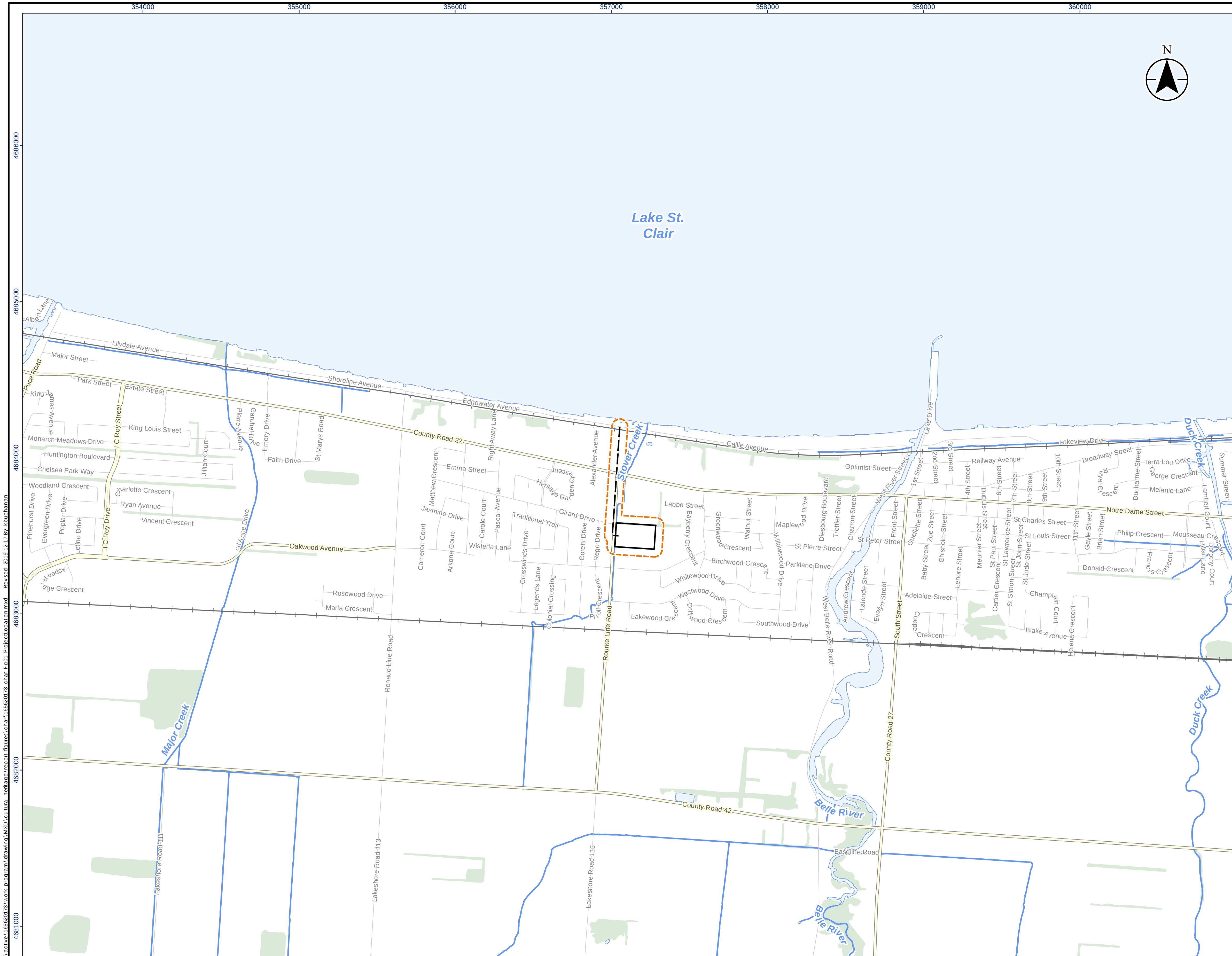
1.1 STUDY PURPOSE AND OBJECTIVES

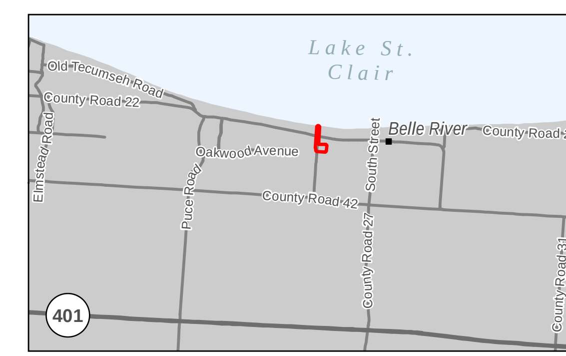
As part of the Municipal Class Environmental Assessment (EA) for the Denis St. Pierre Water Pollution Control Plan Expansion (the Project) in the Town of Lakeshore, Ontario, a Cultural Heritage Assessment Report (CHAR) has been completed to identify heritage resources, including built heritage and cultural heritage landscapes, present within, and adjacent to, the Study Area. The purpose of the Project is to provide additional wastewater treatment capacity to the Denis St. Pierre Water Pollution Control Plant (WPCP) as the existing capacity is not adequate to accommodate the projected future flows from the Belle River and Maidstone wastewater service area.

The Study Area includes the existing Denis St. Pierre WPCP property and the right-of-way (RoW) of Rourke Line Road from the Denis St. Pierre WPCP to Caille Avenue, as well as a 50 metre boundary around the aforementioned locations (Figure 1 and Figure 2). The 50 metre Study Area boundary is used as a sufficient distance to encompass a buffer zone for potential vibration effects resulting from the Project. Although structures on a specific property may be situated outside the 50 metre buffer, in some instances the property boundary is within the buffer, and therefore resources on the property are required to be examined as they are within the Study Area.

As part of the CHAR report, potential heritage resources were identified, inventoried, and evaluated according to *Ontario Regulation* (O. Reg.) *9/06*, the criteria for determining cultural heritage value or interest (CHVI) (Government of Ontario 2006a). A land use history was completed to provide a cultural context for the Study Area and historical background upon which to base evaluations. Where CHVI was identified, the resource was mapped, and recommendations were made for further study. The objectives of the CHAR are summarized below:

- Prepare a land use history of the Study Area for use in the identification and evaluation of heritage resources;
- Identify potential heritage resources within the Study Area through a windshield survey from the public RoW;
- Evaluate the CHVI of the potential heritage resources to determine the number of heritage resources present; and
- Prepare recommendations for future work where heritage resources were identified.





Stantec

Legend
- Cultural Heritage Study Area
- Future Outfall Sewer
- Denis St. Pierre Water Pollution Control Plant

0 500 1,000 m

1:25,000 (At original document size of 11x17)

Notes
1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2019.

Project Location
Essex County

165620173 REV4
Prepared by KDB on 2019-12-03
Quality Review by JM on 2019-12-09
Independent Review by CV on 2019-12-12

Client/Project
TOWN OF LAKESHORE
TOWN OF LAKESHORE DENIS ST. PIERRE WATER POLLUTION CONTROL PLANT EXPANSION

Figure No.
1

Title
Project Location

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Legend

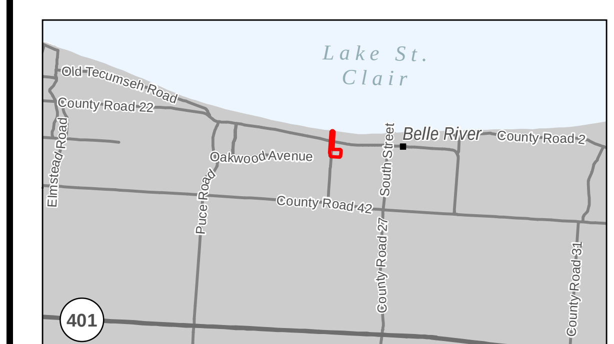
- Cultural Heritage Study Area
- Future Outfall Sewer
- Denis St. Pierre Water Pollution Control Plant

0 50 100 m

1:4,000 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2019.
3. Orthoimagery © First Base Solutions, 2019. Imagery from 2019.



Project Location
Essex County

165620173 REV4
Prepared by KDB on 2019-12-03
Quality Review by JM on 2019-12-09
Independent Review by CV on 2019-12-12

Client/Project
TOWN OF LAKESHORE
TOWN OF LAKESHORE DENIS ST. PIERRE WATER POLLUTION CONTROL PLANT EXPANSION

Figure No.
2

Title
Study Area

2.0 METHODOLOGY

2.1 REQUIREMENTS

The requirement to consider cultural heritage in Municipal Class EAs (MCEA) is discussed in the *Municipal Class Environmental Assessment Manual* (MCEA Manual) (Municipal Engineers Association 2015) and the revised 2014 *Provincial Policy Statement* (PPS) (Government of Ontario 2014). The MCEA Manual considers cultural heritage, including built heritage resources and cultural heritage landscapes, as well as archaeological resources, as one in a series of environmental factors to be considered when undertaking an MCEA, particularly when describing existing and future conditions, development alternatives, and determination of the preferred alternative.

The MCEA Manual further suggests that cultural heritage resources that retain heritage attributes should be identified early in the EA process and avoided where possible. Where avoidance is not possible, potential effects to these attributes should be identified and minimized. Adverse impacts should be mitigated according to provincial and municipal guidelines. It is suggested that this happen early in the process so that potential impacts to significant features can be included in an understanding of project impacts and plans established to mitigate these impacts.

In addition to requirements outlined in the MCEA Manual, provisions made under the PPS were also considered in the preparation of the study. Section 2.6 of the PPS addresses cultural heritage in the land use planning process and was considered. The applicable provisions include:

> *2.6.1 - Significant built heritage resources and significant cultural heritage landscapes shall be conserved.*
>
> *2.6.3 - Planning authorities shall not permit development and site alteration on adjacent lands to protected heritage property except where the proposed development and site alteration has been evaluated and it has been demonstrated that the heritage attributes of the protected heritage property will be conserved.*

(Government of Ontario 2014)

2.2 BACKGROUND HISTORY

To familiarize the study team with the Study Area, local historical resources were consulted, archival documents were reviewed, and a summary of the historical background of the local area was prepared. Specifically, historical mapping from 1877, 1912, 1940, and 1968 and aerial photography from 1954 was reviewed to identify the presence of structures, settlements, and other potential heritage resources in advance of the field program.

2.3 MUNICIPALITY AND AGENCY CONSULTATION

Listings of provincially and locally designated properties, districts, and easements for each municipality were collected from the Ontario Heritage Trust (OHT), the Ministry of Heritage, Sport, Tourism and Cultural Industries (MHSTCI), and the Town of Lakeshore. Consultation with these interested agencies and municipalities within which the Project is proposed was undertaken to determine the presence of designated, listed, or registered heritage properties within the Study Area.

Recognition of protected properties varies greatly and is dependent on the level of CHVI identified or, in some cases, the level of investigation undertaken. For the purpose of this study, any property previously identified by municipal staff or provincial agencies as containing, or having the potential to contain, CHVI was determined to be a protected property.

2.4 FIELD PROGRAM

A vehicular windshield survey was conducted on November 13, 2019 from the RoW. At this time, the Study Area was surveyed for potential heritage resources, including both built heritage resources and cultural heritage landscapes. Where identified, these were photographed, and their locations recorded. Characteristics of each potential heritage resource were noted while in the field and recorded.

In general, heritage resources of more than 40 years of age were evaluated during the survey for their potential to satisfy O. Reg. 9/06 criteria. The use of the 40-year threshold is generally accepted by both the federal and provincial authorities as a preliminary screening measure for CHVI. This practice does not imply that all properties more than 40 years of age are inherently of significant heritage value, nor does it exclude exceptional examples constructed within the past 40 years of being of cultural heritage value.

2.5 EVALUATION OF CULTURAL HERITAGE VALUE OR INTEREST

The criteria for determining CHVI is defined by O. Reg. 9/06. Each potential heritage resource was considered both as an individual structure and as cultural landscape. Where CHVI was identified, a structure or landscape was assigned a cultural heritage resource (CHR) number and the property was determined to contain a heritage resource. Evaluations for each property are contained in Appendix A.

2.5.1 Ontario Regulation 9/06

In order to identify CHVI at least one of the following criteria must be met:

1. *The property has design value or physical value because it,*
    - i. *is a rare, unique, representative or early example of a style, type, expression, material or construction method,*
    - ii. *displays a high degree of craftsmanship or artistic merit, or*
    - iii. *demonstrates a high degree of technical or scientific achievement.*

2. *The property has historical value or associative value because it,*

   i. *has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community,*

   ii. *yields, or has the potential to yield, information that contributes to an understanding of a community or culture, or*

   iii. *demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.*

3. *The property has contextual value because it,*

   i. *is important in defining, maintaining or supporting the character of an area,*

   ii. *is physically, functionally, visually or historically linked to its surroundings, or*

   iii. *is a landmark.*

(Government of Ontario 2006a)

3.0 HISTORICAL DEVELOPMENT

3.1 INTRODUCTION

The Study Area is located within the within Essex County. The Study Area includes the following historical lots and concessions in the former Township of Maidstone, present-day Town of Lakeshore:

- Lot 2, Concession 1, Belle River West Side
- Lot 1, Concession 1, Belle River West Side
- Lot A, Concession 1, Belle River West Side
- Lot 1, Between River Puces and River Belle

3.2 PHYSIOGRAPHY

The Study Area is situated within the St. Clair Clay Plain physiographic region. The St. Clair Clay Plain is an extensive area of clay plains covering 5,880 square kilometres in Essex, Kent, and Lambton counties. The region is fairly flat with little relief, lying between approximately 175 to 215 metres above sea level. During the glacial period the area was covered by glacial lakes Whittlesey and Warren, which failed to leave deep stratified beds of sediment on the underlying clay (Chapman and Putnam 1984: 147). The region is mostly of underlying limestone, with some areas of black shale. The majority of the region has a history of poor drainage, which required the installation of dredged ditches and tile underdrains to have satisfactory conditions for crop growth and tillage (Chapman and Putnam 1984: 149).

Essex County is bound on three sides by major water sources. In addition to Lake St. Clair, the Detroit River, and Lake Erie, there are numerous other primary and secondary sources of potable water through the county and the former Township of Maidstone. Nearest the study area is Lake St. Clair, approximately 670 metres north of the St. Denis Water Pollution Control Plant and the Belle River, approximately 1.3 kilometres east of the St. Denis Water Pollution Control Plant.

The climate conditions in the St. Clair Clay Plain and Essex County are moderated by the proximity to the Great Lakes and Lake St. Clair, which reduces the daily temperature range of the area and increases the average number of frost-free days. This results in a longer growing season for the St. Clair Clay Plain. The most important crops in the region are corn, soybeans, hay, and winter wheat (Chapman and Putnam 1984: 149).

3.3 SURVEY AND SETTLEMENT

Beginning in the 17th century, French explorers and missionaries increased their activity in the Lake Erie and Detroit River regions. On August 12, 1679, on the feast day of Saint Clair, the French explorer Rene-Robert Cavelier, Sieur de La Salle, became the first recorded European to reach Lake St. Clair and the area around the Town of Lakeshore and named the lake in honour of the saint (Morrison 1954: 3).

In the following years, the French extended the borders of New France into the Great Lakes region and in 1701 established Detroit to fortify their claims. Detroit was an important location for the fur trade and was also a vital communication link for the sprawling colony of New France, which stretched from the Gulf of St. Lawrence River in the north to the Gulf of Mexico in the south (Morrison 1954: 3-4 and Burnside et al. 1983: 10-11). By the middle of the 18th century, the French had established permanent settlements along the Detroit River from just south of Lake St. Clair to just south of present-day Windsor (Morrison 1954: 4).

France's expansion south of Detroit into the Ohio Valley enflamed tensions with Great Britain and its Thirteen Colonies clustered along the Atlantic seaboard, contributing to the outbreak of the Seven Years War (1756-1763). During the war, the French surrendered Detroit to the British in 1760 (Hamil 1951: 8). In 1763, parts of New France east of the Mississippi River were ceded to Great Britain as per the terms of the Treaty of Paris. To placate the French population, the passage of the *Quebec Act* in 1774 maintained French laws and customs in what is now southwestern Ontario, but further antagonized the increasingly dissatisfied Thirteen Colonies. Upon British recognition of the independence of the Thirteen Colonies as the United States in 1783, land would be needed to settle Loyalists who left the fledgling republic.

The Loyalist population wished to live under the customs and common law they were familiar with in Great Britain and the former Thirteen Colonies, instead of the French civil law practiced in Quebec as part of the *Quebec Ac*t. To accommodate the influx of Loyalists into Canada, the British parliament passed the *Constitutional Act* of 1791, which divided Quebec into Upper and Lower Canada. The division was both geographic and cultural; French laws would be preserved in Lower Canada, while the British constitution and laws would rule in Upper Canada (Craig 1963: 17).

John Graves Simcoe was appointed as the Lieutenant Governor of Upper Canada and was tasked with governing the new province, directing its settlement, and establishing a constitutional government modeled after Britain's (Petryshyn 1985). In 1792, Simcoe divided Upper Canada into 19 counties and four districts (Dean 1969: Plate 98). Essex County was among these newly created counties and was divided into nine townships, including Maidstone Township, where the Study Area is located. Maidstone Township was named after the town of Maidstone in Kent County, England, located approximately 55 kilometres south of London, England (Rayburn 1997: 204).

In 1792, the Land Board of the Western District was established and was tasked with surveying and allocating land in the District of which Essex County was a part. Patrick McNiff was retained by the Land Board to survey Maidstone Township. He reported to colonial officials that swampy conditions made the survey and settlement of the interior portions of Essex County impractical. Instead, he suggested surveying and establishing settlements along the waterways draining into Lake St. Clair, including the Belle River and Puce River (Lajeunesse 1960: cxiv). McNiff began the survey in 1793 of these lands, including land in the Study Area. He surveyed twelve lots on the west side of the Belle River and four lots on the west and east side of the Puce River, forming the basis for the Township of Maidstone. By the end of 1793, McNiff had surveyed 9,000 acres in the township (Lajeunesse 1960: cxv; Burnside et al. 1983: 15). Since the swampy conditions increased the importance of the rivers and lakes as transportation corridors, the lots along the Belle River and the Puce River just south of Lake St. Clair were surveyed in the long and narrow French-Canadian style to allocate as many water-fronting lots as possible

(Lajeunesse 1960: 182-183). The survey of the remainder of Maidstone Township was completed in 1821. The township was surveyed using the double front and single front systems (Plate 1 and Plate 2).

Plate 1: Double front system (Dean 1969)

Plate 2: Single front system (Dean 1969)

The first settlers in Maidstone Township were primarily squatters and French-Canadian fishers and trappers. In 1795, the United States and Britain signed *Jay's Treaty*, which relinquished control of Detroit to the United States. Many French and British settlers on the American bank of the Detroit River moved into Essex County, including along the Belle River. Maidstone Township would retain a significant French population throughout its history. The first record of squatters in the newly surveyed township appears in 1796 when John Askin Senior wrote to the Land Board asking for assistance in removing squatters who were occupying land in the township and illegally cutting timber (Burnside et al. 1983: 16). Askin was a landowner in the Study Area, but it is not clear if the lands being squatted upon included the Study Area. By 1825, much of the north part of Maidstone Township had been granted. However, much of this land was held by speculators, including John Askin and his family. Settlement of Maidstone Township would not intensify until the 1830s (Burnside et al 1983: 19).

3.4 19TH CENTURY DEVELOPMENT

The settlement of the interior of Maidstone Township began in 1828 along the Middle Road. The early settlers were primarily Irish, the first of them being the O'Connor family, who settled on Lot 3, North of Middle Road, and the Kavanagh family, who settled on Lot 1, North of Middle Road (Belden 1881: 13). During the 1830s, settlement in the township remained sparse and the Middle Road was little more than a blazed path through the forest. Middle Road became a major thoroughfare and greatly increased the prospects of settlement in the area when it was planked in 1854 (Burnside et al. 1982).

Settlement of the lots along the Middle Road was under the superintendence of Colonel Thomas Talbot, who was instrumental in the settlement of 29 townships in southwestern Ontario. Talbot had served as aide-de-camp to John Graves Simcoe. In 1803 he obtained a large grant to settle on Lake Erie and was appointed Crown Land Agent and a District Commissioner. The lands under his superintendence became collectively known as the Talbot Settlement. During a time when road conditions in Canada were treacherous, Talbot developed an excellent road network. The two main roads in Talbot's jurisdiction were the Talbot Road, surveyed starting in 1809, and the Middle Road, surveyed in 1823. The Middle

Road, present-day County Road 46, is located partially within Maidstone Township. Talbot was mistrustful of American settlers and intended to populate the townships under his stewardship with immigrants from the British Isles (Armstrong 1986: 24; Elgin County Archives n.d.; Essex County 2016). Talbot's superintendence over much of southwestern Ontario waned after the Rebellion of 1837 as the colonial government coaxed him to wind down his participation in civic life (Hamil 1955: 221).

The primary overland transportation route in the northern half of Maidstone was completed in 1838 when the Tecumseh Road was opened between Windsor and Tilbury West Township. The road was a corduroy road and was situated just south of Lake St. Clair and ran partially through the Study Area. The Tecumseh Road would remain the main overland route through the northern part of the township and was instrumental in the development of the northern half of the township until the arrival of the Great Western Railway in 1854 (Burnside et al. 1983: 86).

During the 1840s and 1850s the northern half of the township became increasingly settled. The first sawmill was opened along the Tecumseh Road in the 1840s. In the northwest portion of the Scottish families settled in what became known as the Scotch Settlement. The portion of the township south of Middle Road was not settled until the second half of the 19th century (Belden 1881: 13). By 1847, 50% of the available land in Maidstone Township had been granted (Clarke 1978: 110).

A major development in Maidstone Township and the development of Essex County was the construction of the Great Western Railway through the northern part of the township just south of Lake St. Clair. The Great Western Railway had originally been incorporated as the London and Gore Railroad Company in 1834. In 1845 the name was changed to the Great Western Railroad Company, before being changed to the Great Western Railway in 1853. The railway opened in 1854 with a route from Niagara Falls to Windsor and linked to existing railroads in Michigan and New York State (Andreae 1997: 126 and Baskerville 2006). The arrival of the railway was a boon to township farmers, who enjoyed enhanced access to markets (Burnside et al. 1983: 102). By 1857, 75% of the available land in the township had been granted, demonstrating the increasing settlement of the township (Clarke 1978: 110). In 1882, the Great Western Railway merged with its competitor, the Grand Trunk Railway (Baskerville 2006).

The increased prosperity resulting from the railway led to the increased growth of the hamlet of Belle River, located just east of the Study Area on land mostly in the adjacent Rochester Township but partially in Maidstone Township. The hamlet was incorporated as a village in 1875 (Ontario Heritage Trust n.d.).

The population of Maidstone Township in 1881 was 3,260, an increase of 1,205 people since 1871 (Census of Canada 1871; Census of Canada 1881). According to the Census of 1891 the main crops grown in Maidstone Township included wheat, oats, corn, and hay. The township also had the highest number of cattle in Essex County, with a count of 2,717 (Census of Canada 1891).

3.5 20TH CENTURY DEVELOPMENT

The Township of Maidstone remained predominantly agricultural through the first half of the 20th century. The township also experienced a population decline from 1901 to 1921 (Dominion Bureau of Statistics 1953). The emergence of industrialization and urbanization during the late 19th and early 20th century increased the number of wage workers required in cities and towns. At the same time, improvements in farm equipment and the mechanization of farming meant that less labour was required on a farm (Sampson 2012). This encouraged out-migration from rural areas to the burgeoning cities of Ontario (Drummond 1987: 30).

In 1921, the population of Maidstone Township was 2,432, a decline of 685 people since 1901 (Census of Canada 1951). The population included 709 people who identified as French, representing a little over a quarter of the population of the township (Census of Canada 1921a). The Census of 1921 lists Maidstone Township as containing 482 farms, the majority of which were between 51 and 100 acres in size. A total of 26,918 acres of land were under crop. The main crops grown in the township in 1921 included wheat, barley, oats, corn, and hay (Census of Canada 1921b).

In 1929, the Middle Road was designated as King's Highway 2A. The 55 kilometre highway connected Tilbury with Windsor. In 1938, the route was re-designated King's Highway 98. In 1934, Tecumseh Road between Belle River and Windsor was designated as King's Highway 39 (Bevers 2019). The highway, running through the Study Area, was the first paved road to link Windsor and Belle River (Opportunities for Youth Project 1974: 26). In 1965, King's Highway 401 was completed through Essex County and the importance of King's Highway 98 and King's Highway 39 as east to west routes in southern Ontario was quickly diminished. In 1970, the entirety of King's Highway 98 and King's Highway 39 within Maidstone Township was downloaded to the County of Essex (Bevers 2018b). King's Highway 98 is now known as County Road 46 and King's Highway 39 is now known as County Road 22.

Maidstone Township remained predominantly rural and agricultural during the first half of the 20th century. However, the population of the township was beginning to rebound from its early 20th century nadir. In 1941, the population of Maidstone Township was recorded as 3,195, an increase of 578 since 1931. The township continued to grow at the start of the postwar period and the Census of 1951 listed the population as 4,026. In 1951, there were 441 farms in the township and 29,550 acres under crop (Dominion Bureau of Statistics 1953).

By the 1960s, the northern part of Maidstone Township along Lake St. Clair was transitioning from a predominantly rural and agricultural land use to a suburban and recreational land use. By the late 1960s the shore of Lake St. Clair was heavily developed. Development along King's Highway 39 had also intensified. To the east of the Study Area, Belle River was incorporated as a town in 1969 (Opportunities for Youth Project 1974: 43). South of King's Highway 39, the township remained rural (Department of Mines and Energy 1968). By 1981, the population of Maidstone Township had increased to 8,350 (Statistics Canada 1982).

Starting in 1996, the provincial government embarked on a program of municipal restructuring. Between 1996 and 2000 the number of municipalities in Ontario decreased from 815 to 471 (Rusk 2000). In July 1998, the Township of Maidstone and Town of Belle River amalgamated to form Lakeshore Township. In 1999, Rochester Township, Tilbury North Township, and Tilbury West Township amalgamated with Lakeshore Township to form the Town of Lakeshore (Ministry of Municipal Affairs and Housing 2018).

The population of the Town of Lakeshore in 2016 was 36,611, an increase of six percent since 2011 (Statistics Canada 2019).

3.6 SITE HISTORY

3.6.1 Lot 2, Concession 1, Belle River West Side

Lot 2, Concession 1, West of Belle River, totaling 197 acres, was granted by the Crown in 1797 to Benjamin Auge (ONLand 2019a). By 1825, the lot was divided in half, with A. Charron on the north half and S. Jannisse on the south half (Clarke 1983: 76). Historical mapping from 1877 shows that the lot had been further divided into four quarters. The southernmost quarter was occupied by Alexander Marantette, the south middle by Fabien Marantette, the middle north by Oliver Jeroche, and the northernmost quarter by Forlette Charon (also spelled Charron) (Figure 3). However, land records show Paul Charon as the owner of 50 acres of land in the lot during the 1870s (ONLand 2019a).

The Census of 1881 does not list Alexander Marantette but does list Fabien Maranetette as residing in Belle River. The east end of Lot 2 was partially within the borders of the Village of Belle River, so Marantette likely resided on the lot. The census lists him as a 72-year-old farmer born in Ontario. The Census of 1881 lists Oliver Durocher (also spelled Olivier) as a 49-year-old butcher residing in Belle River. He was born in Ontario. He lived with his wife Marie, age 56; mother Stephanie, age 70; son John, age 17; son Edward, age 15, son Francis, age 4; son Ulric, age 3, and daughter Louisa, an infant. The Census of 1881 lists Paul Charron as a 76-year-old farmer born in Ontario. He lived with his wife Antoine, age 80 (Library and Archives Canada 1881). By 1903, the lot contained a north 100-acre parcel and several south parcels. The north half was owned by Oscar Robillard and the south half by Jacques Ladouceur and Henrie Marantette. Both Robillard and Ladouceur continued to own land in the lot through the early 20th century (ONLand 2019a). Topographic mapping from 1912 and 1940 shows the lot as rural (Figure 4 and Figure 5).

In 1945, Denis St. Pierre was granted, for $1.00, an unspecified amount of land in Lot 2 from Thomas Maranetette and in 1957 he expanded his holdings in the lot by purchasing 25 acres from Paul Poisson and his wife (ONLand 2019a). During the mid-20th century St. Pierre was a local land developer in Maidstone Township and land that St. Pierre owned in Lot 2 would be used for a variety of civic purposes. (Lakeshore News 2012).

In 1972, St. Pierre sold land to the Essex County Roman Catholic Separate School Board. The board built the École Pavillon des Jeunes, a Catholic elementary school with instruction in the French language (ONLand 2019a). In 1990, an addition was announced for the school to accommodate the growing student body of the area (Robertson 1990). That same year, St. Pierre also sold land to the Belle River Community Arena Incorporated (ONLand 2019a). The Belle River Community Arena included a hockey rink and community room which could be rented out for private functions (Windsor Star 1993). Today, the arena is known as the Belle River District Community Centre.

In 1974, St, Pierre sold land for a water pollution control plant to the Ministry of the Environment for $1.00 (ONLand 2019a). The facility was constructed and operated by the Ministry of the Environment and was originally named the Belle River/Maidstone Water Pollution Control Plant. It was built in phases between 1974 and 1981 (CH2M Hill Canada Limited and Stantec 2018). Between 1989 and 1991, the plant was upgraded, along with other plants along the Great Lakes in Ontario, to comply with the municipal-industrial strategy for abatement (MISA). The program aimed to reduce pollutants from water pollution control plants that also handle industrial waste (Doelen 1988). In 2007, the plant received further upgrades under the Canada-Ontario Municipal Rural Infrastructure Fund (Canada Newswire 2007). In 2012, the Town of Lakeshore renamed the plant the Denis St. Pierre Water Pollution Control Plant in honour of St. Pierre's contributions to the development of the Town of Lakeshore (Lakeshore News 2012).

3.6.2 Lot 1, Concession 1, Belle River West Side

The Study Area is located in the west half of Lot 1, Concession 1, Belle River West Side. The lot was granted in two halves and the west half, containing 99 acres, was granted by the Crown to John Rourke in 1854 (ONLand 2019b). The Rourke family owned a significant amount of land and their role in the Study Area is reflected by the street name in the Study Area called Rourke Line Road. The Census of 1861 lists John Rourke as a 32-year-old. The census enumerator did not fill out a type of dwelling or occupation for any of the people enumerated on this census page. He lived with his wife Helen, age 29; son James, age 10; son Cornelius, age 7; daughter Mary, age 5; and son Edward, age 3 (Library and Archives Canada 1861). Historical mapping from 1877 lists the west half of the lot as being owned by the Rourke Estate (Walling 1877).

In 1907, the descendants of John Rourke sold a 38-acre portion of the lot to Louis Dicaire, which was sold to Euphraim Trottier in 1919 (ONLand 2019b). Trottier began to subdivide the lot into smaller parcels beginning in the 1920s and in 1945 Mary Rourke sold her portion of the lot to Allen Charon, ending the Rourke family ownership in the west half of Lot 1 (ONLand 2019b). Aerial photography from 1954 shows that the west half of the lot had been divided into several smaller parcels along King's Highway 39 and the south of the property consisted of several large agricultural fields (Figure 6). Topographic mapping from 1968 shows that the land along King's Highway 39 was clustered with residences, while the south part of the lot remained undeveloped (Figure 7).

3.6.3 Lot A, Concession 1, Belle River West Side

Lot A, Concession 1, Belle River West Side, containing 200 acres, was granted by the Crown to King's College in 1828 (ONLand 2019c). King's College was the predecessor to the University of Toronto. King's College was a publicly funded Anglican institution and received a Royal Charter in 1827, which included 225,944 acres of Crown land as an endowment. The lands were to be sold or leased to fund the university. In 1849, the Royal Charter was canceled and in 1850 King's College became the non-denominational University of Toronto (Avigdor 2019). By 1866, 137 acres of the lot was owned by Moses Robarsh, 15 acres was owned by The Great Western Railway, and the remaining acreage was owned by John Rourke and John B. St. Amouern (ONLand 2019c).

The Census of 1871 lists Moses Robarsh as 42-year-old mariner born in Ontario, who was residing in Sandwich at the time of the enumeration. He lived with his wife Elizabeth, age 28, and son Moses Bently, age 10 (Library and Archives Canada 1871). Robarsh was a boat captain and was referred to as Captain Robarsh. He captained a barge that regularly traveled to Detroit (Brown 1876: 517-518). Robarsh was also involved in an ownership dispute at the Belle River mill located on the east side of the Belle River in the Village of Belle River. The original owner of the mill, Charles Chisholm sold the mill to Abraham Van Orden in 1868. Moses Robarsh had originally supported the purchase of the mill by Van Orden, although his level of support, and whether it was financial, is unknown. Soon after the purchase, a dispute between Chisholm and Van Orden surrounding the transaction occurred (Chatham Weekly Planet 1868). However, Robarsh soon grew dissatisfied with Van Orden and turned to Chisholm to double cross Van Orden (Magee 1983).

In August 1868, the mill burned to the ground and three dead bodies, including the body of Van Orden, was discovered in the burned-out ruins. Witnesses said they heard Robarsh tell Chisholm that “the best thing you can do with the mill is insure it and set fire to it” (Chatham Weekly Planet 1868). Robarsh had several previous encounters with the law and was accused of drunkenness, setting fire to the Great Western Railway bridge over the Belle River, and killing his horse and cow (Chatham Weekly Planet 1868). Robarsh was arrested and accused of triple homicide and Chisholm was arrested and accused of paying Robarsh to commit the crime. However, in the fall of 1868 Robarsh and Chisholm were found not guilty and Essex County and the Townships of Maidstone and Rochester offered rewards for clues about the real perpetrators (Magee 1983). Robarsh sold his part of Lot A to Patrick Brady in 1871 (ONLand 2019c).

Historical mapping from 1877 shows that Lot A was divided into a west and east parcel, and that the borders of the Village of Belle River extended into the east part of the lot (Walling 1877) (Figure 3). Topographic mapping from 1912 shows that the lot remained undeveloped and that Rourke Line Road ran north to the railway tracks along Lake St. Clair; no structures are depicted on the lot (Department of Militia and Defence 1912) (Figure 4). By 1940, structures are depicted north of the railway tracks lining Lake St. Clair and Caille Avenue is depicted (Department of National Defence 1940) (Figure 5). Development increased in the postwar period and by 1968 the east side of Rourke Line Road contained one structure and was adjacent to a ditch while the shoreline was lined with structures (Department of Energy, Mines, and Resources 1968) (Figure 7).

3.6.4 Lot 1, Between River Puces and River Belle

Lot 1, Between Rivers Puces and River Belle, totaling 209 acres, was granted by The Crown to Charles Askin in 1806 (ONLand 2019d). Charles Askin was the son of John Askin, a wealthy landowner and speculator who sat on the District of Hesse Land Board (Clarke 1983: 81). By 1825, Askin and his sons would become the sixth largest landowner in the County of Essex. John Askin was born in Ireland in 1739 and moved to the Thirteen Colonies in 1758 before eventually moving to Essex County. His first marriage was to an Indigenous woman, and this earned him the trust of Indigenous peoples and facilitated his acquisition of large tracts of land (Clarke 1983: 96). He later married the daughter of a prominent French-

Canadian family in Detroit. Askin was also a magistrate and a close associate of the surveyors D.W. Smyth and Abraham Iredell (Clarke 1983: 99).

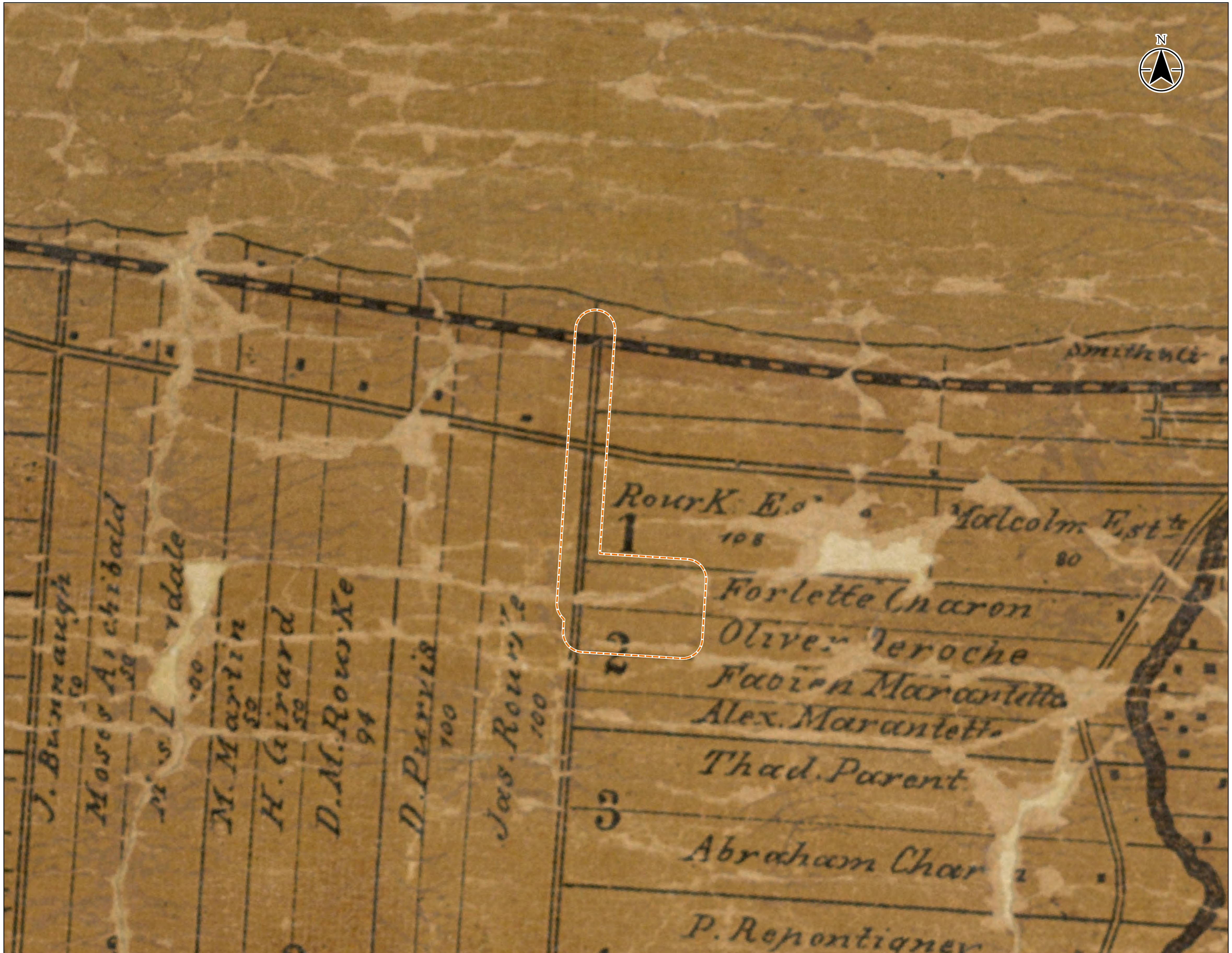
When the Askin family found itself in need of liquid capital, they often turned to their close associate James McGill (Plate 3) to purchase their land (Cooper 1983: 99). In 1807, Askin sold Lot 1 to James McGill (ONLand 2019d). McGill was a wealthy Montreal-based fur trade merchant and fellow land speculator. By 1825 McGill was the largest landowner in Essex County, having amassed 7,317 acres (Clarke 1983: 97, 100). He acquired large amounts of land in Essex County from Askin and also as compensation from the signing of *Jay's Treaty* between the United States and Great Britain, which weakened McGill's fur trade interests. McGill is most remembered for setting aside land and an endowment for McGill University in Montreal (Cooper 1983).

Plate 3: James McGill (McCord Museum n.d.)

In 1830, James McGill Trottier DesRivieres, the step-grandson of James McGill, sold 100 acres in the lot to Thomas Beviore and in 1838 McGill Trottier DesRivieres sold 100 acres to John Martin. In 1852, Martin sold about two acres of land to the Great Western Railway, which ran through the north part of the lot (ONLand 2019d). In 1871, the east half of the lot, which includes part of the Study Area, was sold to James Rourke, a son of John Rourke, who owned land in the adjacent Lot 1, Concession 1, Belle River West Side and Lot A, Concession 1, Belle River West Side (ONLand 2019d).

Historical mapping from 1877 shows that the east half of Lot 1 was owned by James Rourke and a structure is depicted along Tecumseh Road on the north side. The west half of the lot was owned by Dolway Purvis (Walling 1877) (Figure 3). The Census of 1891 lists James Rourke as a 57-year-old farmer who lived alone. Dolway Purvis was a 64-year-old farmer who lived with his wife Nancy, age 60; son John, age 28; and son Silas, age 22 (Library and Archives Canada 1891).

In 1905, Silas Purvis sold the Purvis family's 100 acres of the west half of the lot to William K. Pullis and in 1918, Michael Rourke, John Rourke, Denis Rourke, and Edmund Rourke sold the east half to Ignatius Halford (ONLand 2019d). Topographic mapping from 1912 shows that the lot remained entirely rural except for Tecumseh Road and the railway (Department of Military and Defense 1912) (Figure 4). Aerial photography from 1954 shows that by the postwar period subdivision of the lot for suburban development began (Figure 6) and by 1968 topographic mapping shows the west side of Rourke Line Road north of King's Highway 39 lined with structures (Department of Surveys and Mapping 1968) (Figure 7).



Stantec

Legend

Approximate Location of Cultural Heritage Study Area

Notes

1. Historical mapping not to scale.
2. Citation: Walling H.F. 1877. *Map of Essex County*. Toronto: R.M. Tackabury.

Project Location Essex County	165620173 REV4 Prepared by KDB on 2019-12-03 Quality Review by JM on 2019-12-09 Independent Review by CV on 2019-12-12

Client/Project

TOWN OF LAKESHORE
TOWN OF LAKESHORE DENIS ST. PIERRE WATER POLLUTION CONTROL PLANT EXPANSION

Figure No.

3

Title

County of Essex Map, 1877

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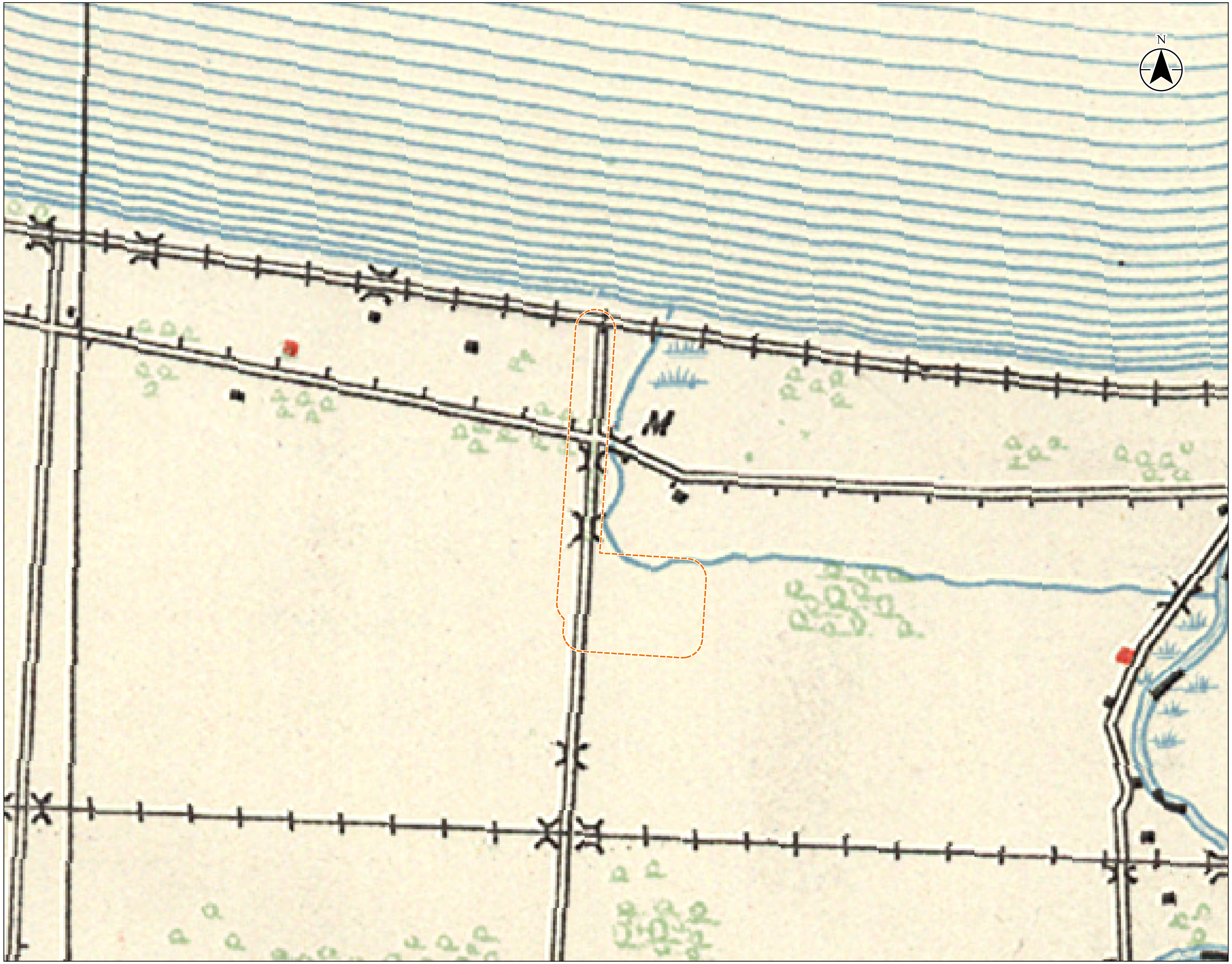

Stantec

Legend

Approximate Location of Cultural Heritage Study Area

0 100 200 m

1:10,000 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Citation: Department of Militia and Defence. 1912. *Belle River, Ontario.*

Project Location
Essex County

165620173 REV4
Prepared by KDB on 2019-12-03
Quality Review by JM on 2019-12-09
Independent Review by CV on 2019-12-12

Client/Project
TOWN OF LAKESHORE
TOWN OF LAKESHORE DENIS ST. PIERRE WATER POLLUTION CONTROL PLANT EXPANSION

Figure No.
4

Title
Topographic Map, 1912

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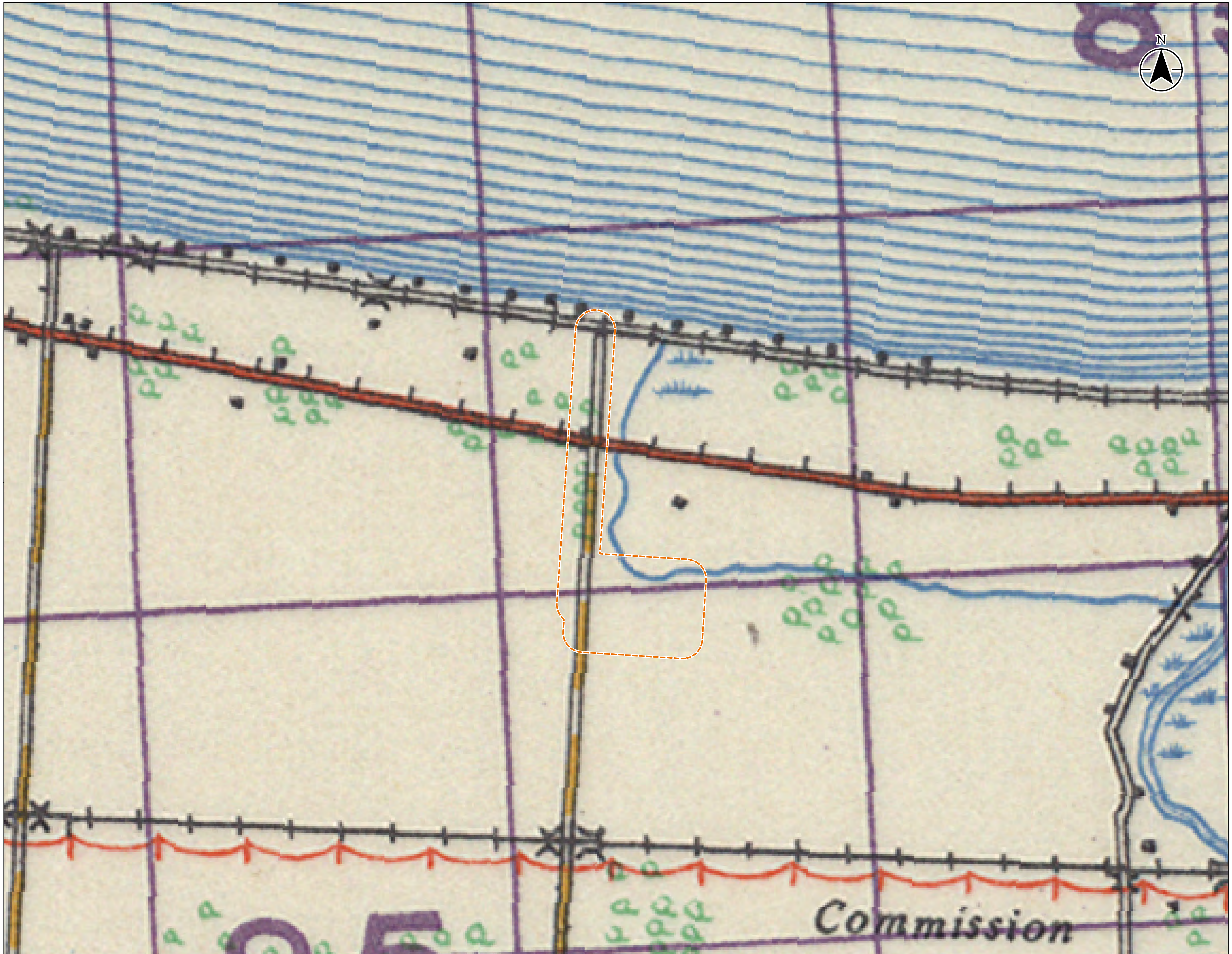


Stantec

Legend

Approximate Location of Cultural Heritage Study Area

0 100 200
m

1:10,000 (At original document size of 11x17)

Notes
1. Coordinate System: NAD 1983 UTM Zone 17N
2. Citation: Department of National Defence. 1940. *Belle River, Ontario.*

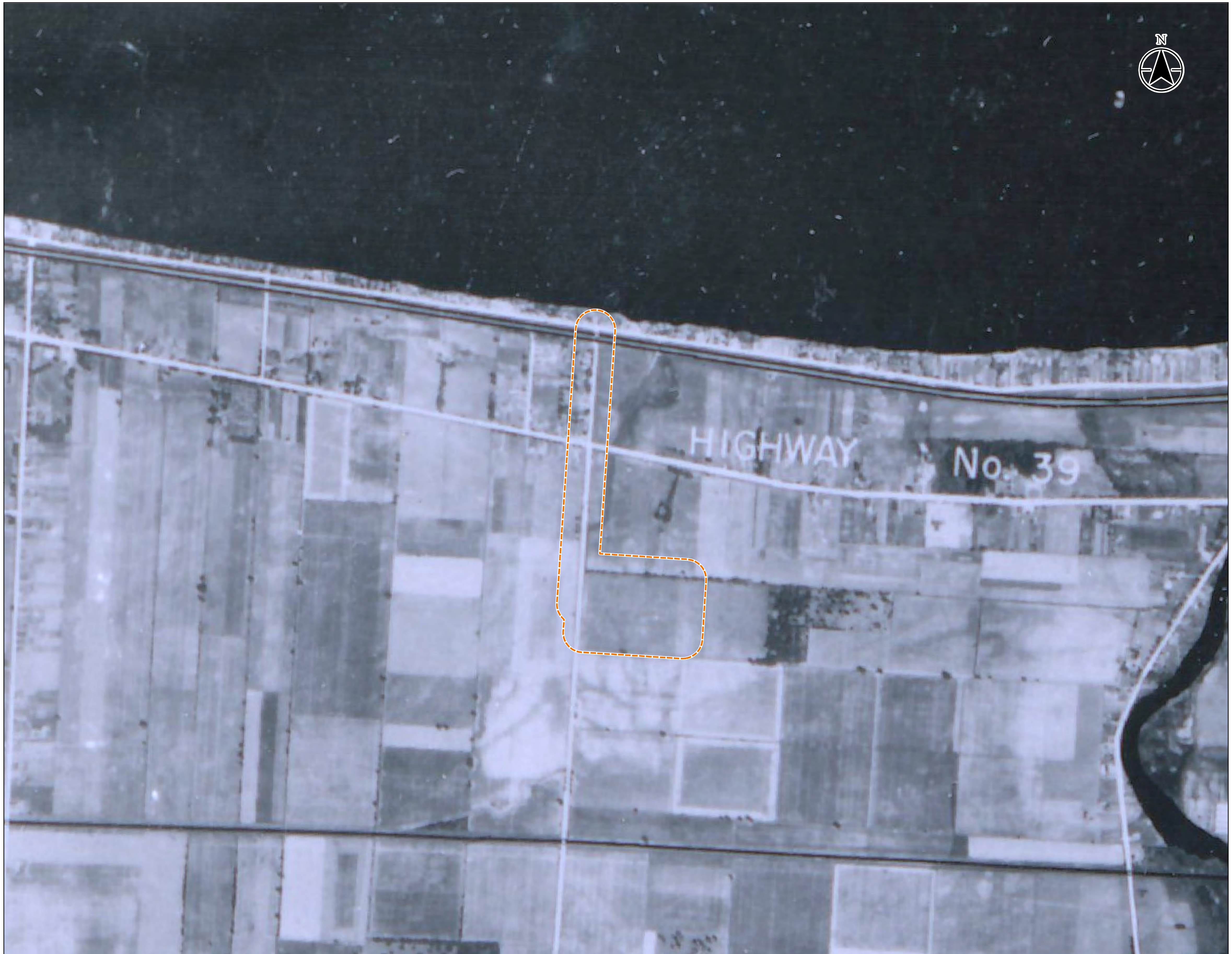
Project Location
Essex County

165620173 REV4
Prepared by KDB on 2019-12-03
Quality Review by JM on 2019-12-09
Independent Review by CV on 2019-12-12

Client/Project
TOWN OF LAKESHORE
TOWN OF LAKESHORE DENIS ST. PIERRE WATER POLLUTION CONTROL PLANT EXPANSION

Figure No.
5

Title
Topographic Map, 1940



Stantec

Legend

Approximate Location of Cultural Heritage Study Area

Notes

1. Historical mapping not to scale.
2. Citation: Hunting Survey Corporation. 1954. *Air Photos of Southern Ontario.*

Project Location Essex County	165620173 REV4 Prepared by KDB on 2019-12-03 Quality Review by JM on 2019-12-09 Independent Review by CV on 2019-12-12

Client/Project

TOWN OF LAKESHORE
TOWN OF LAKESHORE DENIS ST. PIERRE WATER POLLUTION CONTROL PLANT EXPANSION

Figure No.

6

Title

Aerial Photograph, 1954

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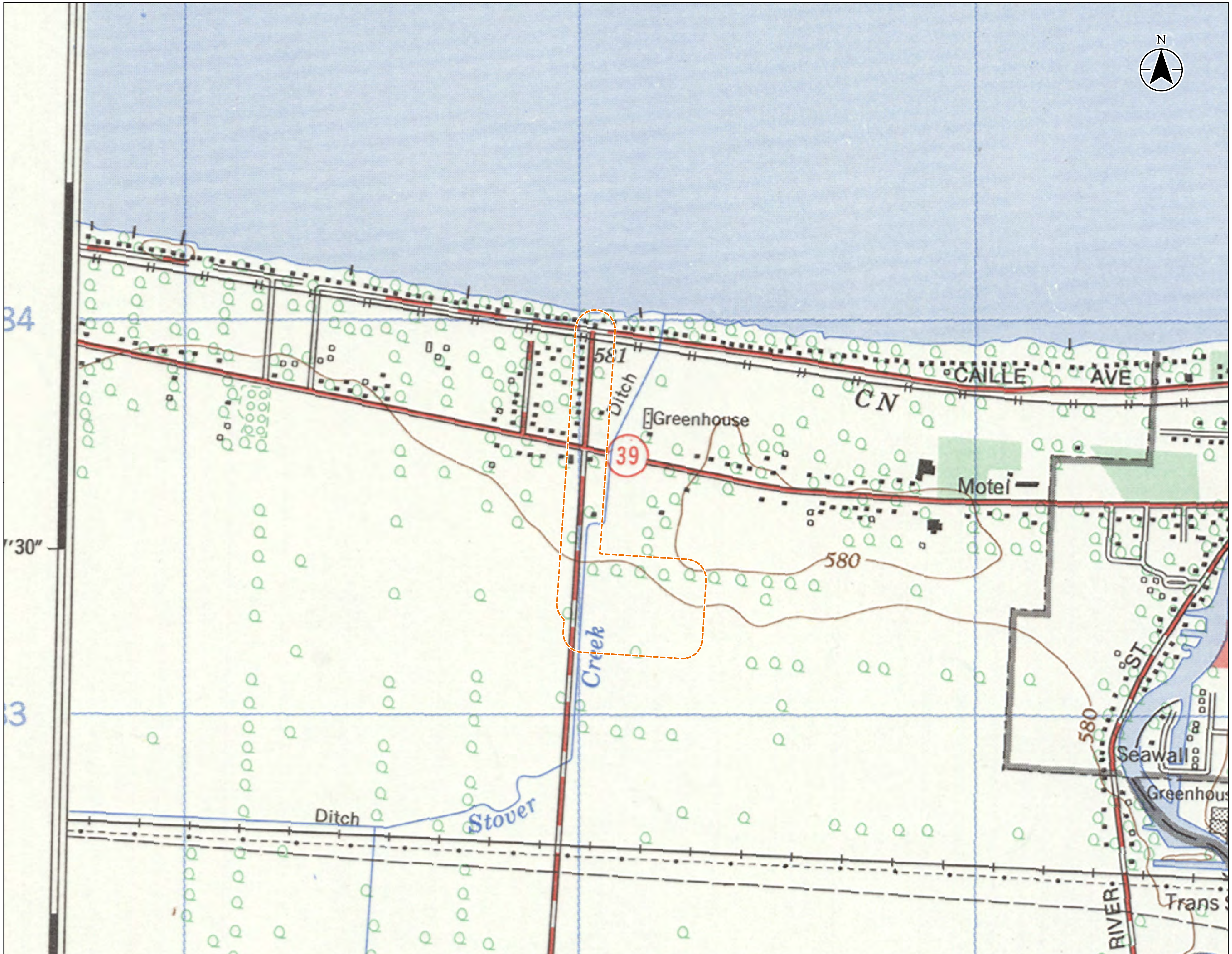

Stantec

Legend

Approximate Location of Cultural Heritage Study Area

0 100 200 m

1:10,000 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Citation: Department of Energy, Mines, and Resources. 1968. *Belle River, Essex County, Ontario.* Ottawa: Map Distribution Office.

Project Location
Essex County

165620173 REV4
Prepared by KDB on 2019-12-03
Quality Review by JM on 2019-12-09
Independent Review by CV on 2019-12-12

Client/Project
TOWN OF LAKESHORE
TOWN OF LAKESHORE DENIS ST. PIERRE WATER POLLUTION CONTROL PLANT EXPANSION

Figure No.
7

Title
Topographic Map, 1968

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3.7 AGENCY AND MUNICIPAL CONSULTATION

In order to identify protected properties, the MHSTCI, OHT, and Town of Lakeshore were contacted. Karla Barboza of the MTCS confirmed there are no provincial heritage properties within or adjacent to the study area. Ian Search of the Town of Lakeshore confirmed that there are no listed or designated properties located within the study area. Kevin DeMille of the OHT confirmed there are not OHT owned properties or easements within or adjacent to the Study Area.

3.8 FIELD PROGRAM

3.8.1 Potential Cultural Heritage Resources

As described in Section 2.4, a pedestrian survey of the study area was undertaken to identify potential cultural heritage resources situated within the study area and confirm the presence of previously identified protected properties. Where identified, the potential cultural heritage resource was photographed from publicly accessible roadways.

During the survey, 37 properties were identified as containing potential cultural heritage resources. Detailed property descriptions of the potential resources can be found in Appendix A.

None of the properties inventoried had previously been identified as protected or potential heritage resources, as outlined in Section 3.7.

3.9 EVALUATION OF CULTURAL HERITAGE VALUE OR INTEREST

Where a potential cultural heritage resource was identified within the study area, an evaluation of the CHVI of the property was undertaken (Figure 8). Detailed evaluations are contained within Appendix A. As described in Section 2.5 each potential cultural heritage resource was evaluated according to O. Reg. 9/06, the criteria for determining CHVI. Each potential cultural heritage resource was considered both as an individual structure and as a landscape. Where CHVI was identified, a structure or landscape was assigned a CHR and the property was determined to contain a cultural heritage resource.

Following evaluation, one heritage resource was identified on properties within the study area (Figure 9). A summary of properties assessed and corresponding CHR, where appropriate, is provided in Table 1 below.

Table 1: Determination of CHVI According to O. Reg. 9/06

Municipal Address	Previous Heritage Recognition	Resource Type	Photograph	Identified Attributes	CHVI	CHR Number	Relationship to Project
304 Rourke Line Road	None	Former community centre		None Identified	No	N/A	Within Study Area
276 Rourke Line Road	None	Water Pollution Control Plant		None Identified	No	N/A	Within Study Area
264 Rourke Line Road	None	Commercial/ Residential		None Identified	No	N/A	Within Study Area

Municipal Address	Previous Heritage Recognition	Resource Type	Photograph	Identified Attributes	CHVI	CHR Number	Relationship to Project
224 Rourke Line Road	None	Commercial		None Identified	No	N/A	Within Study Area
211 Rourke Line Road	None	Commercial		None Identified	No	N/A	Within Study Area
200 Rourke Line Road	None	Residential		None Identified	No	N/A	Within Study Area

Municipal Address	Previous Heritage Recognition	Resource Type	Photograph	Identified Attributes	CHVI	CHR Number	Relationship to Project
1496 County Road 22	None	Commercial/ Residential		None Identified	No	N/A	Within Study Area
1525 County Road 22	None	Commercial/ Residential		None Identified	No	N/A	Within Study Area
1537 County Road 22	None	Commercial/ Residential		None Identified	No	N/A	Within Study Area

Municipal Address	Previous Heritage Recognition	Resource Type	Photograph	Identified Attributes	CHVI	CHR Number	Relationship to Project
180 Rourke Line Road	None	Residential		None Identified	No	N/A	Within Study Area
175 Rourke Line Road	None	Residential		None Identified	No	N/A	Within Study Area
172 Rourke Line Road	None	Residential		None Identified	No	N/A	Within Study Area

Municipal Address	Previous Heritage Recognition	Resource Type	Photograph	Identified Attributes	CHVI	CHR Number	Relationship to Project
168 Rourke Line Road	None	Residential		None Identified	No	N/A	Within Study Area
167 Rourke Line Road	None	Residential		None Identified	No	N/A	Within Study Area
164 Rourke Line Road	None	Residential		None Identified	No	N/A	Within Study Area

Municipal Address	Previous Heritage Recognition	Resource Type	Photograph	Identified Attributes	CHVI	CHR Number	Relationship to Project
163 Rourke Line Road	None	Residential		None Identified	No	N/A	Within Study Area
160 Rourke Line Road	None	Residential		None Identified	No	N/A	Within Study Area
156 Rourke Line Road	None	Residential		None Identified	No	N/A	Within Study Area

Municipal Address	Previous Heritage Recognition	Resource Type	Photograph	Identified Attributes	CHVI	CHR Number	Relationship to Project
155 Rourke Line Road	None	Residential		None Identified	No	N/A	Within Study Area
150 Rourke Line Road	None	Residential		None Identified	No	N/A	Within Study Area
151 Rourke Line Road	None	Residential		None Identified	No	N/A	Within Study Area

Municipal Address	Previous Heritage Recognition	Resource Type	Photograph	Identified Attributes	CHVI	CHR Number	Relationship to Project
148 Rourke Line Road	None	Residential		None Identified	No	N/A	Within Study Area
147 Rourke Line Road	None	Residential		None Identified	No	N/A	Within Study Area
143 Rourke Line Road	None	Residential		None Identified	No	N/A	Within Study Area

Municipal Address	Previous Heritage Recognition	Resource Type	Photograph	Identified Attributes	CHVI	CHR Number	Relationship to Project
139 Rourke Line Road	None	Residential		None Identified	No	N/A	Within Study Area
136 Rourke Line Road	None	Residential		None Identified	No	N/A	Within Study Area
135 Rourke Line Road	None	Residential		None Identified	No	N/A	Within Study Area

Municipal Address	Previous Heritage Recognition	Resource Type	Photograph	Identified Attributes	CHVI	CHR Number	Relationship to Project
132 Rourke Line Road	None	Residential		None Identified	No	N/A	Within Study Area
131 Rourke Line Road	None	Residential		None Identified	No	N/A	Within Study Area
128 Rourke Line Road	None	Residential		None Identified	No	N/A	Within Study Area

Municipal Address	Previous Heritage Recognition	Resource Type	Photograph	Identified Attributes	CHVI	CHR Number	Relationship to Project
127 Rourke Line Road	None	Residential		None Identified	No	N/A	Within Study Area
124 Rourke Line Road	None	Residential		None Identified	No	N/A	Within Study Area
N/A former Great Western Railway tracks over Rourke Line Road	None	Railway line		Railway line: layout of the former Great Western Railway line including linear corridor and naturalized vegetation	Yes	1	Within Study Area

Municipal Address	Previous Heritage Recognition	Resource Type	Photograph	Identified Attributes	CHVI	CHR Number	Relationship to Project
1500 Caille Avenue	None	Residential		None Identified	No	N/A	Within Study Area
N/A Caille Avenue	None	Streetscape		None Identified	No	N/A	Within Study Area
N/A Rourke Line Road	None	Streetscape		None Identified	No	N/A	Within Study Area

Municipal Address	Previous Heritage Recognition	Resource Type	Photograph	Identified Attributes	CHVI	CHR Number	Relationship to Project
N/A County Road 22	None	Streetscape		None identified	No	N/A	Within Study Area

Stantec

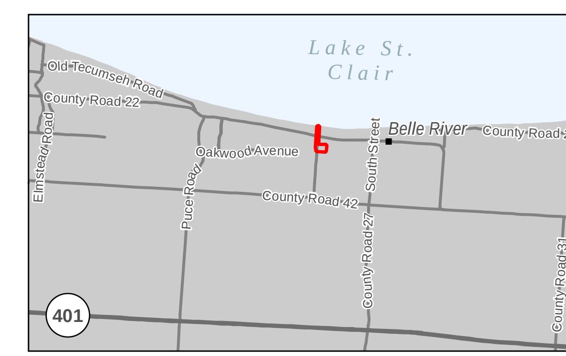
Legend

- Cultural Heritage Study Area
- Potential Cultural Heritage Resource
- Future Outfall Sewer
- Denis St. Pierre Water Pollution Control Plant

0 50 100
m

1:4,000 (At original document size of 11x17)

Notes
1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2019.
3. Orthoimagery © First Base Solutions, 2019. Imagery from 2019.



Project Location
Essex County

165620173 REV4
Prepared by KDB on 2019-12-03
Quality Review by JM on 2019-12-09
Independent Review by CV on 2019-12-12

Client/Project
TOWN OF LAKESHORE
TOWN OF LAKESHORE DENIS ST. PIERRE WATER POLLUTION CONTROL PLANT EXPANSION

Figure No.
8

Title
Potential Cultural Heritage Resources

Stantec

Legend

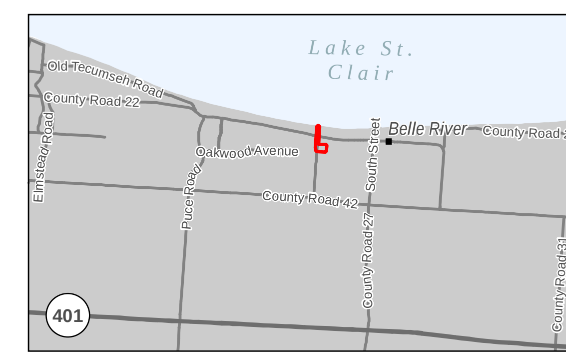
- Cultural Heritage Study Area
- Identified Cultural Heritage Resource
- Future Outfall Sewer
- Denis St. Pierre Water Pollution Control Plant

0 50 100 m

1:4,000 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2019.
3. Orthoimagery © First Base Solutions, 2019. Imagery from 2019.



Project Location
Essex County

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Client/Project
TOWN OF LAKESHORE
TOWN OF LAKESHORE DENIS ST. PIERRE WATER POLLUTION CONTROL PLANT EXPANSION

Figure No.
9

Title
Identified Cultural Heritage Resources

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4.0 SITE DESCRIPTION

4.1 STUDY AREA

The Study Area includes the existing Denis St. Pierre WPCP property and the right-of-way (RoW) of Rourke Line Road from the Denis St. Pierre WPCP to Caille Avenue as well as a 50 metre boundary around the aforementioned locations.

The Denis St. Pierre WCPC contains a collection of contemporary one and two storey red/brown brick buildings, siding clad sheds, and water treatment infrastructure. The buildings are rectangular in plan with flat roofs, rectangular windows, a single entrance door and garage door openings. Shrub landscaping is planted at the entrance to the central building and there is an asphalt parking lot between the buildings and the road (Plate 4).

The Study Area contains a mix of commercial and residential properties fronting on Rourke Line Road, Caille Avenue, or County Road 22. The properties typically range in constructor date from the mid- to late 20th century and are a mix of mid-century vernacular, mid-century modern, and contemporary building styles. Of the 37 potential cultural heritage resources within the Study Area, 25 are residential properties, two are commercial properties, four are mixed commercial and residential properties, three are streetscapes, one is a railway, one is a former community centre, and one is the Denis St. Pierre WPCP. There are a few properties within the study area (on County Road 22 and Caille Avenue) that are less than 40 years of age and as such are not included in the CHAR. The Study Area also includes a storm water management (SWM) pond for a residential development west of Rourke Line Road and an agricultural field to the east of Rourke Line Road. Neither of these features contain structures and as such are not included in the CHAR.

Rourke Line Road within the Study Area consists of a mixed commercial/residential corridor from the Denis St. Pierre Water Pollution Control Plant to County Road 22 and a residential streetscape north of County Road 22 to Caille Avenue. The mixed-use section consists of a two-lane paved asphalt road with central dual turning bay, curbs, and concrete sidewalks on the east side and a paved multi-use pathway on the west side. The road is lined with a mix of commercial properties, a few residences and the borders of a storm water management pond from a residential development to the west (Plate 5, Plate 6). North of County Road 22 the street consists of a two-lane unmarked asphalt road with no curbs or sidewalks. This section is bordered by one to two storey residential properties (Plate 7, Plate 8).

County Road 22 is a streetscape comprised of a two-lane paved asphalt road running east-west with narrow gravel shoulders. Concrete curbs are located at the intersection with Rourke Line Road but do not continue past the intersection. Within the study area the streetscape contains two mid-20th century commercial/residential properties, a contemporary car wash, an early to mid-20th century commercial/residential building, a vacant lot, and a mid-20th century residence (Plate 9). Beyond the study area, the road is lined with a mix of commercial and residential properties primarily dating to the mid-20th century (Plate 10).

The Caille Avenue streetscape consists of a narrow two-lane (unmarked) asphalt road running east-west. Residences along the avenue are located on the north side of the road, while the south side appears to contain sheds or small parking and storage areas for residents of the property across the street (Plate 11, Plate 12). There are no curbs or sidewalks along the avenue, but the south side has narrow gravel shoulders. At the north end of the study area is a small parkette with parking area, lawn, trees, and access to the lake (Plate 13). Residences on the north side of Caille Avenue vary in construction date, size, and style. Within the study area, most appear to date to the mid-to late 20th century or later.

Plate 4: Denis St. Pierre WPCP

Plate 5: Rourke Line Road looking south from the southern boundary of the Study Area

Plate 6: Rourke Line Road looking north from the southern boundary of the Study Area

Plate 7: Rourke Line Road south of County Road 22, looking north

Plate 8: Rourke Line Road looking south from Caille Avenue

Plate 9: County Road 22 looking east from Rourke Line Road

Plate 10: County Road 22 looking west from Rourke Line Road

Plate 11: Caille Avenue looking west from Rourke Line Road

Plate 12: Caille Avenue looking east from Rourke Line Road

Plate 13: Caille Avenue Parkette looking north to Lake St. Clair

5.0 EVALUATION OF ANTICIPATED IMPACTS

5.1 DESCRIPTION OF PROPOSED PROJECT UNDERTAKING

The Denis St. Pierre WPCP has a rated capacity of 14,500 cubic metres a day (m^3/d) of water. The treatment process consists of fine screening, grit removal, three extended aeration tanks, two final settling tanks, and UV disinfection. Treated effluent is discharged into Lake St. Clair through a 900 millimetre diameter plant outfall sewer. The existing outfall sewer extends approximately 600 metres into Lake St. Clair. Effluent discharges through nozzles at the end of the outfall to assist in dispersing the effluent. An average treated flow of 14,228 m^3/d from the Belle River and Maidstone wastewater service areas was recorded for 2018, which is approximately 98 percent of the plant's rated capacity of 14,500 m^3/d. Thus, the existing capacity of the Denis St. Pierre WPCP is not adequate to accommodate the projected future flows from the Belle River and Maidstone wastewater service area.

There are pressures for residential and industrial development in the Belle River and Maidstone areas and additional treatment capacity at the Denis St. Pierre WPCP is required to support the existing services areas and the anticipated future growth.

The recommended alternative designs that form the preferred solution as outlined in the Environmental Study Report (ESR) are summarized below:

- Increase pumping capacity of the existing Maidstone Pumping Station Number 8
- Add second fine screen and vortex grit tank in the existing Screening and Grit Removal Facility
- Add two new aeration tanks and final clarifiers
- Build new UV disinfection facility
- Construct new service building accommodating blowers, sludge pumps, and chemical feed and storage
- Add two new aerobic digesters
- Construct new centrifugal dewatering facility
- Construct new electrical and standby generator building
- Twinning of inland portion of outfall sewer along Rourke Line Road from the Denis St. Pierre WPCP to Caille Avenue.

5.2 ANTICIPATED IMPACTS

Where a component of a cultural heritage resource was situated within the study area, the impacts of the proposed undertaking were evaluated (Table 2). The impacts, both direct and indirect, were evaluated according to *InfoSheet #5: Heritage Impact Assessments and Conservation Plans from the Heritage Resources in the Land Use Planning Process Cultural Heritage and Archaeology Policies of the Ontario Provincial Policy Statement, 2005* (Government of Ontario 2006b). See Section 2.5 for further discussion of impacts assessed.

Table 2: Evaluation of Potential impacts

Address	Direct Impact		Indirect Impact					Discussion
	Destruction	Alteration	Shadows	Isolation	Obstruction	Change in Land Use	Land Disturbances	
Former Great Western Railway line over Rourke Line Road (CHR-1)	N A	N A	N A	N A	N A	N A	N A	A small portion of the former Great Western Railway corridor is positioned within the project location, as the proposed outfall sewer twinning crosses the existing railway corridor. Construction related to twinning of the outfall sewer is not anticipated to alter the heritage attribute, that of the linear corridor of the railway line. Work within the project location is temporary and land would be returned to its pre-construction state.

5.3 SUMMARY OF IMPACTS

Potential impacts were not identified for the cultural heritage resource within the Study Area. Construction related to twinning of the outfall sewer is not anticipated to alter the heritage attribute, that of the linear corridor of the railway line. Work within the project location is temporary and land would be returned to its pre-construction state. The proposed twinning of the outfall sewer is not anticipated to result in destruction or isolation of the heritage resource. Shadows affecting the heritage resource or obstruction of significant views are not anticipated. A change in land use from the railway corridor is not anticipated. Land disturbance at the site will occur to install the new sewers but is not anticipated to impact the linear corridor of the railway line as directional drilling will be used at railway crossings.

6.0 MITIGATION

For most potential impacts, a preventive approach to mitigation measures serves to reduce the risk of indirect impacts. As identified in Section 5.3, no direct or indirect impacts are anticipated, and mitigation measures are not required. Table 3 contains a summary of the evolution of mitigation options and their applicability to this project.

Table 3: Evaluation of Mitigation and Avoidance Options

Methods	Discussion
Alternative Development	The current approach involves minimal land disturbance that is not anticipated to impact the linear corridor of the railway line. As such, alternative developments are not warranted
Isolation of Development	The project will not introduce impacts on heritage resources. Therefore, isolating development from heritage resources is not required
Harmonization of Design Guidelines	The Project will not introduce any above ground features and will return the landscape to current conditions. Therefore, no additional design guidelines are required
Limitation of Construction	The Project will not introduce any above ground features and will return the landscape to current conditions. Therefore, no limitations on height or density of construction are required
Compatible Additions	The Project will not introduce any above ground features and will return the landscape to current conditions. Therefore, compatible additions are not required
Reversible Alterations	The Project will not introduce any above ground features and will return the landscape to current conditions. Therefore, alterations to the landscape do not need to be considered
Planning Mechanisms	The current approach involves minimal land disturbance within the existing RoW that is not anticipated to impact the linear corridor of the railway line. As such, planning mechanisms are not warranted

7.0 RECOMMENDATIONS

The proposed undertaking for the Denis St. Pierre WPCP upgrades and twinning of the outfall sewer are not anticipated to result in direct or indirect impacts to cultural heritage resources within the Study Area. Work for the sewer twinning is anticipated to be confined to the existing RoW and is expected to be restored to its pre-construction conditions. The proposed twinning of the sewer is not anticipated to affect the heritage attribute of the linear corridor of the former Great Western Railway. As a result, no mitigation measures are recommended.

8.0 CLOSURE

This report documents work that was performed in accordance with generally accepted professional standards at the time and location in which the services were provided. No other representations, warranties or guarantees are made concerning the accuracy or completeness of the data or conclusions contained within this report, including no assurance that this work has uncovered all potential cultural heritage resources associated with the identified property.

All information received from the client or third parties in the preparation of this report has been assumed by Stantec to be correct. Stantec assumes no responsibility for any deficiency or inaccuracy in information received from others.

Conclusions made within this report consist of Stantec’s professional opinion as of the time of the writing of this report and are based solely on the scope of work described in the report, the limited data available and the results of the work. The conclusions are based on the conditions encountered by Stantec at the time the work was performed.

This report has been prepared for the exclusive use of the client identified herein and any use by any third party is prohibited. Stantec assumes no responsibility for losses, damages, liabilities, or claims, howsoever arising, from third party use of this report. We trust this report meets your current requirements. Please do not hesitate to contact us should you require further information or have additional questions about any facet of this report.

Yours truly,

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Appendix A CULTURAL HERITAGE RESOURCE/LANDSCAPE RECORD FORMS

Municipal Address: 304 Rourke Line Road

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Former community centre

Associated Dates: *circa* (c.) 1973

Relationship to Project: Within Study Area

Description: The property contains a former community centre, parking area, baseball diamonds, parkland and water tower. The former community centre is a one- and one-half story contemporary concrete block, brick, and siding-clad building with combination flat roof and low-pitched modified hip roof. The former community centre has modern aluminum frame windows and glass doors. An asphalt parking lot it located between the building and the road. The community centre is now vacant. The water tower is constructed of ridged concrete panels and a metal tank.

Land for the Belle River Community Arena was purchased in 1972 by Belle River Community Arena Incorporated. Bids for the construction of the arena were open until early 1973 and construction likely began later that year. The arena included a hockey rink and community room which could be rented for private functions.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Lashia Jones, Frank Smith	**Date Completed:** November 12, 2019

Municipal Address: 276 Rourke Line Road

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Water Pollution Control Plant

Associated Dates: 1974

Relationship to Project: Within Study Area

Description:

The Denis St. Pierre Water Pollution Control Plant consists of a collection of contemporary one and two storey red/brown brick buildings, siding clad sheds, and water treatment infrastructure. The buildings are rectangular in plan with flat roofs, rectangular windows, a single entrance door and garage door openings. Shrub landscaping is planted at the entrance to the central building and there is an asphalt parking lot between the buildings and the road.

The plant was built by the Ministry of Environment beginning in 1974 with construction occurring in phases until 1981. The facility was originally named the Belle River/Maidstone Water Pollution Control Plant. The plant was upgraded between 1989 to 1991 and again in 2007. In 2012, the facility was renamed after Denis St. Pierre, the local land developer who donated land for the facility to the Ministry of Environment.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Lashia Jones, Frank Smith	**Date Completed:** November 12, 2019

Municipal Address: 264 Rourke Line Road

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Commercial/Residential

Associated Dates: 1954-1968

Relationship to Project: Within Study Area

Description:

The property contains a one storey residential building and one storey shop/garage building. The residence has a low-pitched front gable roof clad in asphalt shingles. It is clad in stone and synthetic siding, with contemporary rectangular windows and a single entrance door. The residence has an inset porch. The yard contains a gravel driveway, stone landscaping, shrubs and a young conifer tree.

The garage building has a low-pitched front gable roof with asphalt shingles. The building is clad in vertical metal siding and has an oversized single garage entry. The yard in front of the garage has a paved asphalt parking lot.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Lashia Jones, Frank Smith	**Date Completed:** November 12, 2019

Municipal Address: 224 Rourke Line Road

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Commercial

Associated Dates: 1968-c. 1990

Relationship to Project: Within Study Area

Description:

The property contains a one storey commercial/industrial building and detached garage building. The commercial building has a flat roof and is clad in coloured concrete block with an attached shed-roof section clad in vertical siding. The commercial building contains contemporary rectangular windows and glass entrance door all with awnings. The building has three large garage door openings. The detached garage structure is a one storey front gable roof building clad in vertical siding. It has no windows or doors on the street-facing elevation, but a large garage door on the north elevation. The property contains paved concrete and no landscaping.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith	**Date Completed:** November 12, 2019

Municipal Address: 211 Rourke Line Road

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Commercial

Associated Dates: 1968-c. 1990

Relationship to Project: Within Study Area

Description: The property contains a one storey commercial auto repair shop. The building has a wing with low pitched side gable roof with metal cladding and a taller wing with low pitched front gable roof with asphalt shingles. The building has seven garage door bays, with the two in the front gable section being taller than the remainder. The building is clad in stucco or External Insultation Finishing System (EIFS). The yard surrounding the garage includes graveled and grassed parking areas with a small cluster of intermediate deciduous trees.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Lashia Jones, Frank Smith	**Date Completed:** November 12, 2019

Municipal Address: 200 Rourke Line Road

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Residential

Associated Dates: 1954-1968

Relationship to Project: Within Study Area

Description: The property contains a one storey residential building with detached single storey garage building clad in light coloured brick. The residential building has medium pitched hip roof with asphalt shingles. The residence faces Highway 22 and has contemporary rectangular sliding windows and a large picture window and single entrance door. The detached garage has a low-pitched front gable roof with two garage bays facing Rourke Line Road, rectangular contemporary windows with muntins and a single door facing Highway 22. The garage is clad in stucco or EIFS. The yard surrounding the property contains lawn and intermediate deciduous and coniferous trees.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Lashia Jones, Frank Smith	**Date Completed:** November 12, 2019

Municipal Address: 1496 County Road 22

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Commercial/residential

Associated Dates: 1912-1940

Relationship to Project: Within Study Area

Description: The property contains a one and two storey attached commercial and residential building. The one storey commercial section has a flat roof, modern trios of aluminum windows and a glass and metal double door. The residential section is two storeys with a low-pitched front gable roof with asphalt shingles, rectangular contemporary windows and single entrance doors. The entire building is clad in stucco/EIFS. The yard surrounding the building contains a paved parking area.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Lashia Jones, Frank Smith	**Date Completed:** November 12, 2019

Municipal Address: 1525 County Road 22

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Commercial

Associated Dates: 1940-1954

Relationship to Project: Within Study Area

Description: The property contains a nursery/garden centre with small greenhouse complex and residential building. The greenhouses are semi-circular arched structures and the centre one has a small pointed arch. All three are clad in white sheeting. There is a gravel parking area and tree nursery in front of the greenhouses. The residential building is set back behind the greenhouses but is not well visible from the street and screened by the greenhouse buildings and vegetation. The residence is a one storey structure with cross gable roof clad in asphalt shingles. The residence is clad in siding and has contemporary rectangular windows and single entrance door. The yard surrounding the residence has lawn, landscaped shrubs and deciduous and coniferous trees.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Lashia Jones, Frank Smith	**Date Completed:** November 12, 2019

Municipal Address: 1537 County Road 22

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Commercial/Residence

Associated Dates: 1954-1968

Relationship to Project: Within Study Area

Description: The property contains a one storey residence with low pitched hip roof clad in asphalt shingles. The building has a rectangular plan and is clad in red brick with a concrete foundation. It has contemporary rectangular windows and picture window, single entrance door and single garage. The yard surrounding the residence has lawn, shrubs, mature maple trees and young coniferous trees. Set further back from the road there is a one storey commercial structure with low pitched front gable roof. The building is clad in siding with contemporary multi-pane windows, decorative "gingerbread" trim, and a front gable porch.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Lashia Jones, Frank Smith	**Date Completed:** November 12, 2019

Municipal Address: 180 Rourke Line Road

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Residence

Associated Dates: 1968-c. 1990

Relationship to Project: Within Study Area

Description: The property contains a one storey mid-century residential building with low pitched side gable roof clad in asphalt shingles. The house is clad in white brick and contains contemporary windows, picture window, and bay window. The house has a semi-enclosed carport with single entrance door to the house. The front yard contains lawn, mature maple trees and shrubs, and a concrete driveway.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith, Lashia Jones	**Date Completed:** November 12, 2019

Municipal Address: 175 Rourke Line Road

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Residence

Associated Dates: 1941-1954

Relationship to Project: Within Study Area

Description: The property contains a one storey vernacular residence with low pitched front gable roof clad in asphalt shingles. The house has a rectangular plan and is clad in siding, with contemporary rectangular window, bay window and single metal door with glazing and half sidelight. The house has a concrete block foundation and wooden porch platform without railings. A front gable wooden garage building is located set back from the residence with wood siding and contemporary garage door. The yard contains lawn, gravel driveway and walkway, and cedar trees at the southern fence line.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith, Lashia Jones	**Date Completed:** November 12, 2019

Municipal Address: 172 Rourke Line Road

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Residence

Associated Dates: 1968-c. 1990

Relationship to Project: Within Study Area

Description: The property contains a one storey mid-century modern residence with medium pitched front gable roof clad in asphalt shingles. The house is clad in siding and features a carport. Most of the house is screened by coniferous shrubs and not visible from the roadway. The front yard contains lawn, asphalt driveway, and intermediate maple tree.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith, Lashia Jones	**Date Completed:** November 12, 2019

Municipal Address: 168 Rourke Line Road

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Residence

Associated Dates: 1954-1968

Relationship to Project: Within Study Area

Description: The property contains a two storey mid-century residence with medium pitched side gable roof clad in asphalt shingles. The residence has contemporary picture windows and rectangular windows, a single glazed entrance door, second storey wall dormer and carport. The house is clad in siding and grey brick and has a full-length front porch. A detached single storey garage structure clad in siding is located behind the carport. The yard contains lawn, tow mature maple trees, and a gravel driveway.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: N/A	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith, Lashia Jones	**Date Completed:** November 12, 2019

Municipal Address: 167 Rourke Line Road

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Residence

Associated Dates: 1941-1954

Relationship to Project: Within Study Area

Description: The property contains a one storey vernacular residence with medium pitch hip-on-gable-roof clad in asphalt shingles. The residence contains contemporary rectangular windows and single glazed entrance door set within a semi-enclosed porch vestibule. The residence is clad in siding and has a concrete block foundation. The residence has a nearly full width front porch. Set back behind the residence is a single storey front gable garage building clad in siding. The yard contains lawn and gravel driveways.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith, Lashia Jones	**Date Completed:** November 12, 2019

Municipal Address: 164 Rourke Line Road

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Residence

Associated Dates: 1968-c. 1990

Relationship to Project: Within Study Area

Description: The property contains a one storey mid-century residence with low pitched hip roof clad din asphalt shingles. The residence contains contemporary rectangular and picture windows and a single glazed entrance door. The residence has a half-width entrance porch and is clad in siding. The yard contains lawn, concrete driveway, shrubs, and spruce tree.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith, Lashia Jones	**Date Completed:** November 12, 2019

Municipal Address: 163 Rourke Line Road

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Residence

Associated Dates: 1954-1968

Relationship to Project: Within Study Area

Description: The property contains a one storey mid-century residence with low pitched hip roof clad in asphalt shingles. The residence has a contemporary picture window comprised of four casement windows, a single entrance door, and single garage door. The residence is clad in light red brick. The yard contains an asphalt driveway, lawn, and shrubs.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith, Lashia Jones	**Date Completed:** November 12, 2019

Municipal Address: 160 Rourke Line Road

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Residence

Associated Dates: 1968-c. 1990

Relationship to Project: Within Study Area

Description: The property contains a single storey contemporary residence with medium pitched pyramidal hip roof clad in asphalt shingles. The house has rectangular contemporary windows, a single glazed entrance door and is clad in siding. The house has a full width porch with pentagonal projection and modern stone cladding at the foundation level.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith, Lashia Jones	**Date Completed:** November 12, 2019

Municipal Address: 156 Rourke Line Road

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Residence

Associated Dates: 1968-c. 1990

Relationship to Project: Within Study Area

Description: The property contains a single storey contemporary residence with low pitched side gable roof clad in asphalt shingles. The house is clad in light coloured brick and contains contemporary rectangular casement and sliding windows and a single glazed entrance door in a half-width front porch. The yard contains an asphalt driveway, lawn, and intermediate maple trees.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith, Lashia Jones	**Date Completed:** November 12, 2019

Municipal Address: 155 Rourke Line Road

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Residence

Associated Dates: 1954-1968

Relationship to Project: Within Study Area

Description: The property contains a mid-century one storey residence with low pitched front gable roof clad in asphalt shingles. The house has a recessed section containing the single entrance door with sidelight and trio of casement windows. An additional small contemporary rectangular window is located on the non-recessed section of the façade. The house is clad in siding and has an inset wooden front porch in the recessed section of the house. The yard contains an asphalt driveway and mature Norway spruce.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith, Lashia Jones	**Date Completed:** November 12, 2019

Municipal Address: 150 Rourke Line Road

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Residence

Associated Dates: 1968-c. 1990

Relationship to Project: Within Study Area

Description: The property contains a one storey contemporary residence with low pitched hip roof clad in asphalt shingles. The house is clad in red brick and contains contemporary casements and sliding rectangular windows and a single glazed entrance door. There is a full width uncovered porch. The yard contains an asphalt driveway, lawn, and weeping beech tree.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith, Lashia Jones	**Date Completed:** November 12, 2019

Municipal Address: 151 Rourke Line Road

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Residence

Associated Dates: 1954-1968

Relationship to Project: Within Study Area

Description: The property contains a two storey mid-century residence with steeply pitched side gable roof clad in asphalt shingles. The residence is clad in siding and has contemporary rectangular windows, a single entrance door with sidelights and a single projecting garage. The yard contains a gravel driveway, mature maple trees, and shrubs.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith, Lashia Jones	**Date Completed:** November 12, 2019

Municipal Address: 148 Rourke Line Road

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Residence

Associated Dates: 1968-c. 1990

Relationship to Project: Within Study Area

Description: The property contains a one and two storey contemporary residence with low pitched side gable roof clad in asphalt shingles. The front section of the building is one storey with contemporary rectangular sliding windows, bay window, single glazed entrance door with half sidelight. There is a small wooden porch landing at the entrance. The rear section is two storeys with rectangular contemporary windows and a chimney clad in siding. The yard contains lawn, young trees, and a concrete driveway.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith, Lashia Jones	**Date Completed:** November 12, 2019

Municipal Address: 147 Rourke Line Road

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Residence

Associated Dates: 1941-1954

Relationship to Project: Within Study Area

Description: The property contains a mid-century vernacular residence with medium pitched front and side gable roof clad in asphalt shingles. The house is clad is siding and contains contemporary rectangular sliding windows with false muntins and a single unglazed door. There is a small concrete stoop in front of the entrance. A detached garage with front gable roof is set back from the house, clad with siding. The yard contains lawn and a gravel driveway.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith, Lashia Jones	**Date Completed:** November 12, 2019

Municipal Address: 143 Rourke Line Road

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Residence

Associated Dates: 1941-1954

Relationship to Project: Within Study Area

Description: The property contains a single storey mid-century vernacular residence with medium pitched cross gable roof clad in asphalt shingles. The residence is clad in siding, has a concrete block foundation, and contains contemporary rectangular sliding windows and single entrance door. There is a small wooden uncovered porch at the entrance. The yard contains lawn, shrubs, and an asphalt driveway.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith, Lashia Jones	**Date Completed:** November 12, 2019

Municipal Address: 139 Rourke Line Road

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Residence

Associated Dates: 1941-1954

Relationship to Project: Within Study Area

Description: The property contains a mid-century vernacular residence with medium pitched saltbox roof clad in asphalt shingles. The residence is clad in siding and contains contemporary sliding rectangular windows and a single unglazed entrance door. There is a small concrete stoop in front of the entrance. The foundation has been clad with fabricated stone. Set back from the residence is a one storey single garage structure built of concrete block. The yard contains a gravel driveway and lawn.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith, Lashia Jones	**Date Completed:** November 12, 2019

Municipal Address: 136 Rourke Line Road

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Residence

Associated Dates: 1968-c. 1990

Relationship to Project: Within Study Area

Description: The property contains a two storey contemporary dwelling with low pitched side gable roof clad in asphalt shingles. The dwelling is clad in siding and brown brick and contains contemporary rectangular sliding and awning windows. The entrance to the property is located on the south elevation and is a single glazed entrance door with a small concrete stoop. The yard contains an asphalt driveway, lawn, and intermediate maple trees and an intermediate cedar.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith, Lashia Jones	**Date Completed:** November 12, 2019

Municipal Address: 135 Rourke Line Road

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Residence

Associated Dates: 1941-1954

Relationship to Project: Within Study Area

Description: The property contains a one storey mid-century vernacular residence with medium pitched pyramidal hip roof and gable dormer with octagonal window. The residence is clad in siding and contemporary stone facing. It contains contemporary rectangular casement windows and a single unglazed entrance door and screen door. The front yard contains lawn, mature maple and asphalt driveway.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith, Lashia Jones	**Date Completed:** November 12, 2019

Municipal Address: 132 Rourke Line Road

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Residence

Associated Dates: 1968-c. 1990

Relationship to Project: Within Study Area

Description: The property contains a one storey contemporary residence with low pitched side gable roof clad with asphalt shingles. The residence has a concrete foundation, is clad is siding and stone facing with rectangular contemporary casement windows and a single glazed entrance door. The house has a full width front porch with extended roof overhang and carport. The yard contains lawn, shrubs, and an asphalt driveway.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith, Lashia Jones	**Date Completed:** November 12, 2019

Municipal Address: 131 Rourke Line Road

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Residence

Associated Dates: 1941-1954

Relationship to Project: Within Study Area

Description: The property contains a one storey mid-century vernacular residence with medium pitch pyramidal hipped roof clad in asphalt shingles and gabled dormer with rectangular window with wood muntins. The house is clad in siding and has contemporary sash and fixed rectangular windows, and a single glazed entrance door with metal awning. There is a small concrete stoop at the entrance. The yard contains lawn and a concrete driveway.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith, Lashia Jones	**Date Completed:** November 12, 2019

Municipal Address: 128 Rourke Line Road

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Residence

Associated Dates: 1968-c. 1990

Relationship to Project: Within Study Area

Description: The property contains a contemporary one storey residence with low pitched pyramidal hip roof clad in asphalt shingles. The residence is clad in red brick and has a concrete foundation, contemporary rectangular casement windows and a single glazed entrance door. There is a small wooden stoop on the south elevation entrance. The yard contains an asphalt driveway and young trees and intermediate cedars.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith, Lashia Jones	**Date Completed:** November 12, 2019

Municipal Address: 127 Rourke Line Road

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Residence

Associated Dates: 1954-1968

Relationship to Project: Within Study Area

Description: The property contains a mid-century modern residence and detached garage. The residence is set back from the street and located behind the garage, screened by vegetation, and is difficult to view from the road. The garage is a two storey structure with steeply pitched side gable roof clad in asphalt shingles. The garage is clad in red brick with two columns supporting the overhanging roof. There are two unglazed garage doors and no windows or entrance doors facing the street. The residence appears to be a one and one half and two storey structure with front gable roof clad in asphalt shingles. The residence is clad in red brick and wood siding, with a brick chimney and rectangular windows. The yard contains an asphalt driveway, lawn, and mature trees.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith, Lashia Jones	**Date Completed:** November 12, 2019

Municipal Address: 124 Rourke Line Road

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Residence

Associated Dates: 1968-c. 1990

Relationship to Project: Within Study Area

Description: The property contains a residence that is set back from the road and screened by vegetation such that it is not well visible from the road. A portion of the residence that is visible is clad in siding and appears to be one storey with asphalt shingle roof. The yard contains driveway, lawn, and a mix of deciduous and coniferous trees.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith, Lashia Jones	**Date Completed:** November 12, 2019

Municipal Address: N/A—former Great Western Railway Tracks over Rourke Line Road

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Railway

Associated Dates: 1854

Relationship to Project: Within Study Area

Description: The railway corridor contains a single-track running east-west across the study area. Naturalized grasses and scrub brush grow on either side of the track bordered by fences and vegetation from the adjacent residential properties.

The Great Western Railway opened trackage from Niagara Falls to Windsor in 1854 and connected with existing railroads in Michigan and New York State. In 1882, the Great Western Railway merged with the Grand Trunk Railway. The Grand Trunk Railway went bankrupt in 1919 and became part of Canadian National Railways in 1923. The railway trackage in the Study Area is still operational.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,	✓	
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or	✓	
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: This railway corridor is associated with the Great Western Railway (GWR), Grand Trunk Railway (GTR) and the Canadian National (CN) Railway. The line was constructed in 1854 and connected with existing railroads in Michigan and New York State. In 1923, it was taken over by CN, who continue to operate the railway line. The railway line is physically and functionally linked to its surroundings.

Identified Heritage Attributes: Railway line: Layout of the former Great Western Railway line including linear corridor lined with naturalized vegetation.

Identification of CHVI: Yes	**Cultural Heritage Resource Number:** 1
Completed by (name): Frank Smith, Lashia Jones	**Date Completed:** November 12, 2019

Municipal Address: 1500 Caille Avenue

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Residence

Associated Dates: 1941-1968

Relationship to Project: Within Study Area

Description: The property contains a contemporary two storey residence with steeply pitched front gable roof and detached garage with steeply pitched front gable roof and gable dormer. The roofs of both structures are clad in asphalt shingles. Both buildings have contemporary rectangular windows. The garage is clad in siding and has a concrete block foundation and single garage door. The residence is clad in grey brick and siding and has a single entrance door with sidelight. The yard contains concrete and gravel driveway, a small patch of lawn, and shrubs.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: N/A	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith, Lashia Jones	**Date Completed:** November 12, 2019

Municipal Address: N/A Caille Avenue

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Streetscape

Associated Dates: c. 1941-1953

Relationship to Project: Within Study Area

Description: The Caille Avenue streetscape consists of a narrow two-lane (unmarked) asphalt road running east-west. Residences along the avenue are located on the north side of the road, while the south side appears to contain sheds or small parking and storage areas for residents of the property across the street. There are no curbs or sidewalks along the avenue, but the south side has narrow gravel shoulders. At the north end of the study area is a small parkette with parking area, lawn, trees and access to the lake. Residences on the north side of Caille Avenue vary in construction date, size and style. Within the study area, most appear to date to the mid-to-late 20th century or later.

Based on topographic mapping and aerial photography, Caille Avenue was built in the mid-20th century. However, an earlier more rudimentary road similar to the alignment of present-day Caille Avenue may have existed during the early 20th century as topographic mapping from 1940 depicts structures along the lakeshore.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith, Lashia Jones	**Date Completed:** November 12, 2019

Municipal Address: N/A Rourke Line Road

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Streetscape

Associated Dates: Alignment: 1793, current configuration: Post 1940

Relationship to Project: Within Study Area

Description: The Rourke Line Road streetscape consists of a mixed commercial/residential corridor from the Denis St. Pierre Water Pollution Control Plant to County Road 22 and a residential streetscape north of County Road 22 to Caille Avenue. The mixed-use section consists of a two-lane paved asphalt road with central dual turning bay, curbs and concrete sidewalks on the east side and a paved multi-use pathway on the west side. The road is lined with a mix of commercial properties, a few residences, and the borders of a storm water management pond from a residential development to the west. North of County Road 22 the street consists of a two-lane unmarked asphalt road with no curbs or sidewalks. This section is bordered by one to two storey residential properties. The streetscape is not of a consistent character throughout the study area.

Rourke Line Road is a road allowance between the lots fronting the Belle River and the lots between the Puces River and Belle River. Based on topographic mapping, the road remained unpaved until the mid-20th century. The roadway is named after the Rourke family, who owned property along both the west and east side of the road allowance during the 19th and early to mid-20th centuries. The roadway has been modernized to meet contemporary safety standards.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓

3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith, Lashia Jones	**Date Completed:** November 12, 2019

Municipal Address: N/A County Road 22

Former Township: Township of Maidstone

Municipality: Town of Lakeshore

Resource Type: Streetscape

Associated Dates: Alignment: 1838-1840, current configuration: c. 1934

Relationship to Project: Within Study Area

Description: County Road 22 is a streetscape comprised of a two-lane paved asphalt road running east-west with narrow gravel shoulders. Concrete curbs are located at the intersection with Rourke Line Road but do not continue past the intersection. Within the study area the streetscape contains a contemporary car wash, early to mid-20th century commercial/residential building, vacant lot, and mid-20th century residence. Beyond the study area, the road is lined with a mix of commercial and residential properties primarily dating to the mid-20th century.

County Road 22 was originally known as Tecumseh Road. The Tecumseh Road was built after the previous road along Lake St. Clair had suffered from years of erosion. The new road was built approximately one mile (1.6 kilometres) south of the lake to prevent erosion. The road was originally a corduroy road. In the 1934 the Tecumseh Road was paved and assumed by the provincial government as King's Highway 39. The road served as the primary link between Windsor and Belle River. In 1970, King's Highway 39 was downloaded by the provincial government and assumed by the County of Essex, which re-designated the road as County Road 22. The roadway has been modernized to meet contemporary safety standards.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith, Lashia Jones	**Date Completed:** November 12, 2019

APPENDIX D-2

MTCS Checklist

Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes

Ontario

Ministry of Tourism, Culture and Sport

Programs & Services Branch
401 Bay Street, Suite 1700
Toronto ON M7A 0A7

Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes

A Checklist for the Non-Specialist

The **purpose of the checklist** is to determine:

- if a property(ies) or project area:
  - is a recognized heritage property
  - may be of cultural heritage value
- it includes all areas that may be impacted by project activities, including – but not limited to:
  - the main project area
  - temporary storage
  - staging and working areas
  - temporary roads and detours

Processes covered under this checklist, such as:

- *Planning Act*
- *Environmental Assessment Act*
- *Aggregates Resources Act*
- *Ontario Heritage Act* – Standards and Guidelines for Conservation of Provincial Heritage Properties

Cultural Heritage Evaluation Report (CHER)

If you are not sure how to answer one or more of the questions on the checklist, you may want to hire a qualified person(s) (see page 5 for definitions) to undertake a cultural heritage evaluation report (CHER).

The CHER will help you:

- identify, evaluate and protect cultural heritage resources on your property or project area
- reduce potential delays and risks to a project

Other checklists

Please use a separate checklist for your project, if:

- you are seeking a Renewable Energy Approval under Ontario Regulation 359/09 – separate checklist
- your Parent Class EA document has an approved screening criteria (as referenced in Question 1)

Please refer to the Instructions pages for more detailed information and when completing this form.

Project or Property Name
Class Environmental Assessment, Denis St. Pierre Water Pollution Control Plant Expansion

Project or Property Location (upper and lower or single tier municipality)
276 Rourke Line Road, Town of Lakeshore, County of Essex

Proponent Name
The Corporation of the Town of Lakeshore

Proponent Contact Information
Kevin Girard, P.Eng. , Manager of Environmental Services, Tel: 519-728-1975 x239 email: kgirard@lakeshore.ca

Screening Questions

	Yes	No
1. Is there a pre-approved screening checklist, methodology or process in place?	☐	☑

If Yes, please follow the pre-approved screening checklist, methodology or process.

If No, continue to Question 2.

Part A: Screening for known (or recognized) Cultural Heritage Value

	Yes	No
2. Has the property (or project area) been evaluated before and found **not** to be of cultural heritage value?	☐	☑

If Yes, do **not** complete the rest of the checklist.

The proponent, property owner and/or approval authority will:

- summarize the previous evaluation and
- add this checklist to the project file, with the appropriate documents that demonstrate a cultural heritage evaluation was undertaken

The summary and appropriate documentation may be:

- submitted as part of a report requirement
- maintained by the property owner, proponent or approval authority

If No, continue to Question 3.

	Yes	No
3. Is the property (or project area):		
a. identified, designated or otherwise protected under the *Ontario Heritage Act* as being of cultural heritage value?	☐	☑
b. a National Historic Site (or part of)?	☐	☑
c. designated under the *Heritage Railway Stations Protection Act*?	☐	☑
d. designated under the *Heritage Lighthouse Protection Act*?	☐	☑
e. identified as a Federal Heritage Building by the Federal Heritage Buildings Review Office (FHBRO)?	☐	☑
f. located within a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site?	☐	☑

If Yes to any of the above questions, you need to hire a qualified person(s) to undertake:

- a Cultural Heritage Evaluation Report, if a Statement of Cultural Heritage Value has not previously been prepared or the statement needs to be updated

If a Statement of Cultural Heritage Value has been prepared previously and if alterations or development are proposed, you need to hire a qualified person(s) to undertake:

- a Heritage Impact Assessment (HIA) – the report will assess and avoid, eliminate or mitigate impacts

If No, continue to Question 4.

Part B: Screening for Potential Cultural Heritage Value

	Yes	No
4. Does the property (or project area) contain a parcel of land that:		
a. is the subject of a municipal, provincial or federal commemorative or interpretive plaque?	☐	☑
b. has or is adjacent to a known burial site and/or cemetery?	☐	☑
c. is in a Canadian Heritage River watershed?	☐	☑
d. contains buildings or structures that are 40 or more years old?	☐	☑

Part C: Other Considerations

	Yes	No
5. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area):		
a. is considered a landmark in the local community or contains any structures or sites that are important in defining the character of the area?	☐	☑
b. has a special association with a community, person or historical event?	☐	☑
c. contains or is part of a cultural heritage landscape?	☐	☑

If Yes to one or more of the above questions (Part B and C), there is potential for cultural heritage resources on the property or within the project area.

You need to hire a qualified person(s) to undertake:

- a Cultural Heritage Evaluation Report (CHER)

If the property is determined to be of cultural heritage value and alterations or development is proposed, you need to hire a qualified person(s) to undertake:

- a Heritage Impact Assessment (HIA) – the report will assess and avoid, eliminate or mitigate impacts

If No to all of the above questions, there is low potential for built heritage or cultural heritage landscape on the property.

The proponent, property owner and/or approval authority will:

- summarize the conclusion
- add this checklist with the appropriate documentation to the project file

The summary and appropriate documentation may be:

- submitted as part of a report requirement e.g. under the *Environmental Assessment Act, Planning Act* processes
- maintained by the property owner, proponent or approval authority

Instructions

Please have the following available, when requesting information related to the screening questions below:

- a clear map showing the location and boundary of the property or project area
  - large scale and small scale showing nearby township names for context purposes
- the municipal addresses of all properties within the project area
- the lot(s), concession(s), and parcel number(s) of all properties within a project area

For more information, see the Ministry of Tourism, Culture and Sport's Ontario Heritage Toolkit or Standards and Guidelines for Conservation of Provincial Heritage Properties.

In this context, the following definitions apply:

- **qualified person(s)** means individuals – professional engineers, architects, archaeologists, etc. – having relevant, recent experience in the conservation of cultural heritage resources.
- **proponent** means a person, agency, group or organization that carries out or proposes to carry out an undertaking or is the owner or person having charge, management or control of an undertaking.

1. Is there a pre-approved screening checklist, methodology or process in place?

An existing checklist, methodology or process may already be in place for identifying potential cultural heritage resources, including:

- one endorsed by a municipality
- an environmental assessment process e.g. screening checklist for municipal bridges
- one that is approved by the Ministry of Tourism, Culture and Sport (MTCS) under the Ontario government's Standards & Guidelines for Conservation of Provincial Heritage Properties [s.B.2.]

Part A: Screening for known (or recognized) Cultural Heritage Value

2. Has the property (or project area) been evaluated before and found not to be of cultural heritage value?

Respond 'yes' to this question, if all of the following are true:

A property can be considered not to be of cultural heritage value if:

- a Cultural Heritage Evaluation Report (CHER) - or equivalent - has been prepared for the property with the advice of a qualified person and it has been determined not to be of cultural heritage value and/or
- the municipal heritage committee has evaluated the property for its cultural heritage value or interest and determined that the property is not of cultural heritage value or interest

A property may need to be re-evaluated, if:

- there is evidence that its heritage attributes may have changed
- new information is available
- the existing Statement of Cultural Heritage Value does not provide the information necessary to manage the property
- the evaluation took place after 2005 and did not use the criteria in Regulations 9/06 and 10/06

Note: Ontario government ministries and public bodies [prescribed under Regulation 157/10] may continue to use their existing evaluation processes, until the evaluation process required under section B.2 of the Standards & Guidelines for Conservation of Provincial Heritage Properties has been developed and approved by MTCS.

To determine if your property or project area has been evaluated, contact:

- the approval authority
- the proponent
- the Ministry of Tourism, Culture and Sport

3a. Is the property (or project area) identified, designated or otherwise protected under the *Ontario Heritage Act* as being of cultural heritage value e.g.:

i. designated under the *Ontario Heritage Act*

- individual designation (Part IV)
- part of a heritage conservation district (Part V)

Individual Designation – Part IV

A property that is designated:

- by a municipal by-law as being of cultural heritage value or interest [s.29 of the *Ontario Heritage Act*]
- by order of the Minister of Tourism, Culture and Sport as being of cultural heritage value or interest of provincial significance [s.34.5]. **Note**: To date, no properties have been designated by the Minister.

Heritage Conservation District – Part V

A property or project area that is located within an area designated by a municipal by-law as a heritage conservation district [s. 41 of the *Ontario Heritage Act*].

For more information on Parts IV and V, contact:

- municipal clerk
- Ontario Heritage Trust
- local land registry office (for a title search)

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ii. subject of an agreement, covenant or easement entered into under Parts II or IV of the *Ontario Heritage Act*

An agreement, covenant or easement is usually between the owner of a property and a conservation body or level of government. It is usually registered on title.

The primary purpose of the agreement is to:

- preserve, conserve, and maintain a cultural heritage resource
- prevent its destruction, demolition or loss

For more information, contact:

- Ontario Heritage Trust - for an agreement, covenant or easement [clause 10 (1) (c) of the *Ontario Heritage Act*]
- municipal clerk – for a property that is the subject of an easement or a covenant [s.37 of the *Ontario Heritage Act*]
- local land registry office (for a title search)

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iii. listed on a register of heritage properties maintained by the municipality

Municipal registers are the official lists - or record - of cultural heritage properties identified as being important to the community.

Registers include:

- all properties that are designated under the *Ontario Heritage Act* (Part IV or V)
- properties that have not been formally designated, but have been identified as having cultural heritage value or interest to the community

For more information, contact:

- municipal clerk
- municipal heritage planning staff
- municipal heritage committee

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iv. subject to a notice of:

- intention to designate (under Part IV of the *Ontario Heritage Act*)
- a Heritage Conservation District study area bylaw (under Part V of the *Ontario Heritage Act*)

A property that is subject to a **notice of intention to designate** as a property of cultural heritage value or interest and the notice is in accordance with:

- section 29 of the *Ontario Heritage Act*
- section 34.6 of the *Ontario Heritage Act*. **Note**: To date, the only applicable property is Meldrum Bay Inn, Manitoulin Island. [s.34.6]

An area designated by a municipal by-law made under section 40.1 of the *Ontario Heritage Act* as a **heritage conservation district study area**.

For more information, contact:

- municipal clerk – for a property that is the subject of notice of intention [s. 29 and s. 40.1]
- Ontario Heritage Trust

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v. included in the Ministry of Tourism, Culture and Sport's list of provincial heritage properties

Provincial heritage properties are properties the Government of Ontario owns or controls that have cultural heritage value or interest.

The Ministry of Tourism, Culture and Sport (MTCS) maintains a list of all provincial heritage properties based on information provided by ministries and prescribed public bodies. As they are identified, MTCS adds properties to the list of provincial heritage properties.

For more information, contact the MTCS Registrar at registrar@ontario.ca.

3b. Is the property (or project area) a National Historic Site (or part of)?

National Historic Sites are properties or districts of national historic significance that are designated by the Federal Minister of the Environment, under the *Canada National Parks Act*, based on the advice of the Historic Sites and Monuments Board of Canada.

For more information, see the National Historic Sites website.

3c. Is the property (or project area) designated under the *Heritage Railway Stations Protection Act*?

The *Heritage Railway Stations Protection Act* protects heritage railway stations that are owned by a railway company under federal jurisdiction. Designated railway stations that pass from federal ownership may continue to have cultural heritage value.

For more information, see the Directory of Designated Heritage Railway Stations.

3d. Is the property (or project area) designated under the *Heritage Lighthouse Protection Act*?

The *Heritage Lighthouse Protection Act* helps preserve historically significant Canadian lighthouses. The Act sets up a public nomination process and includes heritage building conservation standards for lighthouses which are officially designated.

For more information, see the Heritage Lighthouses of Canada website.

3e. Is the property (or project area) identified as a Federal Heritage Building by the Federal Heritage Buildings Review Office?

The role of the Federal Heritage Buildings Review Office (FHBRO) is to help the federal government protect the heritage buildings it owns. The policy applies to all federal government departments that administer real property, but not to federal Crown Corporations.

For more information, contact the Federal Heritage Buildings Review Office.

See a directory of all federal heritage designations.

3f. Is the property (or project area) located within a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site?

A UNESCO World Heritage Site is a place listed by UNESCO as having outstanding universal value to humanity under the Convention Concerning the Protection of the World Cultural and Natural Heritage. In order to retain the status of a World Heritage Site, each site must maintain its character defining features.

Currently, the Rideau Canal is the only World Heritage Site in Ontario.

For more information, see Parks Canada – World Heritage Site website.

Part B: Screening for potential Cultural Heritage Value

4a. Does the property (or project area) contain a parcel of land that has a municipal, provincial or federal commemorative or interpretive plaque?

Heritage resources are often recognized with formal plaques or markers.

Plaques are prepared by:

- municipalities
- provincial ministries or agencies
- federal ministries or agencies
- local non-government or non-profit organizations

For more information, contact:

- municipal heritage committees or local heritage organizations – for information on the location of plaques in their community
- Ontario Historical Society's Heritage directory – for a list of historical societies and heritage organizations
- Ontario Heritage Trust – for a list of plaques commemorating Ontario's history
- Historic Sites and Monuments Board of Canada – for a list of plaques commemorating Canada's history

4b. Does the property (or project area) contain a parcel of land that has or is adjacent to a known burial site and/or cemetery?

For more information on known cemeteries and/or burial sites, see:

- Cemeteries Regulations, Ontario Ministry of Consumer Services – for a database of registered cemeteries
- Ontario Genealogical Society (OGS) – to locate records of Ontario cemeteries, both currently and no longer in existence; cairns, family plots and burial registers
- Canadian County Atlas Digital Project – to locate early cemeteries

In this context, adjacent means contiguous or as otherwise defined in a municipal official plan.

4c. Does the property (or project area) contain a parcel of land that is in a Canadian Heritage River watershed?

The Canadian Heritage River System is a national river conservation program that promotes, protects and enhances the best examples of Canada's river heritage.

Canadian Heritage Rivers must have, and maintain, outstanding natural, cultural and/or recreational values, and a high level of public support.

For more information, contact the Canadian Heritage River System.

If you have questions regarding the boundaries of a watershed, please contact:

- your conservation authority
- municipal staff

4d. Does the property (or project area) contain a parcel of land that contains buildings or structures that are 40 or more years old?

A 40 year 'rule of thumb' is typically used to indicate the potential of a site to be of cultural heritage value. The approximate age of buildings and/or structures may be estimated based on:

- history of the development of the area
- fire insurance maps
- architectural style
- building methods

Property owners may have information on the age of any buildings or structures on their property. The municipality, local land registry office or library may also have background information on the property.

Note: 40+ year old buildings or structure do not necessarily hold cultural heritage value or interest; their age simply indicates a higher potential.

A building or structure can include:

- residential structure
- farm building or outbuilding
- industrial, commercial, or institutional building
- remnant or ruin
- engineering work such as a bridge, canal, dams, etc.

For more information on researching the age of buildings or properties, see the Ontario Heritage Tool Kit Guide Heritage Property Evaluation.

Part C: Other Considerations

5a. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) is considered a landmark in the local community or contains any structures or sites that are important to defining the character of the area?

Local or Aboriginal knowledge may reveal that the project location is situated on a parcel of land that has potential landmarks or defining structures and sites, for instance:

- buildings or landscape features accessible to the public or readily noticeable and widely known
- complexes of buildings
- monuments
- ruins

5b. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) has a special association with a community, person or historical event?

Local or Aboriginal knowledge may reveal that the project location is situated on a parcel of land that has a special association with a community, person or event of historic interest, for instance:

- Aboriginal sacred site
- traditional-use area
- battlefield
- birthplace of an individual of importance to the community

5c. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) contains or is part of a cultural heritage landscape?

Landscapes (which may include a combination of archaeological resources, built heritage resources and landscape elements) may be of cultural heritage value or interest to a community.

For example, an Aboriginal trail, historic road or rail corridor may have been established as a key transportation or trade route and may have been important to the early settlement of an area. Parks, designed gardens or unique landforms such as waterfalls, rock faces, caverns, or mounds are areas that may have connections to a particular event, group or belief.

For more information on Questions 5.a., 5.b. and 5.c., contact:

- Elders in Aboriginal Communities or community researchers who may have information on potential cultural heritage resources. Please note that Aboriginal traditional knowledge may be considered sensitive.
- municipal heritage committees or local heritage organizations
- Ontario Historical Society's "Heritage Directory" - for a list of historical societies and heritage organizations in the province

An internet search may find helpful resources, including:

- historical maps
- historical walking tours
- municipal heritage management plans
- cultural heritage landscape studies
- municipal cultural plans

Information specific to trails may be obtained through Ontario Trails.

APPENDIX E

- E-1 Stage 1 Archaeological Assessment Report
- E-2 MTCS Checklist
  - Criteria for Evaluating Archaeological Potential

APPENDIX E-1

Stage 1 Archaeological Assessment Report

Ministry of Heritage, Sport, Tourism, Culture Industries

Archaeology Program Unit
Programs and Services Branch
Culture Division
401 Bay Street, Suite 1700
Toronto ON M7A 0A7
Archaeology@ontario.ca

Ministère des Industries du patrimoine, du sport, du tourisme et de la culture

Unité des programme d'archéologie
Direction des programmes et des services
Division de culture
401, rue Bay, bureau 1700
Toronto ON M7A 0A7
Archaeology@ontario.ca

Dec 18, 2019

Parker S. Dickson (P256)
Stantec Consulting
171 Queens London ON N6A 5J7

RE: Entry into the Ontario Public Register of Archaeological Reports: Archaeological Assessment Report Entitled, "Stage 1 Archaeological Assessment: Denis St. Pierre Water Pollution Control Plan Expansion, Municipal Class Environmental Assessment, Part of Lot 2, Concession 1 Belle River West Side, and Part of the Municipal Road Right-of-way of Rourke Line Road, Geographic Township of Maidstone, now Town of Lakeshore, Essex County, Ontario ", Dated Dec 17, 2019, Filed with MTCS Toronto Office on N/A, MTCS Project Information Form Number P256-0601-2019, MTCS File Number 0011805

Dear Mr. Dickson:

The above-mentioned report, which has been submitted to this ministry as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18, has been entered into the Ontario Public Register of Archaeological Reports without technical review.[1]

Please note that the ministry makes no representation or warranty as to the completeness, accuracy or quality of reports in the register.

Should you require further information, please do not hesitate to send your inquiry to Archaeology@Ontario.ca

cc. Archaeology Licensing Officer
Kevin Girard,Town of Lakeshore
Kevin Girard,Town of Lakeshore

1 *In no way will the ministry be liable for any harm, damages, costs, expenses, losses, claims or actions that may result: (a) if the Report(s) or its recommendations are discovered to be inaccurate, incomplete, misleading or fraudulent; or (b) from the issuance of this letter. Further measures may need to be taken in the event that additional artifacts or archaeological sites are identified or the Report(s) is otherwise found to be inaccurate, incomplete, misleading or fraudulent.*

Lakeshore
OUR COMMUNITIES. OUR HOME.

December 17, 2019

Stantec Consulting Ltd.
600-171 Queens Avenue
London, ON N6A 5J7

Attention: Parker Dickson – Senior Archaeologist

Re: Stage 1 Archaeological Assessment: Denis St. Pierre Water Pollution Control Plant Expansion, Municipal Class Environmental Assessment
PIF # P256-0601-2019
Expedited Review Request

Dear Mr. Dickson,

Kindly forward this letter to the archaeology review officer at the Ministry of Heritage, Sport, Tourism and Culture Industries. The Town of Lakeshore has proposed the expansion of the Denis St. Pierre Water Pollution Control Plant (WPCP) Expansion (the Project) in anticipation of future growth and expansion through to 2035 in the former Belle River Community and Maidstone Urban Area. The Project includes an expansion of the existing Denis St. Pierre WPCP to increase future flow capacity and the installation of a future outfall sewer along a portion of Rourke Line Road.

Detailed Design of the Project is anticipated to begin in early January 2020. To reduce potential design and construction delays associated with the Project, the Town of Lakeshore kindly requests to have this report reviewed by January 31, 2020.

Your assistance regarding this matter is greatly appreciated.

Kevin Girard, P.Eng.
Manager of Environmental Services

KG/kg

Stage 1 Archaeological Assessment: Denis St. Pierre Water Pollution Control Plant Expansion, Municipal Class Environmental Assessment

Part of Lot 2, Concession 1 Belle River West Side, and Part of the Municipal Road Right-of-way of Rourke Line Road,
Geographic Township of Maidstone,
now Town of Lakeshore,
Essex County, Ontario

December 17, 2019

Prepared for:

Town of Lakeshore
419 Notre Dame Street
Belle River, Ontario N0R 1A0

Prepared by:

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Licensee: Parker Dickson, MA
Licence Number: P256
Project Information Form #: P256-0601-2019
Project Number: 165620173

ORIGINAL REPORT

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Executive Summary

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The Stage 1 study area for the Project comprises approximately 5.5 hectares and includes the existing Denis St. Pierre WPCP property on a portion of Lot 2, Concession 1 Belle River West Side and a portion of the municipal road right-of-way (ROW) of Rourke Line Road from approximately the southern end of the WPCP to Caille Avenue in the north. A property inspection was conducted under archaeological consulting license P256 issued to Parker Dickson, MA, of Stantec by the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI). The property inspection was completed on November 22, 2019 under Project Information Form number P256-0601-2019 in accordance with Section 1.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

The Stage 1 archaeological assessment determined that the study area retains low to no archaeological potential due to various deep and extensive modern disturbances. Thus, the study area retains low to no potential for the identification or recovery of archaeological resources. In accordance with Section 1.3.2 and Section 7.7.4 Standard 1b of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), **Stage 2 archaeological assessment is not required for the study area.**

The MHSTCI is asked to review the results presented and to accept this report into the *Ontario Public Register of Archaeological Reports*.

The Executive Summary highlights key points from the report only; for complete information and findings, the reader should examine the complete report.

Project Personnel

Licensed Archaeologist:	Parker Dickson, MA (P256)
Project Manager:	Jian Li, Ph.D., P.Eng., PE
Licensed Field Director:	Parker Dickson, MA (P256)
GIS Analyst:	Kent Buchanan, H.B.Sc., OCGC
Report Writer:	Parker Dickson, MA (P256)
Quality Review:	Jeffrey Muir, BA, CAHP (R304)
Independent Review:	Tracie Carmichael, BA. B.Ed. (R140)

Acknowledgements

Town of Lakeshore:	Kevin Girard, P.Eng. – Manager of Environmental Services
Ontario Clean Water Agency:	Marco Albano – Senior Operations Manager, Essex Hub Region
Ministry of Heritage, Sport, Tourism and Culture Industries:	Robert von Bitter – Archaeological Sites Database Coordinator

1.0 PROJECT CONTEXT

1.1 DEVELOPMENT CONTEXT

Stantec Consulting Ltd. (Stantec) was retained by the Town of Lakeshore to complete a Stage 1 archaeological assessment for the proposed Denis St. Pierre Water Pollution Control Plant (WPCP) Expansion (the Project; Figure 1). The Town of Lakeshore has proposed the expansion of the Denis St. Pierre WPCP in anticipation of future growth and expansion through to 2035 in the former Belle River Community and Maidstone Urban Area. The Stage 1 archaeological assessment is being completed as part of the preliminary planning associated with a Schedule C Municipal Class Environmental Assessment. This assessment was triggered by the planning and design process for Schedule C projects outlined in the Municipal Class Environmental Assessment (June 2000, as amended in 2007, 2011 and 2015) and described as part of an Environmental Study Report for the Project under the Ontario *Environmental Assessment Act* (Government of Ontario 1990a).

The Project includes an expansion of the existing Denis St. Pierre WPCP to increase future flow capacity and the installation of a future outfall sewer along a portion of Rourke Line Road. The Stage 1 study area for the Project comprises approximately 5.5 hectares and includes the existing Denis St. Pierre WPCP property on a portion of Lot 2, Concession 1 Belle River West Side and a portion of the municipal road right-of-way (ROW) of Rourke Line Road from approximately the southern end of the WPCP to Caille Avenue in the north (Figure 2).

1.1.1 Objectives

In compliance with the provincial standards and guidelines set out in the Ministry of Heritage, Sport, Tourism and Culture Industries' (MHSTCI) 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), the objectives of the Stage 1 archaeological assessment are as follows:

- To provide information about the study area's geography, history, previous archaeological fieldwork, and current land conditions;
- To evaluate the study area's archaeological potential, which will support recommendations for Stage 2 survey for all or parts of the property; and
- To recommend appropriate strategies for Stage 2 survey.

To meet these objectives, Stantec archaeologists employed the following research strategies:

- A review of relevant archaeological, historic, and environmental literature pertaining to the study area;
- A review of the land use history, including pertinent historic maps;
- An examination of the *Ontario Archaeological Sites Database* to determine the presence of registered archaeological sites in and around the study area; and
- An inspection of the study area by a licensed archaeologist.

Permission to enter the study area and identify features of archaeological potential was provided by the Town of Lakeshore.

1.2 HISTORICAL CONTEXT

The study area for the Project comprises approximately 5.5 hectares and includes the existing Denis St. Pierre WPCP property on a portion of Lot 2, Concession 1 Belle River West Side and a portion of the municipal road ROW of Rourke Line Road from approximately the southern end of the WPCP to Caille Avenue.

1.2.1 Post-contact Indigenous Resources

"Contact" is typically used as a chronological benchmark in discussing Indigenous archaeology in Canada and describes the contact between Indigenous and European cultures. The precise moment of contact is a constant matter of discussion. Contact in what is now the province of Ontario is broadly assigned to the 16th century (Loewen and Chapdelaine 2016).

At the turn of the 16th century, the region of the study area is documented to have been occupied by the Western Basin Tradition archaeological culture (see Section 1.3.2). Following the turn of the 17th century, the region of the study area is understood to have been within the territory of the historic Fire Nation, an Algonquian group occupying the western end of Lake Erie. It is argued, however, that the Attiwandaron (Neutral) expanded extensively westward, displacing the Fire Nation and occupying the region of modern Chatham-Kent (Lennox and Fitzgerald 1990:418-419). It is debated whether the Fire Nation was descendent from the archaeologically described Western Basin Tradition, or if they migrated into the western part of Lake Erie, displacing a previous Indigenous culture (Murphy and Ferris 1990:193-194). Historians understand that the displaced Fire Nation moved across the St. Clair and Detroit Rivers into what is modern day lower Michigan and their populations are synonymous with the later historic Kickapoo, Miami, Potawatomi, Fox, and Sauk (Heidenreich 1990: Figure 15.1). Bkejwanong (Walpole Island) First Nation tradition states that Nations of the Three Fires (a political confederacy, constituted of the Pottawatomi, the Ojibwa, and Odawa, have occupied the delta of the St. Clair River and the surrounding region for thousands of years continually (Walpole Island First Nation [WIFN] n.d.). In 1649, the Seneca with the Mohawk led a campaign into southern Ontario and dispersed the resident Nations and the Seneca used the lower Great Lakes basin as a prolific hinterland for beaver hunting (Heidenreich 1978; Trigger 1978:345).

By 1690, Ojibwa speaking people had begun to displace the Seneca from southern Ontario. The economy, since the turn of the 18th century, focused on fishing and the fur trade, supplemented by agriculture and hunting (Konrad 1981; Rogers 1978). The study area falls within the traditional territory of the WIFN, the Aamjiwnaang (Sarnia) First Nation (Aamjiwnaang First Nation), the Wiiwkwedong and Aazhoodena (Kettle Point and Stony Point) First Nation (Lytwyn 2009), and the Deshkaan Ziibing Anishnaabeg (Chippewas of the Thames First Nation). Some populations of Wyandot (a Nation of historically amalgamated Tionontate and Huron-Wendat populations) also had moved to the region of Lake St. Clair at the turn of the 18th century and resided with the Three Fires Nations (Tooker 1978:398).

In Essex County, and specifically in the Windsor region, a splinter group of Odawa settled in the area (CRM Group Limited *et al*. 2005:2-14 to 2-15). Also, the surviving remnants of the Huron and Petun were settling in the Windsor region as the Wyandot, exhibiting continuities with their 16th and 17th century predecessors from the Midland and Blue Mountain regions (Garrad 2014; Steckley 2014). Given the amalgamated nature of the Wyandot people, sometimes one of the contributing Indigenous peoples was recognized over another, hence the Wyandot were known as Huron in the Windsor region (Garrad 2014:16-54). Therefore, the Wyandot settlement in the Windsor region is commonly referred to as the “Huron Village” and related place names survive in Windsor today, such as Huron Church Road (but also note Wyandotte Street).

Despite the dispersal and movement of Indigenous groups throughout southern Ontario during the 17th and 18th centuries, archaeologically they can be characterized by continuity with their pre-contact Indigenous counterparts. These peoples still maintained a Terminal Woodland archaeological culture albeit with some features of European material culture. While there was cultural and social change occurring due to contact with European colonial powers, there was equally a definite persistence of Indigenous socio-cultural practices since these groups were not so profoundly affected by European contact that they left their former lifeways behind (Ferris 2009).

Under British administration in the 19th century, the various Indigenous groups were divided into separate bands. The Anishinaabe included the western Algonquian peoples, among them the Chippewa and the Odawa. Until the 18th century, the central Algonquian-speaking peoples, including the Pottawatomi, were located in the Michigan Peninsula (Blackbird 1887). In the middle of 18th century, the Chippewa were located on the south shores of Lake Huron, the east shores of Georgian Bay, and on the west end of Lake Ontario. Indigenous peoples and their communities continue to play a large role in the occupation of the study area and its environs.

Following the American Revolutionary War, Britain focused on the settlement of European immigrants into what became the province of Upper Canada in 1791. To enable widespread settlement, the British government negotiated a series of treaties with Indigenous peoples. One of the earliest treaties involving lands located in close proximity to the study area was made on May 19, 1790. Originally identified as the Detroit Treaty (Figure 3), the chiefs of the Odawa, Chippewa, Pottawatomi, and Huron Nations and representatives of the British Crown established a vast tract of land “…from the Detroit River easterly to Catfish Creek and south of the river La Tranche [now Thames River] and Chenail Ecarte [now St. Clair River], and contains Essex County except Anderdon Township and Part of West Sandwich; Kent County except Zone Township, and Gores of Camden and Chatham; Elgin County except Bayham Township and parts of South Dorchester and Malahide…[i]n Middlesex County, Deleware and Westminster Township and part of North Dorchester” (Morris 1943:17). Today, this treaty is identified as Treaty Number 2, illustrated by the letter “C” on Figure 4.

A plaque erected by the Historic Sites and Monuments Board of Canada further identifies this treaty as *McKee’s Purchase*. A commemorative plaque located in the Blenheim Memorial Park in Blenheim, Ontario reads (Ontario Plaques 2016):

> *In May 1790 Alexander McKee, Deputy Agent of the British Indian Department, and the principal chiefs of the Ottawa, Potawatomi, Chippewa and Wyandot negotiated a treaty whereby the British Crown acquired title to what is now southwestern Ontario. This treaty completed the process begun with Niagara treaties of 1781 and 1784, with the result that most of the Ontario peninsula was soon opened to British and Loyalist settlement.*

In addition to the above, Figure 5 reproduces a map from the *History of the Windsor Border Region* (Lajeunesse 1960) which depicts several Indigenous sites and trails documented in Essex County during the late 18th century. Trail A extends from the City of Windsor at the Detroit River to the Town of Leamington. Subsequently, Talbot Road and Highway 3 were constructed to largely follow Trail A. Trail B extends north from the shores of Lake Erie (west of the Town of Leamington) to an Indigenous site, identified as “Site 20”, near the mouth of the Ruscom River. Trail G represents an early path along the south shore of Lake St. Clair, connecting the Thames River to Sandwich (now, the City of Windsor). This road, later named Tecumseh Road or modernly, County Road 22, was also travelled by Governor Simcoe in 1793 (Lajeunesse 1960: xxxix).

The nature of Indigenous settlement size, population distribution, and material culture shifted as European settlers encroached upon Aboriginal territory. However, despite this shift, “written accounts of material life and livelihood, the correlation of historically recorded villages to their archaeological manifestations, and the similarities of those sites to more ancient sites have revealed an antiquity to documented cultural expressions that confirms a deep historical continuity to…systems of ideology and thought” (Ferris 2009:114). As a result, Indigenous peoples have left behind archaeological resources throughout the region which show continuity with past peoples, even if they have not been explicitly recorded in Euro-Canadian documentation.

1.2.2 Euro-Canadian Resources

In 1791, the Provinces of Upper Canada and Lower Canada were created from the former Province of Quebec by an act of British Parliament. At this time, Colonel John Graves Simcoe was appointed as the Lieutenant Governor of Upper Canada and was tasked with governing the new province, directing its settlement and establishing a constitutional government modelled after that of Britain (Petryshyn 1985). In 1792, Simcoe divided Upper Canada into 19 counties consisting of previously settled lands, new lands opened for settlement, and lands not yet acquired by the Crown. These new counties stretched from Essex in the west to Glengarry in the east.

Essex County is bounded by Lake St. Clair to the north, the Detroit River to the west, Lake Erie to the south, and Kent County (now Municipality of Chatham-Kent) to the east. It was one of the first counties to be settled in Upper Canada (later, Ontario). The first French settlers arrived in the Detroit-Windsor area in 1701 when the Sieur De Lamothe Cadillac and roughly 100 military and civilian personnel established Fort Pontchartrain on the Detroit side of the river (Fuller 1972:6-8). The French settlement remained on the Detroit side until 1748 when the Jesuit mission to the Huron (or Wyandot) was established on the south shore near the foot of the present-day Huron Church Road and the Ambassador Bridge. Fort Pontchartrain surrendered to the British in 1760 and remained under British control until 1796, although it was officially a part of the United States from 1783 onwards. During this period, the settlement continued to grow, but remained predominantly French. The area (now in present-day Windsor) across the river from Fort Pontchartrain (later to become Detroit) was called “Petite côte” and served the agricultural needs of the fort (Archives of Ontario 2014).

By 1881, the population of Essex County was 36,258, with 25,303 settlers living in rural areas (Belden 1881:8). Roads continued to improve as concerns over the division from the rest of Upper Canada developed. In 1803, a survey of the county was conducted and an incipient road was established from the mouth of the River Thames to Pike Creek. However, the road was often in disrepair and in wet seasons was sometimes impassable. By 1838, rising lake levels had inundated the road and a new road was surveyed in 1840. Ultimately named Tecumseh Road, it was constructed one mile from the shoreline using the corduroy method. A corduroy constructed road used felled timbers to cross low-lying marshy areas. Prior to the construction of Tecumseh Road, Colonel Thomas Talbot surveyed a road running east to west through the middle of Maidstone Township. Aptly named Middle Road, this road would serve as a major thoroughfare and greatly increased the prospects of settlement in the area upon its completion of being planked in 1854 (Burnside *et al.* 1982).

A portion of the map of Maidstone Township from the 1881 *Illustrated Historical Atlas of Essex County, Ontario* (Belden 1881) is illustrated in Figure 6. No landowners are depicted on the 1881 map for Lot 2, Concession 1 Belle River West Side. The portion of Rourke Line Road associated with the study area follows the early roadway depicted on the 1811. Brown’s Creek is illustrated along the east side of the historic road (now Rourke Line Road) and within a portion of the study area. Additionally, a portion of the Great Western Railway is depicting cutting across the northern portion of the study area.

In discussing the late 19th century historical mapping it must be remembered that historical county atlases were produced primarily to identify factories, offices, residences, and landholdings of subscribers and were funded by subscription fees. Landowners who did not subscribe were not always listed on the maps (Caston 1997:100). As such, structures were not necessarily depicted or placed accurately on early maps (Gentilcore and Head 1984). Review of historic mapping also has inherent accuracy difficulties due to potential error in geo-referencing. Geo-referencing is conducted by assigning spatial coordinates to fixed locations and using these points to spatially reference the remainder of the map. Due to changes in “fixed” locations over time (e.g., road intersections, road alignments, watercourses, etc.), errors/difficulties of scale and the relative idealism of the historic cartography, historic maps may not translate accurately into real space points. This may provide obvious inconsistencies during the historic map review.

The majority of the region surrounding the study area has been subject to European-style agricultural practices for over 100 years, having been populated by Euro-Canadian farmers by the late 19th century. Today, the expanding communities of Emeryville and Belle River are converting farmland into urban developments.

1.3 ARCHAEOLOGICAL CONTEXT

1.3.1 The Natural Environment

The study area is situated within the St. Clair Clay Plains physiographic region. This region is described by Chapman and Putnam (1986:147) as:

> *Adjoining Lake St. Clair in Essex and Kent Counties and the St. Clair River in Lambton County are extensive clay plains covering 2,270 square miles. The region is one of little relief, lying between 575 and 700 feet a.s.l., except for the moraine at Ridgetown and Blenheim which rises 50 to 100 feet higher. … Glacial Lake Whittlesey, which deeply covered all of these lands, and Lake Warren which subsequently covered nearly the whole area, failed to leave deep stratified beds of sediment on the underlying clay till except around Chatham, between Blenheim and the Rondeau marshes, and in a few other smaller areas. Most of Lambton and Essex Counties, therefore, are essentially till plains smoothed by shallow deposits of lacustrine clay which settled in the depressions while the knolls were being lowered by wave action.*

Generally, the soils within the region of the study area consist of Wauseon Sandy Loam, Brookstone Clay, and Caistor Clay. These soils are typically suitable for agricultural purposes. Specific to the study area, however, much of the natural soils have been removed as a result of 20th and 21st century development and are classified as “built up” areas.

As noted earlier, Essex County is bound on three sides by major water sources. In addition to large primary water sources, i.e., Lake St. Clair, the Detroit River, and Lake Erie, there are numerous other primary and secondary sources of potable water through the county and the Geographic Township of Maidstone. The closest source of extant potable water is Stover Creek (formerly Brown’s Creek); which is located adjacent to the east side of the study area along Rourke Line Road. Stover Creek drains into Lake St. Clair which, itself, is located approximately 30 metres north of the study area. The Belle River is located approximately 1,100 metres to the east. Additional secondary and tertiary creeks and streams are noted throughout the region.

1.3.2 Pre-contact Archaeological Resources

This portion of southwestern Ontario has been occupied by First Nations peoples since the retreat of the Wisconsin glacier approximately 11,000 years ago. Much of what is understood about the lifeways of these Indigenous peoples is derived from archaeological evidence and ethnographic analogy. In Ontario, Indigenous culture prior to the period of contact with European peoples has been distinguished into cultural periods based on observed changes in material culture. These cultural periods are largely based in observed changes in formal lithic tools, and separated into the Early Paleo-Indian, Late Paleo-Indian, Early Archaic, Middle Archaic, and Late Archaic periods. Following the advent of ceramic technology in the Indigenous archaeological record, cultural periods are separated into the Early Woodland, Middle Woodland, and Late Woodland periods, based primarily on observed changes in formal ceramic decoration. It should be noted that these cultural periods do not necessarily represent specific cultural identities but are a useful paradigm for understanding changes in Indigenous culture through time. Table 1 provides a general outline of the cultural chronology of the study area, summarized from Ellis and Ferris (1990). The provided time periods are based on the "Common Era" calendar notation system, i.e., Before Common Era (BCE) and Common Era (CE).

Table 1: Generalized Cultural Chronology of the Study Area

Period	Characteristics	Time	Comments
Early Paleo-Indian	Fluted Projectiles	9,000 – 8,400 BCE	spruce parkland/caribou hunters
Late Paleo-Indian	Hi-Lo Projectiles	8,400 – 8,000 BCE	smaller but more numerous sites
Early Archaic	Kirk and Bifurcate Base Points	8,000 – 6,000 BCE	slow population growth
Middle Archaic	Brewerton-like Points	6,000 – 2,500 BCE	environment similar to present
Late Archaic	Narrow Point	2,000 – 1,800 BCE	increasing site size
	Broad Point	1,800 – 1,500 BCE	large chipped lithic tools
	Small Point	1,500 – 1,100 BCE	introduction of bow hunting
Terminal Archaic	Hind Points	1,100 – 950 BCE	emergence of true cemeteries
Early Woodland	Meadowood Points	950 – 400 BCE	introduction of pottery
Middle Woodland	Couture Corded Pottery	400 BCE – 500 CE	increased sedentism
	Riviere au Vase Phase	500 – 800 CE	seasonal hunting and gathering
Late Woodland	Younge Phase	800 – 1200 CE	incipient agriculture
	Springwells Phase	1200 – 1400 CE	agricultural villages
	Wolf Phase	1400 – 1550 CE	earth worked villages, warfare
Contact Indigenous	Various Algonkian and Iroquoian Groups	1600 – 1875 CE	early written records and treaties
Historic	French/Euro-Canadian	1749 CE – present	European settlement

Local environmental conditions during the Paleo-Indian period were significantly different from what they are today. Ontario's first peoples would have crossed the landscape in small groups in search of food, particularly migratory game species. In this area, caribou may have been a Paleo-Indian diet staple, supplemented by wild plants, small game, birds, and fish. Given the low density of populations on the landscape at this time and their mobile nature, Paleo-Indian sites are small and ephemeral. They are sometimes identified by the presence of fluted points. Sites are frequently located adjacent to the shorelines of large glacial lakes (Ellis and Deller 1990).

Archaeological records indicate subsistence changes around 8000 BCE at the start of the Archaic Period in southwestern Ontario. Since the large mammal species that formed the basis of the Paleo-Indian diet became extinct or moved north with the warming of the climate, Archaic populations had a more varied diet, exploiting a range of plants and bird, mammal, and fish species. Reliance on specific food resources like fish, deer, and several nut species became more noticeable through the Archaic Period and the presence of warmer, more hospitable environs led to expansion of group and family sizes. In the archaeological record, this is evident in the presence of larger sites. The coniferous forests of earlier times were replaced by stands of mixed coniferous and deciduous trees by about 4000 BCE. The transition to more productive environmental circumstances led to a rise in population density. As a result, Archaic sites become more abundant over time. Artifacts typical of these occupations include a variety of stemmed and notched projectile points; chipped stone scrapers; ground stone tools (e.g., celts, adzes, etc.) and ornaments (e.g., bannerstones, gorgets, etc.); bifaces or tool blanks; animal bone; and chert waste flakes, a byproduct of the tool making process (Ellis *et al*. 1990).

Significant changes in cultural and environmental patterns occurred in the Early and Middle Woodland periods (*circa* 950 BCE to 800 CE). Occupations became increasingly more permanent in this period, culminating in major semi-permanent villages by roughly 1,000 years ago. Archaeologically, the most significant changes by Woodland peoples were the appearance of artifacts manufactured from modeled clay and the emergence of more sedentary villages. The earliest pottery was crudely made by the coiling method; and early house structures were simple oval enclosures. The Early and Middle Woodland periods are also characterized by extensive trade in raw materials, objects, and finished tools, with sites in Ontario containing trade items with origins in the Mississippi and Ohio River valleys (Spence *et al*. 1990).

By the Late Woodland period there was a distinctive cultural occupation in southwestern Ontario, including Essex, Kent, and Lambton counties. The primary Late Woodland occupants of this area were populations described by archaeologists as Western Basin Tradition. Murphy and Ferris (1990:189) indicate that these people had ties with populations in southeastern Michigan and northwestern Ohio and represent an *in situ* cultural development from the earlier Middle Woodland groups. The Western Basin Tradition seems to have been centred in the territory comprising the eastern drainage basin of Lake Erie, Lake St. Clair, and the southern end of Lake Huron. The Western Basin Tradition is divided up into four phases based on differences in settlement and subsistence strategies and pottery attributes: Riviere au Vase, Younge, Springwells, and Wolf.

1.3.3 Registered Archaeological Sites and Surveys

In Canada, archaeological sites are registered within the Borden system, a national grid system designed by Charles Borden in 1952 (Borden 1952). The grid covers the entire surface area of Canada and is divided into major units containing an area that is two degrees in latitude by four degrees in longitude. Major units are designated by upper case letters. Each major unit is subdivided into 288 basic unit areas, each containing an area of 10 minutes in latitude by 10 minutes in longitude. The width of basic units reduces as one moves north due to the curvature of the earth. In southern Ontario, each basic unit measures approximately 13.5 kilometres east-west by 18.5 kilometres north-south. In northern Ontario, adjacent to Hudson Bay, each basic unit measures approximately 10.2 kilometres east-west by 18.5 kilometres north-south. Basic units are designated by lower case letters. Individual sites are assigned a unique, sequential number as they are registered. These sequential numbers are issued by the MHSTCI who maintain the *Ontario Archaeological Sites Database*. The study area is located within Borden Block AbHq.

Information concerning specific site locations is protected by provincial policy and is not fully subject to the *Freedom of Information and Protection of Privacy Act* (Government of Ontario 1990c). The release of such information in the past has led to looting or various forms of illegally conducted site destruction. Confidentiality extends to media capable of conveying location, including maps, drawings, or textual descriptions of a site location. The MHSTCI will provide information concerning site location to the party or an agent of the party holding title to a property, or to a licensed archaeologist with relevant cultural resource management interests.

An examination of the *Ontario Archaeological Sites Database* has shown that there are four registered archaeological sites within one kilometre of the study area; however, none are within 50 metres of the study area (Government of Ontario 2019a). Table 2 provides a summary of the registered archaeological sites within one kilometre of the study area. An examination of the *Ontario Public Register of Archaeological Reports* has shown that no previous archaeological assessments have been completed within 50 metres of the study area (Government of Ontario 2019b).

Table 2: Registered Archaeological Sites within One Kilometre

Borden #	Site Name	Site Type	Cultural Affiliation
AbHq-1	Not applicable (n/a)	Findspot	Indigenous
AbHq-2	n/a	Findspot	Indigenous
AbHq-15	Leo Mailloux P1	Findspot	Indigenous
AbHq-16	Leo Mailloux H1	Homestead	Euro-Canadian

1.3.4 Existing Conditions

The Project includes an expansion of the existing Denis St. Pierre WPCP to increase future flow capacity and the installation of a future outfall sewer along a portion of Rourke Line Road. The Stage 1 study area for the Project comprises approximately 5.5 hectares and includes the existing Denis St. Pierre WPCP property on a portion of Lot 2, Concession 1 Belle River West Side and a portion of the municipal road ROW of Rourke Line Road from approximately the southern end of the WPCP to Caille Avenue in the north (see Figure 2). The Denis St. Pierre WPCP was commissioned in 1976 as an extended aeration plant and was later upgraded and expanding in 1999 to a sequencing batch reactor process. Additional improvements to the existing facility occurred in the 2000s. An aerial image of the facility from 2010 illustrates deep and extensive ground disturbance throughout the property (Figure 7).

2.0 FIELD METHODS

Initial background research compiled information concerning any known and/or potential archaeological resources within the study area. A property inspection was conducted under archaeological consulting license P256 issued to Parker Dickson, MA, of Stantec by the MHSTCI. The property inspection was completed on November 22, 2019 under Project Information Form number P256-0601-2019 in accordance with Section 1.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

Prior to the start of the Stage 1 property inspection, the Town of Lakeshore provided preliminary mapping of the proposed Project and its associated impacts which defined the study area. This mapping was then geo-referenced by Stantec's Geographical Information Services (GIS) team and a digital file (i.e., a shape file) was created of the Project's anticipated study area. The digital file was uploaded to handheld Global Positioning System (GPS) devices for use in the field. The limits of the study area were also guided in the field by the installation of wooden surveying stakes which illustrated the limits of the Rourke Line Road ROW. The painted red wooden stakes were installed by a third-party surveying contractor retained by the Town of Lakeshore.

During the property inspection on November 22, 2019, the weather was overcast and cool. The lighting and visibility of land features was suitable for the identification of features of archaeological potential. At no time were field, lighting, or weather conditions detrimental to the identification of features of archaeological potential.

The Stage 1 study area for the Project comprises approximately 5.5 hectares and includes the existing Denis St. Pierre WPCP property on a portion of Lot 2, Concession 1 Belle River West Side and a portion of the municipal road ROW of Rourke Line Road from approximately the southern end of the WPCP to Caille Avenue in the north. The photography from the property inspection is presented in Section 7.1 and confirms that the requirements for a Stage 1 property inspection were met, as per Section 1.2 and Section 7.7.2 Standard 1 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). Numerous modern disturbances were noted throughout the study area, including municipal road ROWs (Photos 1, 4, 6, 12, and 16), buried utilities and infrastructure (Photos 3, 5, 7 to 11, 13 to 15, 17, 18, and 20), and a rail line with an associated ditch (Photos 2 and 19). Additionally, the various buildings, structures, and extensive earthmoving activities associated with the existing Denis St. Pierre WPCP form other modern disturbances within the study area (Photos 21 to 28).

3.0 ANALYSIS AND CONCLUSIONS

Archaeological potential is established by determining the likelihood that archaeological resources may be present within a study area. Stantec applied archaeological potential criteria commonly used by the MHSTCI (Government of Ontario 2011) to determine areas of archaeological potential within the region under study. These variables include proximity to previously identified archaeological sites, distance to various types of water sources, soil texture and drainage, glacial geomorphology, elevated topography, and the general topographic variability of the area. However, it is worth noting that extensive land disturbance can eradicate archaeological potential (Government of Ontario 2011).

Potable water is the single most important resource for any extended human occupation or settlement and since water sources in Ontario have remained relatively stable over time, proximity to drinkable water is regarded as a useful index for the evaluation of archaeological site potential. In fact, distance to water is one of the most commonly used variables for predictive modeling of archaeological site locations. Distance to modern or ancient water sources is generally accepted as the most important determinant of past human settlement patterns and, considered alone, may result in a determination of archaeological potential. However, any combination of two or more other criteria, such as well-drained soils or topographic variability, may also indicate archaeological potential.

As discussed above, distance to water is an essential factor in archaeological potential modeling. When evaluating distance to water it is important to distinguish between water and shoreline, as well as natural and artificial water sources, as these features affect site location and type to varying degrees. The MHSTCI categorizes water sources in the following manner:

- Primary water sources: lakes, rivers, streams, creeks;
- Secondary water sources: intermittent streams and creeks, springs, marshes and swamps;
- Past water sources: glacial lake shorelines, relic river or stream channels, cobble beaches, shorelines of drained lakes or marshes; and
- Accessible or inaccessible shorelines: high bluffs, swamp or marshy lake edges, sandbars stretching into marsh.

The closest source of extant potable water is Stover Creek which is located adjacent to the east side of the study area along Rourke Line Road. Stover Creek drains into Lake St. Clair which, itself, is located approximately 30 metres north of the study area. The Belle River is located approximately 1,100 metres to the east of the study area. Additional secondary and tertiary creeks and streams are noted throughout the region. Additional ancient and/or relic tributaries of water sources may have existed but are not identifiable today and are not indicated on historic mapping.

Generally, the region of the study area comprises Wauseon Sandy Loam, Brookstone Clay, and Caistor Clay. These soils would have been suitable for agricultural purposes, however, much of the natural soils have been removed as a result of 20th and 21st century development.

An examination of the *Ontario Archaeological Sites Database* identified three Indigenous archaeological findspots within one kilometre of the study area. However, no archaeological sites are located within 50 metres of the study area. Early mapping of Essex County (see Figures 3 to 5) demonstrate an Indigenous presence within the area prior to European contact.

For Euro-Canadian sites, archaeological potential can be extended to areas of early Euro-Canadian settlement, including places of military or pioneer settlements; early transportation routes; and properties listed on the municipal register or designated under the *Ontario Heritage Act* (Government of Ontario 1990b) or property that local histories or informants have identified with possible historical events, activities, or occupations. There are no protected heritage properties within or adjacent to the study area for the Project. There is one registered Euro-Canadian archaeological site within one kilometre of the study area. Late 19th century mapping demonstrates that the study area had become well-developed and was home to numerous early roads, homesteads, farmsteads, and commercial buildings, as well as a railway (see Figure 6). Much of the established road and rail networks and agricultural settlement from the 19th century is still visible today.

Based on background and archival research alone, the study area for the Project retains general potential for the identification of Indigenous and Euro-Canadian archaeological resources. However, deep and extensive land alteration from 20th century development has impacted the archaeological potential of the study area. Aerial imagery from the 21st century demonstrates the deep and extensive ground disturbance within the Denis St. Pierre WPCP property (see Figure 7). This disturbance was confirmed during the Stage 1 property visit. Additional disturbance, in the form of buried utilities and municipal infrastructure, road ROWs, and a rail line with an associated ditch, were also identified during the Stage 1 property inspection.

In summary, the background and archival research determined that while the study area retained general archaeological potential, the archaeological potential of the study area has been removed through extensive land disturbance. Taking this into consideration, the Stage 1 archaeological assessment has determined that the study area retains low to no potential for the identification and documentation of archaeological resources (Figure 8). This conclusion is consistent with Section 1.3.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.0 RECOMMENDATIONS

The Stage 1 archaeological assessment determined that the study area retains low to no archaeological potential due to various deep and extensive modern disturbances. Thus, the study area retains low to no potential for the identification or recovery of archaeological resources. In accordance with Section 1.3.2 and Section 7.7.4 Standard 1b of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), **Stage 2 archaeological assessment is not required for the study area (Figure 8).**

The MHSTCI is asked to review the results presented and to accept this report into the *Ontario Public Register of Archaeological Reports*.

5.0 ADVICE ON COMPLIANCE WITH LEGISLATION

This report is submitted to the Minister of Heritage, Sport, Tourism and Culture Industries as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c. O.18 (Government of Ontario 1990b). The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the study area of a development proposal have been addressed to the satisfaction of the Ministry of Heritage, Sport, Tourism and Culture Industries, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.

It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* (Government of Ontario 1990b) for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the *Ontario Public Register of Archaeological Reports* referred to in Section 65.1 of the *Ontario Heritage Act* (Government of Ontario 1990b).

Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48(1) of the *Ontario Heritage Act* (Government of Ontario 1990b). The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48(1) of the *Ontario Heritage Act* (Government of Ontario 1990b).

The *Funeral, Burial and Cremation Services Act,* 2002, S.O. 2002, c.33 (Government of Ontario 2002), requires that any person discovering or having knowledge of a burial site shall immediately notify the police or coroner. It is recommended that the Registrar of Cemeteries at the Ministry of Government and Consumer Services is also immediately notified.

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7.0 IMAGES

7.1 PHOTOS

Photo 1: View of study area illustrating Rourke Line Road, facing south

Photo 2: View of study area illustrating rail line, facing west

Photo 3: View of study area illustrating road ROW and buried infrastructure, facing south

Photo 4: View of study area illustrating road ROW, facing south

Photo 5: View of study area illustrating road ROW and buried infrastructure, facing north

Photo 6: View of study area illustrating Rourke Line Road, facing south

Photo 7: View of study area illustrating road ROW and buried utilities, facing south

Photo 8: View of study area illustrating road ROW and buried infrastructure, facing south

Photo 9: View of study area illustrating road ROW and buried utilities, facing south

Photo 10: View of study area illustrating road ROW and buried infrastructure, facing south

Photo 11: View of study area illustrating road ROW and buried utilities, facing south

Photo 12: View of study area illustrating Rourke Line Road, facing north

Photo 13: View of study area illustrating road ROW and buried infrastructure, facing north

Photo 14: View of study area illustrating road ROW and buried infrastructure, facing north

Photo 15: View of study area illustrating road ROW and buried infrastructure, facing north

Photo 16: View of study area illustrating road ROW, facing north

Photo 17: View of study area illustrating road ROW and buried infrastructure, facing south

Photo 18: View of study area illustrating road ROW and buried infrastructure, facing north

Photo 19: View of constructed ditch alongside rail line, facing east

Photo 20: View of study area illustrating buried infrastructure, facing north

Photo 21: View of existing WPCP, facing southeast

Photo 22: View of existing WPCP, facing east

Photo 23: View of existing WPCP illustrating extensive terraforming, facing east

Photo 24: View of existing WPCP illustrating extensive terraforming, facing south

Photo 25: View of existing WPCP illustrating extensive terraforming, facing south

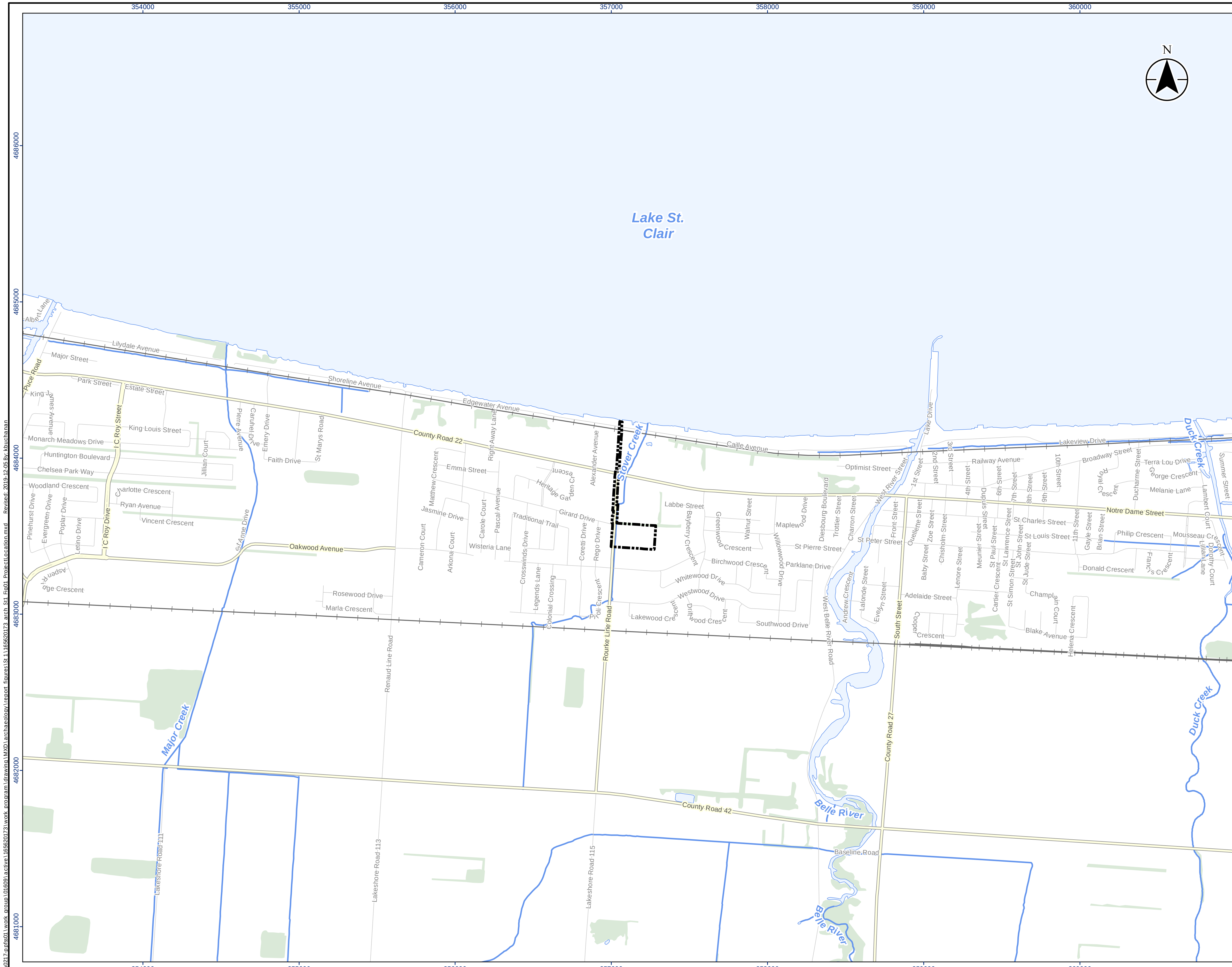
Photo 26: View of existing WPCP, facing northwest

Photo 27: View of existing WPCP, facing east

Photo 28: View of buried infrastructure within the existing WPCP, facing west

8.0 MAPS

General maps of the study area will follow on succeeding pages.



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Study Area

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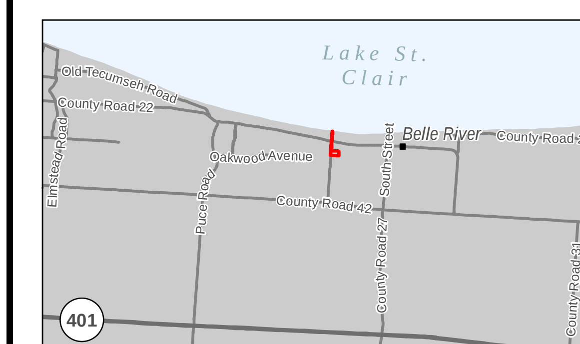

Project Location
Essex County

165620173 REV4
Prepared by PW on 2019-12-05

Client/Project
TOWN OF LAKESHORE
TOWN OF LAKESHORE DENIS ST. PIERRE WATER POLLUTION CONTROL PLANT EXPANSION

Figure No.
1

Title
Location of the Project

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Stantec

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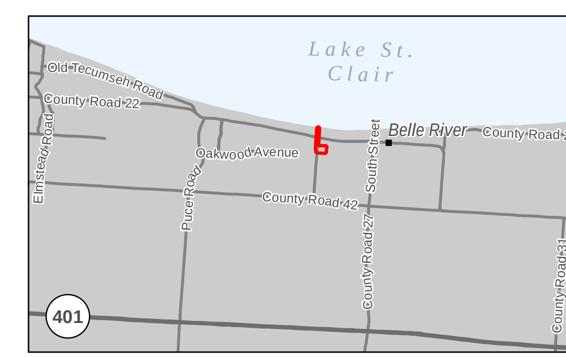

Project Location
Essex County

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Prepared by KDB on 2019-12-05

Client/Project
TOWN OF LAKESHORE
TOWN OF LAKESHORE DENIS ST. PIERRE WATER POLLUTION CONTROL PLANT EXPANSION

Figure No.
2

Title
Location of the Study Area

Stantec

Legend

★ Approximate Location of Study Area

Notes
1. Historical mapping not to scale.
2. Citation: Government of Canda. n.d.a. *Map of Treaty Areas in Upper Canada.* Ottawa: Department of Indian Affairs. Survey Branch.

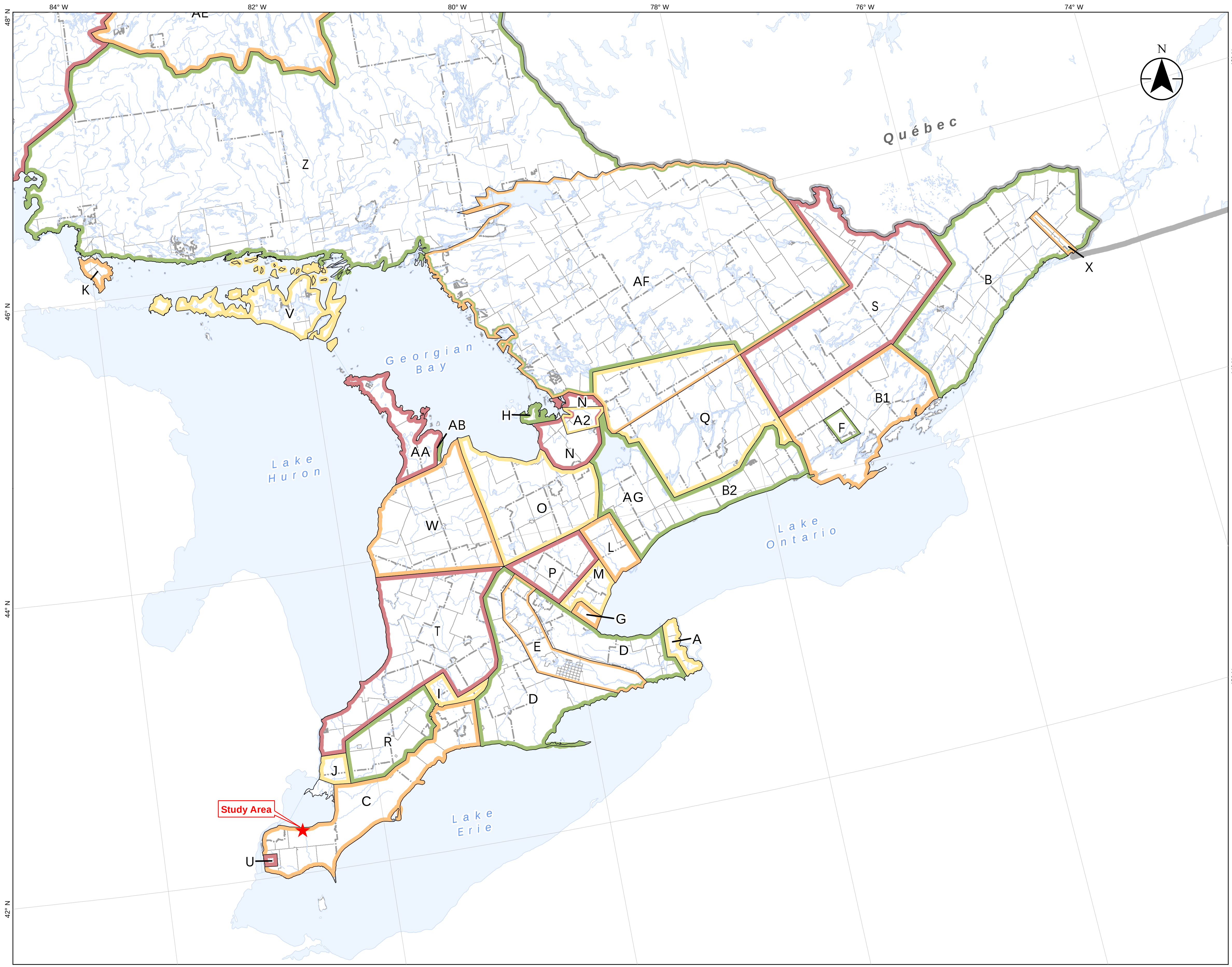
Project Location
Essex County

165620173 REV4
Prepared by KDB on 2019-12-05

Client/Project
TOWN OF LAKESHORE
TOWN OF LAKESHORE DENIS ST. PIERRE WATER POLLUTION CONTROL PLANT EXPANSION

Figure No.
3

Title
Map of Treaty Areas in Upper Canada



Stantec

Legend

- Approximate Location of Study Area
- Watercourse
- Waterbody
- Municipal Boundary - Upper Tier
- Municipal Boundary - Lower or Single Tier

A	Treaty No. 381, May 9th, 1781 (Mississauga and Chippewa)
B	Crawford's Purchase, October 9th, 1783 (Algonquin and Iroquois)
B1	Crawford's Purchase, October 9th, 1783 (Mississauga)
B2	Crawford's Purchases, 1784, 1787 And 1788 (Mississauga)
A2	John Collins' Purchase, 1785 (Chippewa)
C	Treaty No. 2, May 19th, 1790 (Odawa, Chippewa, Pottawatomi, and Huron)
D	Treaty No. 3, December 2nd, 1792 (Mississauga)
E	Haldimand Tract:from the Crown to the Mohawk, 1793
F	Tyendinaga:from the Crown to the Mohawk, 1793
G	Treaty No. 3 3/4:from the Crown to Joseph Brant, October 24th, 1795
H	Treaty No. 5, May 22nd, 1798 (Chippewa)
I	Treaty No. 6, September 7th, 1796 (Chippewa)
J	Treaty No. 7, September 7th, 1796 (Chippewa)
L	Treaty No. 13, August 1st, 1805 (Mississauga)
M	Treaty No. 13A, August 2nd, 1805 (Mississauga)
N	Treaty No.16, November 18th, 1815 (Chippewa)
O	Treaty No. 18, October 17th, 1818 (Chippewa)
P	Treaty No. 19, October 28th 1818 (Chippewa)
Q	Treaty No. 20, November 5th, 1818 (Chippewa)
R	Treaty No. 21, March 9th, 1819 (Chippewa)
S	Treaty No. 27, May 31st, 1819 (Mississauga)
T	Treaty No. 27½, April 25th, 1825 (Ojibwa and Chippewa)
U	Treaty No. 35, August 13th, 1833 (Wyandot or Huron)
V	Treaty No. 45, August 9th, 1836 (Chippewa and Odawa, "For All Indians To Reside Thereon")
W	Treaty No. 45½, August 9th, 1836 (Saugeen)
X	Treaty No. 57, June 1st, 1847 (Iroquois of St. Regis)
Z	Treaty No. 61, September 9th, 1850 (Robinson Treaty:Ojibwa)
AA	Treaty No. 72, October 30th, 1854 (Chippewa)
AB	Treaty No. 82, February 9th, 1857 (Chippewa)
AF	Williams Treaty, October 31st and November 15th, 1923 (Chippewa and Mississauga)
AG	Williams Treaty, October 31st, 1923 (Chippewa)

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Notes

1. Coordinate System: NAD 1983 Statistics Canada Lambert
2. Contains information used under the Open Government License - Ontario.

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Essex County

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Prepared by KDB on 2019-12-05

Client/Project
TOWN OF LAKESHORE
TOWN OF LAKESHORE DENIS ST. PIERRE WATER POLLUTION CONTROL PLANT EXPANSION

Figure No.
4

Title
Treaties and Purchases
(Adapted from Morris 1943)

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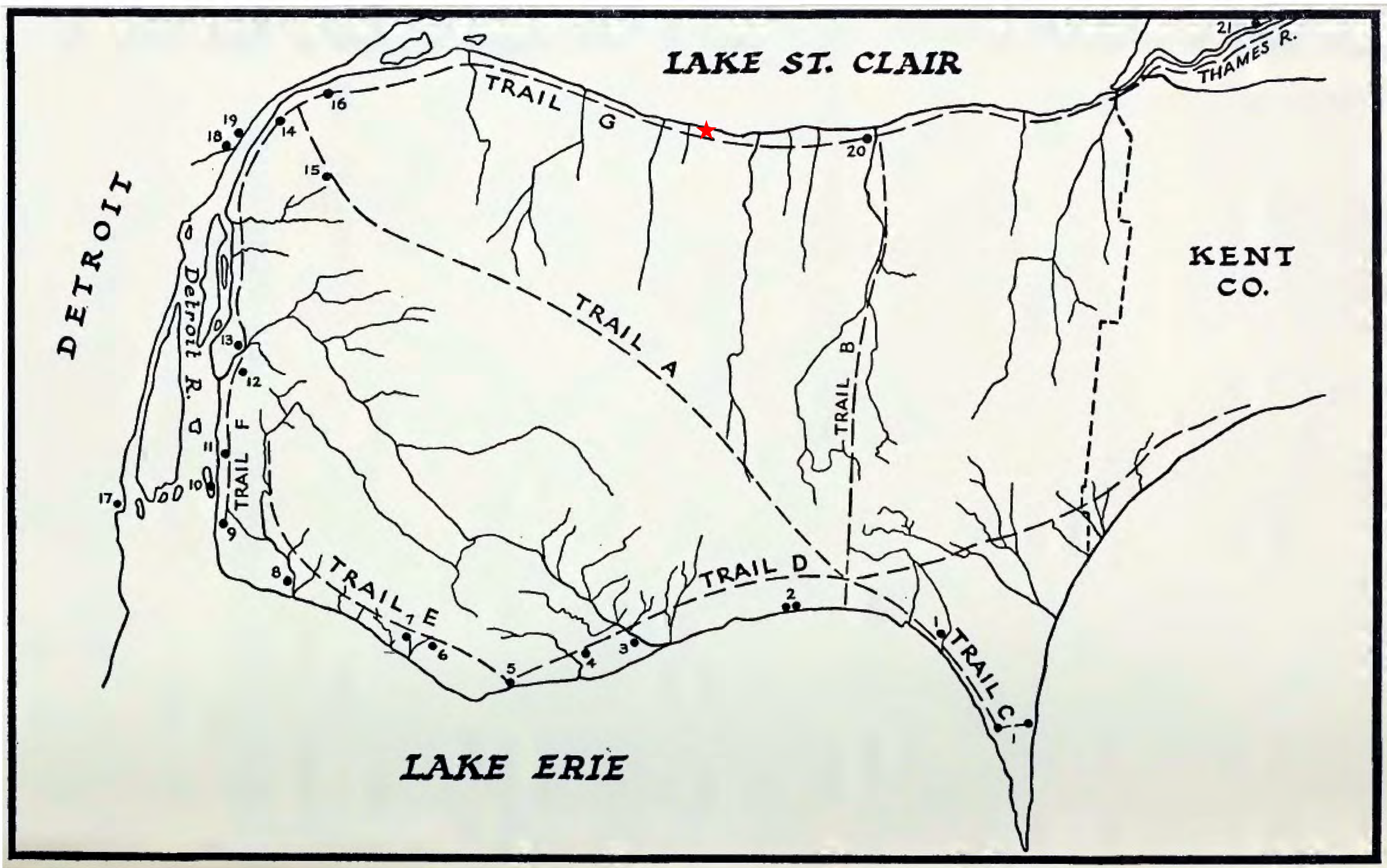
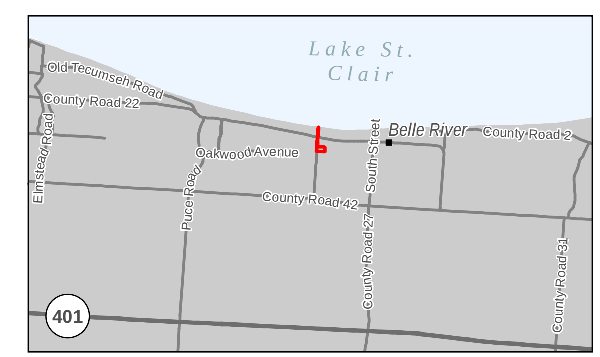


Stantec

Legend

★ Approximate Location of Study Area

Notes
1. Historical mapping not to scale.
2. Citation: Lajeunesse, Ernest J. 1960. *The Windsor Border Region: Canada's Southernmost Frontier. The Champlain Society.* Toronto: University of Toronto Press.



Project Location
Essex County

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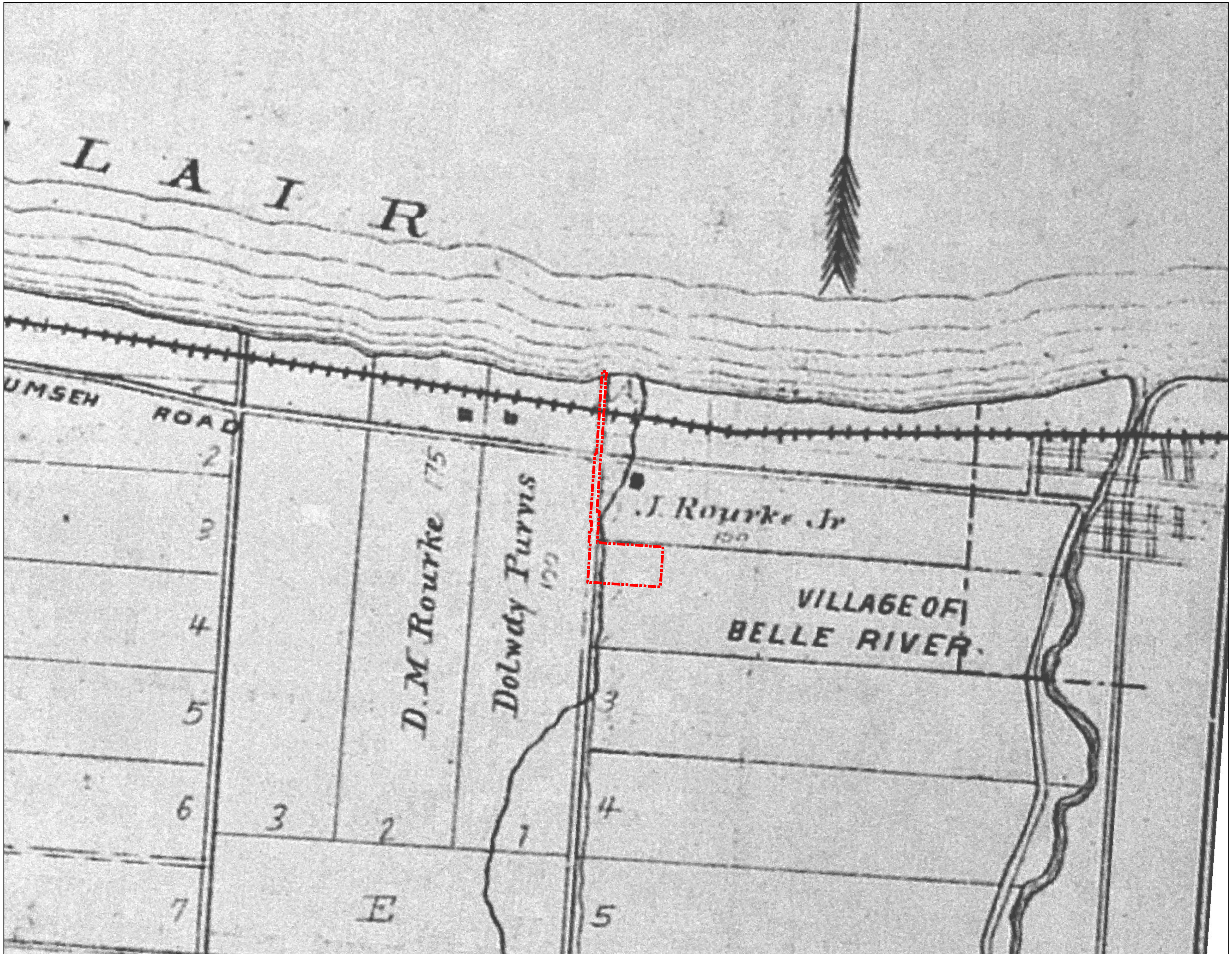
Prepared by KDB on 2019-12-05

Client/Project
TOWN OF LAKESHORE
TOWN OF LAKESHORE DENIS ST. PIERRE WATER POLLUTION CONTROL PLANT EXPANSION

Figure No.
5

Title
Documented Indigenous Activity in Essex County (Lajeunesse 1960)



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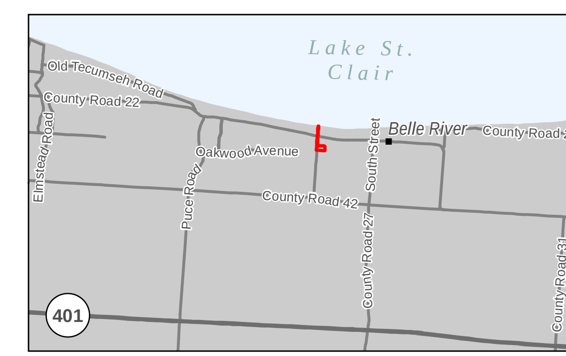
Approcimate Location of Study Area

Notes
1. Historical mapping not to scale.
2. Citation: Belden, H. and Co. 1881. <ita>Essex Supplement in the Illustrated Atlas of the Domion of Canada.</ita> Toronto: H. Belden & Co.



Project Location
Essex County

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Prepared by KDB on 2019-12-05

Client/Project
TOWN OF LAKESHORE
TOWN OF LAKESHORE DENIS ST. PIERRE WATER POLLUTION CONTROL PLANT EXPANSION

Figure No.
6

Title
Portion of the 1881 Map of Maidstone Township

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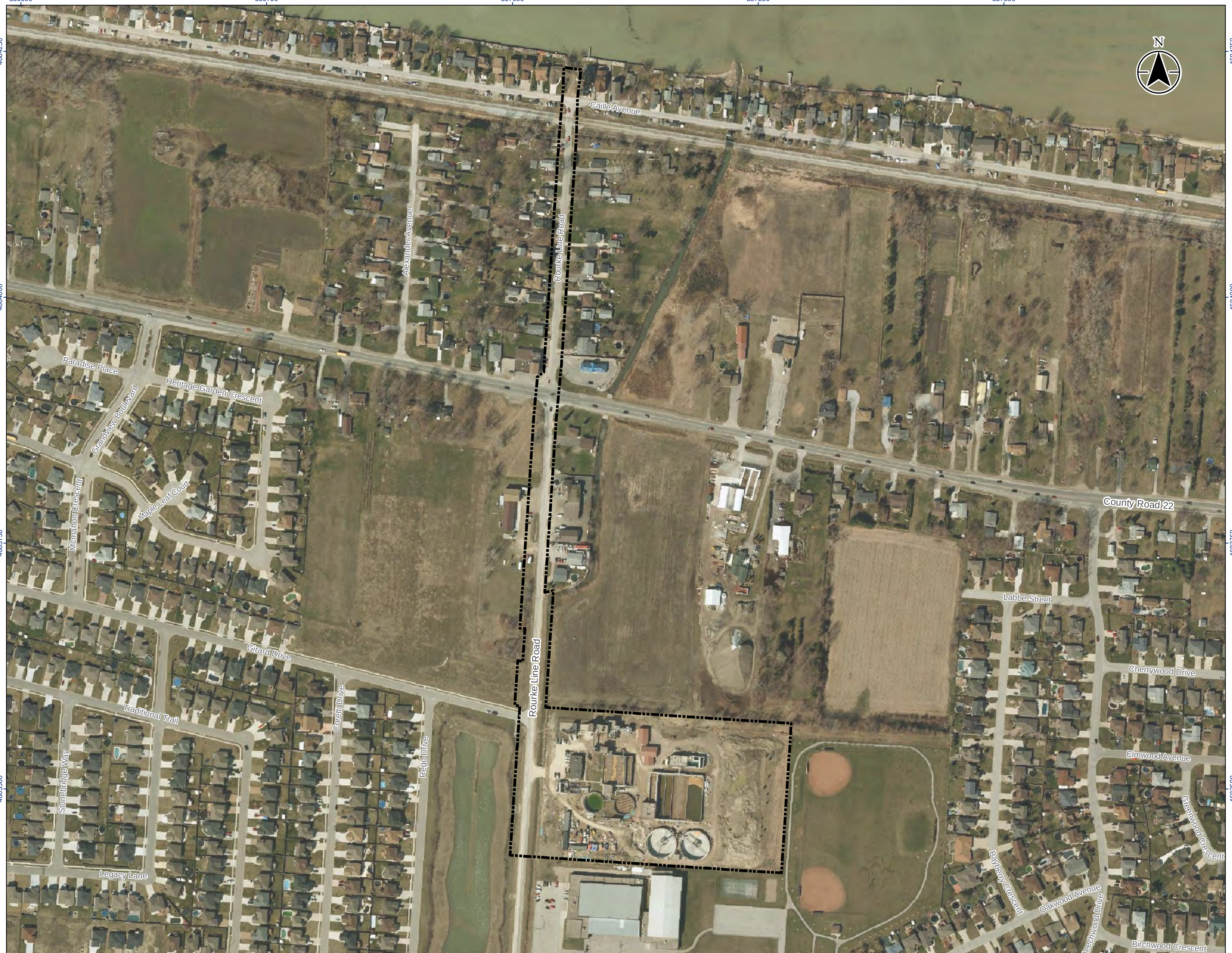

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Legend

Study Area

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1:4,000 (At original document size of 11x17)

Notes
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Client/Project
TOWN OF LAKESHORE
TOWN OF LAKESHORE DENIS ST. PIERRE WATER POLLUTION CONTROL PLANT EXPANSION

Figure No.
7

Title
2010 Aerial Image Illustrating the Study Area

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![Stantec]

Legend

Study Area

Photo Location and Direction

Archaeological Potential

Previously Disturbed, No Further Work Required

0 50 100 m

1:4,000 (At original document size of 11x17)

Notes
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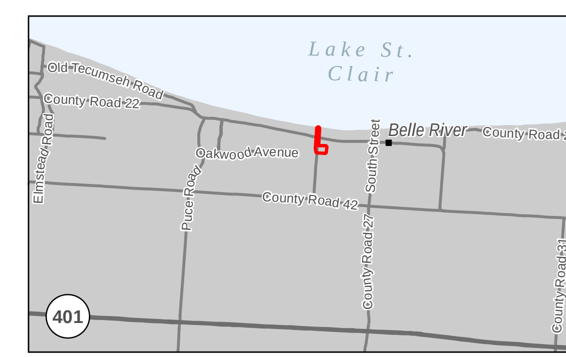


Project Location
Essex County

165620173 REV4
Prepared by KDB on 2019-12-05

Client/Project
TOWN OF LAKESHORE
TOWN OF LAKESHORE DENIS ST. PIERRE WATER POLLUTION CONTROL PLANT EXPANSION

Figure No.
8

Title
Stage 1 Results and Recommendations

9.0 CLOSURE

This report documents work that was performed in accordance with generally accepted professional standards at the time and location in which the services were provided. No other representations, warranties, or guarantees are made concerning the accuracy or completeness of the data or conclusions contained within this report, including no assurance that this work has uncovered all potential archaeological resources associated with the identified property.

All information received from the client or third parties in the preparation of this report has been assumed by Stantec to be correct. Stantec assumes no responsibility for any deficiency or inaccuracy in information received from others.

Conclusions made within this report consist of Stantec's professional opinion as of the time of the writing of this report and are based solely on the scope of work described in the report, the limited data available, and the results of the work.

The conclusions are based on the conditions encountered by Stantec at the time the work was performed. Due to the nature of archaeological assessment, which consists of systematic sampling, Stantec does not warrant against undiscovered environmental liabilities nor that the sampling results are indicative of the condition of the entire property.

This report has been prepared for the exclusive use of the client identified herein and any use by any third party is prohibited. Stantec assumes no responsibility for losses, damages, liabilities or claims, howsoever arising, from third party use of this report. We trust this report meets your current requirements. Please do not hesitate to contact us should you require further information or have additional questions about any facet of this report.

Quality Review ______________________________
(signature)

Jeffrey Muir – Senior Archaeologist

Independent Review ______________________________
(signature)

Tracie Carmichael – Managing Principal, Environmental Services

APPENDIX E-2

MTCS Checklist

- Criteria for Evaluating Archaeological Potential

Ontario

Ministry of Tourism, Culture and Sport

Programs & Services Branch
401 Bay Street, Suite 1700
Toronto ON M7A 0A7

Criteria for Evaluating Archaeological Potential

A Checklist for the Non-Specialist

The **purpose of the checklist** is to determine:

- if a property(ies) or project area may contain archaeological resources i.e., have archaeological potential
- it includes all areas that may be impacted by project activities, including – but not limited to:
  - the main project area
  - temporary storage
  - staging and working areas
  - temporary roads and detours

Processes covered under this checklist, such as:

- *Planning Act*
- *Environmental Assessment Act*
- *Aggregates Resources Act*
- *Ontario Heritage Act* – Standards and Guidelines for Conservation of Provincial Heritage Properties

Archaeological assessment

If you are not sure how to answer one or more of the questions on the checklist, you may want to hire a licensed consultant archaeologist (see page 4 for definitions) to undertake an archaeological assessment.

The assessment will help you:

- identify, evaluate and protect archaeological resources on your property or project area
- reduce potential delays and risks to your project

Note: By law, archaeological assessments **must** be done by a licensed consultant archaeologist. Only a licensed archaeologist can assess – or alter – an archaeological site.

What to do if you:

- **find an archaeological resource**

  If you find something you think may be of archaeological value during project work, you must – by law – stop all activities immediately and contact a licensed consultant archaeologist

  The archaeologist will carry out the fieldwork in compliance with the *Ontario Heritage Act* [s.48(1)].
- **unearth a burial site**

  If you find a burial site containing human remains, you must immediately notify the appropriate authorities (i.e., police, coroner's office, and/or Registrar of Cemeteries) and comply with the *Funeral, Burial and Cremation Services Act*.

Other checklists

Please use a separate checklist for your project, if:

- you are seeking a Renewable Energy Approval under Ontario Regulation 359/09 – separate checklist
- your Parent Class EA document has an approved screening criteria (as referenced in Question 1)

Please refer to the Instructions pages when completing this form.

Project or Property Name
Class Environmental Assessment, Denis St. Pierre Water Pollution Control Plant Expansion

Project or Property Location (upper and lower or single tier municipality)
276 Rourke Line Road, Town of Lakeshore, County of Essex

Proponent Name
The Corporation of the Town of Lakeshore

Proponent Contact Information
Kevin Girard, P.Eng. , Manager of Environmental Services, Tel: 519-728-1975 x239 email: kgirard@lakeshore.ca

Screening Questions

	Yes	No
1. Is there a pre-approved screening checklist, methodology or process in place?	☐	☑

If Yes, please follow the pre-approved screening checklist, methodology or process.

If No, continue to Question 2.

	Yes	No
2. Has an archaeological assessment been prepared for the property (or project area) and been accepted by MTCS?	☐	☑

If Yes, do **not** complete the rest of the checklist. You are expected to follow the recommendations in the archaeological assessment report(s).

The proponent, property owner and/or approval authority will:

- summarize the previous assessment
- add this checklist to the project file, with the appropriate documents that demonstrate an archaeological assessment was undertaken e.g., MTCS letter stating acceptance of archaeological assessment report

The summary and appropriate documentation may be:

- submitted as part of a report requirement e.g., environmental assessment document
- maintained by the property owner, proponent or approval authority

If No, continue to Question 3.

	Yes	No
3. Are there known archaeological sites on or within 300 metres of the property (or the project area)?	☐	☑
4. Is there Aboriginal or local knowledge of archaeological sites on or within 300 metres of the property (or project area)?	☐	☑
5. Is there Aboriginal knowledge or historically documented evidence of past Aboriginal use on or within 300 metres of the property (or project area)?	☐	☑
6. Is there a known burial site or cemetery on the property or adjacent to the property (or project area)?	☐	☑
7. Has the property (or project area) been recognized for its cultural heritage value?	☐	☑

If Yes to any of the above questions (3 to 7), do **not** complete the checklist. Instead, you need to hire a licensed consultant archaeologist to undertake an archaeological assessment of your property or project area.

If No, continue to question 8.

	Yes	No
8. Has the entire property (or project area) been subjected to recent, extensive and intensive disturbance?	☑	☐

If Yes to the preceding question, do **not** complete the checklist. Instead, please keep and maintain a summary of documentation that provides evidence of the recent disturbance.

An archaeological assessment is not required.

If No, continue to question 9.

	Yes	No
9. Are there present or past water sources within 300 metres of the property (or project area)?	☐	☐

If Yes, an archaeological assessment is required.

If No, continue to question 10.

	Yes	No
10. Is there evidence of two or more of the following on the property (or project area)?	☐	☐

- elevated topography
- pockets of well-drained sandy soil
- distinctive land formations
- resource extraction areas
- early historic settlement
- early historic transportation routes

If Yes, an archaeological assessment is required.

If No, there is low potential for archaeological resources at the property (or project area).

The proponent, property owner and/or approval authority will:

- summarize the conclusion
- add this checklist with the appropriate documentation to the project file

The summary and appropriate documentation may be:

- submitted as part of a report requirement e.g., under the *Environmental Assessment Act, Planning Act* processes
- maintained by the property owner, proponent or approval authority

Instructions

Please have the following available, when requesting information related to the screening questions below:

- a clear map showing the location and boundary of the property or project area
  - large scale and small scale showing nearby township names for context purposes
- the municipal addresses of all properties within the project area
- the lot(s), concession(s), and parcel number(s) of all properties within a project area

In this context, the following definitions apply:

- **consultant archaeologist** means, as defined in Ontario regulation as an archaeologist who enters into an agreement with a client to carry out or supervise archaeological fieldwork on behalf of the client, produce reports for or on behalf of the client and provide technical advice to the client. In Ontario, these people also are required to hold a valid professional archaeological licence issued by the Ministry of Tourism, Culture and Sport.
- **proponent** means a person, agency, group or organization that carries out or proposes to carry out an undertaking or is the owner or person having charge, management or control of an undertaking.

1. Is there a pre-approved screening checklist, methodology or process in place?

An existing checklist, methodology or process may be already in place for identifying archaeological potential, including:

- one prepared and adopted by the municipality e.g., archaeological management plan
- an environmental assessment process e.g., screening checklist for municipal bridges
- one that is approved by the Ministry of Tourism, Culture and Sport under the Ontario government's Standards & Guidelines for Conservation of Provincial Heritage Properties [s. B.2.]

2. Has an archaeological assessment been prepared for the property (or project area) and been accepted by MTCS?

Respond 'yes' to this question, if all of the following are true:

- an archaeological assessment report has been prepared and is in compliance with MTCS requirements
  - a letter has been sent by MTCS to the licensed archaeologist confirming that MTCS has added the report to the Ontario Public Register of Archaeological Reports (Register)
- the report states that there are no concerns regarding impacts to archaeological sites

Otherwise, if an assessment has been completed and deemed compliant by the MTCS, and the ministry recommends further archaeological assessment work, this work will need to be completed.

For more information about archaeological assessments, contact:

- approval authority
- proponent
- consultant archaeologist
- Ministry of Tourism, Culture and Sport at archaeology@ontario.ca

3. Are there known archaeological sites on or within 300 metres of the property (or project area)?

MTCS maintains a database of archaeological sites reported to the ministry.

For more information, contact MTCS Archaeological Data Coordinator at archaeology@ontario.ca.

4. Is there Aboriginal or local knowledge of archaeological sites on or within 300 metres of the property?

Check with:

- Aboriginal communities in your area
- local municipal staff

They may have information about archaeological sites that are not included in MTCS' database.

Other sources of local knowledge may include:

- property owner
- local heritage organizations and historical societies
- local museums
- municipal heritage committee
- published local histories

5. Is there Aboriginal knowledge or historically documented evidence of past Aboriginal use on or within 300 metres of the property (or property area)?

Check with:

- Aboriginal communities in your area
- local municipal staff

Other sources of local knowledge may include:

- property owner
- local heritage organizations and historical societies
- local museums
- municipal heritage committee
- published local histories

6. Is there a known burial site or cemetery on the property or adjacent to the property (or project area)?

For more information on known cemeteries and/or burial sites, see:

- Cemeteries Regulation Unit, Ontario Ministry of Consumer Services – for database of registered cemeteries
- Ontario Genealogical Society (OGS) – to locate records of Ontario cemeteries, both currently and no longer in existence; cairns, family plots and burial registers
- Canadian County Atlas Digital Project – to locate early cemeteries

In this context, 'adjacent' means 'contiguous', or as otherwise defined in a municipal official plan.

7. Has the property (or project area) been recognized for its cultural heritage value?

There is a strong chance there may be archaeological resources on your property (or immediate area) if it has been listed, designated or otherwise identified as being of cultural heritage value by:

- your municipality
- Ontario government
- Canadian government

This includes a property that is:

- designated under *Ontario Heritage Act* (the OHA), including:
  - individual designation (Part IV)
  - part of a heritage conservation district (Part V)
  - an archaeological site (Part VI)
- subject to:
  - an agreement, covenant or easement entered into under the OHA (Parts II or IV)
  - a notice of intention to designate (Part IV)
  - a heritage conservation district study area by-law (Part V) of the OHA
- listed on:
  - a municipal register or inventory of heritage properties
  - Ontario government's list of provincial heritage properties
  - Federal government's list of federal heritage buildings
- part of a:
  - National Historic Site
  - UNESCO World Heritage Site
- designated under:
  - *Heritage Railway Station Protection Act*
  - *Heritage Lighthouse Protection Act*
- subject of a municipal, provincial or federal commemorative or interpretive plaque.

To determine if your property or project area is covered by any of the above, see:

- Part A of the MTCS Criteria for Evaluating Potential for Built Heritage and Cultural Heritage Landscapes

Part VI – Archaeological Sites

Includes five sites designated by the Minister under Regulation 875 of the Revised Regulation of Ontario, 1990 (Archaeological Sites) and 3 marine archaeological sites prescribed under Ontario Regulation 11/06.

For more information, check Regulation 875 and Ontario Regulation 11/06.

8. Has the entire property (or project area) been subjected to recent extensive and intensive ground disturbance?

Recent: after-1960

Extensive: over all or most of the area

Intensive: thorough or complete disturbance

Examples of ground disturbance include:

- quarrying
- major landscaping – involving grading below topsoil
- building footprints and associated construction area
  - where the building has deep foundations or a basement
- infrastructure development such as:
  - sewer lines
  - gas lines
  - underground hydro lines
  - roads
  - any associated trenches, ditches, interchanges. **Note**: this applies only to the excavated part of the right-of-way; the remainder of the right-of-way or corridor may not have been impacted.

A ground disturbance does **not** include:

- agricultural cultivation
- gardening
- landscaping

Site visits

You can typically get this information from a site visit. In that case, please document your visit in the process (e.g., report) with:

- photographs
- maps
- detailed descriptions

If a disturbance isn't clear from a site visit or other research, you need to hire a licensed consultant archaeologist to undertake an archaeological assessment.

9. Are there present or past water bodies within 300 metres of the property (or project area)?

Water bodies are associated with past human occupations and use of the land. About 80-90% of archaeological sites are found within 300 metres of water bodies.

Present

- Water bodies:
  - primary - lakes, rivers, streams, creeks
  - secondary - springs, marshes, swamps and intermittent streams and creeks
- accessible or inaccessible shoreline, for example:
  - high bluffs
  - swamps
  - marsh fields by the edge of a lake
  - sandbars stretching into marsh

Water bodies not included:

- man-made water bodies, for example:
  - temporary channels for surface drainage
  - rock chutes and spillways
  - temporarily ponded areas that are normally farmed
  - dugout ponds
- artificial bodies of water intended for storage, treatment or recirculation of:
  - runoff from farm animal yards
  - manure storage facilities
  - sites and outdoor confinement areas

Past

Features indicating past water bodies:

- raised sand or gravel beach ridges – can indicate glacial lake shorelines
- clear dip in the land – can indicate an old river or stream
- shorelines of drained lakes or marshes
- cobble beaches

You can get information about water bodies through:

- a site visit
- aerial photographs
- 1:10,000 scale Ontario Base Maps - or equally detailed and scaled maps.

10. Is there evidence of two or more of the following on the property (or project area)?

- **elevated topography**
- **pockets of well-drained sandy soil**
- **distinctive land formations**
- **resource extraction areas**
- **early historic settlement**
- **early historic transportation routes**

- **Elevated topography**

  Higher ground and elevated positions - surrounded by low or level topography - often indicate past settlement and land use.

  Features such as eskers, drumlins, sizeable knolls, plateaus next to lowlands, or other such features are a strong indication of archaeological potential.

  Find out if your property or project area has elevated topography, through:

  - site inspection
  - aerial photographs
  - topographical maps

- **Pockets of well-drained sandy soil, especially within areas of heavy soil or rocky ground**

  Sandy, well-drained soil - in areas characterized by heavy soil or rocky ground - may indicate archaeological potential

  Find out if your property or project area has sandy soil through:

  - site inspection
  - soil survey reports

- **Distinctive land formations**

  Distinctive land formations include – but are not limited to:

  - waterfalls
  - rock outcrops
  - rock faces
  - caverns
  - mounds, etc.

  They were often important to past inhabitants as special or sacred places. The following sites may be present – or close to – these formations:

  - burials
  - structures
  - offerings
  - rock paintings or carvings

  Find out if your property or project areas has a distinctive land formation through:

  - a site visit
  - aerial photographs
  - 1:10,000 scale Ontario Base Maps - or equally detailed and scaled maps.

- **Resource extraction areas**

  The following resources were collected in these extraction areas:

  - food or medicinal plants e.g., migratory routes, spawning areas, prairie
  - scarce raw materials e.g., quartz, copper, ochre or outcrops of chert
  - resources associated with early historic industry e.g., fur trade, logging, prospecting, mining

  Aboriginal communities may hold traditional knowledge about their past use or resources in the area.

- **Early historic settlement**

  Early Euro-Canadian settlement include – but are not limited to:

  - early military or pioneer settlement e.g., pioneer homesteads, isolated cabins, farmstead complexes
  - early wharf or dock complexes
  - pioneers churches and early cemeteries

  For more information, see below – under the early historic transportation routes.

- **Early historic transportation routes** - such as trails, passes, roads, railways, portage routes, canals.

  For more information, see:

  - historical maps and/or historical atlases
    - for information on early settlement patterns such as trails (including Aboriginal trails), monuments, structures, fences, mills, historic roads, rail corridors, canals, etc.
    - Archives of Ontario holds a large collection of historical maps and historical atlases
    - digital versions of historic atlases are available on the Canadian County Atlas Digital Project
  - commemorative markers or plaques such as local, provincial or federal agencies
  - municipal heritage committee or other local heritage organizations
    - for information on early historic settlements or landscape features (e.g., fences, mill races, etc.)
    - for information on commemorative markers or plaques

APPENDIX F

- F-1 Project Initiation
- F-2 Phase 3 Open House and Draft ESR
- F-3 First Nations Consultation
- F-4 Final ESR and Notice of Completion

APPENDIX F-1

Project Initiation

- Public and Review Agency Notification Letter dated April 3, 2019

  Copy of Notice published on local newspapers

- List of Review Agencies

- Responses to notice of project initiation

DENIS ST. PIERRE WATER POLLUTION CONTROL PLANT EXPANSION
CLASS ENVIRONMENTAL ASSESSMENT

NOTICE OF STUDY COMMENCEMENT

The Study

The Town of Lakeshore adopted its first comprehensive Water and Wastewater Master Plan in November 2008, and then an update of this Master Plan was undertaken and completed in 2017 in accordance with Phases 1 and 2 of the Municipal Class Environmental Assessment (EA) process.

The Water and Wastewater Master Plan and Update identified capacity issues within the Denis St. Pierre Wastewater System. The former Belle River community and the Maidstone urban are serviced by the Denis St. Pierre Wastewater System consisting of sanitary sewers, pumping stations, the Denis St. Pierre Water Pollution Control Plant (WPCP) and an outfall discharging to Lake St. Clair.

It is outlined in the Master Plan and Update that additional treatment capacity at the Denis St. Pierre Water Pollution Control Plant (WPCP) is required to support the existing services areas and the anticipated future growth through 2035. The Master Plan and Update were prepared in accordance with Phases 1 and 2 of the Class EA process to implement the preferred solution which involves capacity expansion of the Denis St. Pierre WPCP which is located on Rourke Line. Further information may be obtained by viewing the Water and Wastewater Master Plan at http://lakeshore.ca

The Town of Lakeshore is now undertaking Phases 3 and 4 of the Class EA process which will involve evaluation of alternative design concepts for the proposed Denis St. Pierre WPCP capacity expansion, and preparation of an Environmental Study Report documenting the activities and recommendations from the Class EA process.

Public Consultation

One of the key components of this Class EA is consultation with the public. This Notice of Study Commencement is a part of the public consultation process. The public is invited to submit comments and express any concerns with respect to the project. During the course of the Class EA as the study work is nearing completion, the public will be invited to an Open House to review the findings of the study and to submit any further comments and concerns. The public will be notified in advance of the Open House through publication of notices in local newspapers.

If you have any questions or wish to be added to the study mailing list, please contact:

Mr. Kevin Girard, P.Eng.
Manager of Environmental Services
419 Notre Dame Street
Belle River, Ontario N0R 1A0
Phone: 519-728-1975 x 239
Fax: 519-728-9530
Email: kgirard@lakeshore.ca

or

Dr. Jian Li, P. Eng.
Stantec Consulting Ltd.
140 Ouellette Place Suite 100
Windsor, Ontario N8X 1L9
Phone: 519-966-2250 x 240
Fax: 519-966-5523
Email: jian.li@stantec.com

Stantec Consulting Ltd
100-140 Ouellette Place, Windsor ON N8X 1L9

April 3, 2019
File: 165620173

«Company»
«Address1»
«Address2»
«Address3»
«City», Ontario
«PostalCode»

Attention: **«FirstName»**
«Title»

Dear Sir/Madam:

Reference: **Denis St. Pierre Water Pollution Control Plant Expansion**
Class Environmental Assessment
Town of Lakeshore

Following completion of the Water and Wastewater Plan in November 2008 and its update in December 2017 which included Phases 1 & 2 of the Class EA process for the subject project, the Town of Lakeshore is now undertaking Phases 3 & 4 Class EA for the Denis St. Pierre Water Pollution Control Plant Expansion Project. Attached for your information is an Introductory Brief which provides a description of the existing Denis St. Pierre Water Pollution Control Plant and the problems being addressed by this Class EA, the preferred solutions that have been identified and a general outline of the work plan and timetable. Also attached is a copy of the Notice of Study Commencement which will be published in local newspapers.

We trust this information is satisfactory for your present purposes. You are invited to submit any comments you may have at this stage of the project. Please advise if you wish to be kept informed on the project as it proceeds to completion. If you do not express any interest in the project, you will be removed from the mailing list of contacts.

Sincerely,

STANTEC CONSULTING LTD.

Jian Li, Ph.D., P. Eng., PE
Project Manager
Phone: (519) 966-2250
Fax: (519) 966-5523
jiian.li@stantec.com

Attachment: Notice of Study Commencement
Introductory Brief

INTRODUCTORY BRIEF

TO MANDATORY CONTACTS AND REVIEW AGENCIES

DENIS ST. PIERRE WATER POLLUTION CONTROL PLANT EXPANSION CLASS EA

TOWN OF LAKESHORE

1.0 BACKGROUND

The Town of Lakeshore adopted its first comprehensive Water and Wastewater Master Plan in November 2008, and then an update of this Master Plan was undertaken and completed in 2017 in accordance with Phases 1 and 2 of the Municipal Class Environmental Assessment (EA) process.

The Water and Wastewater Master Plan and Update identified capacity issues within the Denis St. Pierre Wastewater System. The former Belle River community and the Maidstone urban are serviced by the Denis St. Pierre Wastewater System consisting of sanitary sewers, pumping stations, the Denis St. Pierre Water Pollution Control Plant (WPCP) and an outfall discharging to Lake St. Clair.

It is outlined in the Master Plan and Update that additional treatment capacity at the Denis St. Pierre Water Pollution Control Plant (WPCP) is required to support the existing services areas and the anticipated future growth through 2035. The Master Plan and Update were prepared in accordance with Phases 1 and 2 of the Class EA process to implement the preferred solution which involves capacity expansion of the Denis St. Pierre WPCP which is located on Rourke Line. Further information may be obtained by viewing the Water and Wastewater Master Plan at http://lakeshore.ca

The Town of Lakeshore is now undertaking Phases 3 and 4 of the Class EA process which will involve evaluation of alternative design concepts for the proposed Denis St. Pierre WPCP capacity expansion, and preparation of an Environmental Study Report documenting the activities and recommendations from the Class EA process.

2.0 EXISTING DENIS ST. PIERRE WASTEWATER SYSTEM

The Denis St. Pierre Sewage Works (formerly Belle River / Maidstone Sewage Works) services the urban areas between Manning Road and Charron Line Road north of the Canada Pacific Rail (CPR) tracks by the sanitary sewage works system. This system consists of sanitary sewers, pumping stations, and the Denis St. Pierre WPCP (formerly the Belle River/Maidstone WPCP), which is located on Rourke Line. The system was developed by the Ministry of the Environment, Conservation and Parks (MECP) as a Provincial Sewage Works Project that was constructed and built between 1974 and 1981 under a total of ten (10) construction contracts.

The Denis St. Pierre WPCP is located on Rourke Line Road south of County Road 22 and provides secondary level biological treatment. The treatment plant was designed for an average daily sewage flow of 14,500 m^3/day and a peak flow capacity of 35,069 m^3/d. The Denis St. Pierre WPCP has recently been rerated to an average daily sewage flow of 14,500 m^3/day. The treatment process consists of fine screening, grit removal, three extended aeration tanks, two final settling tanks, and UV disinfection. Waste activated sludge is aerobically digested for stabilization and the stabilized biosolids are gravity-thickened and dewatered by centrifuges. The dewatered biosolids are hauled to an offsite storage facility and ultimately land applied.

Treated effluent is discharged into Lake St. Clair through a 900-mm-diameter plant outfall sewer. The existing outfall sewer currently has a peak design capacity of 67,855 m^3/d and extends approximately 600 m into Lake St. Clair. Effluent discharges through nozzles at the end of the outfall to assist in dispersing the effluent.

3.0 PROBLEM STATEMENT

The existing capacity of the Denis St. Pierre WPCP is not adequate to accommodate the projected future flows from the Belle River/Maidstone wastewater service area. Additional treatment capacity at the Denis St. Pierre WPCP is required to support the existing services areas and the anticipated future growth through 2035.

The estimated wastewater flow rate based on the last five-year rolling average (2014 to 2018) is approximately 87 percent of the plant’s design capacity. The projected wastewater flows to the Denis St. Pierre WPCP indicates the capacity of the WPCP will be met around 2024, assuming linear flow increase. However, an average treated flow of 14,228 m^3/d was recorded for 2018, which is greater than expected from the projected population forecast. If the future flows increase at a rate greater than the population forecast, the available WPCP capacity may be consumed in 2019.

4.0 PREFERRED SOLUTIONS

As part of the Phase 2 Class EA process the Lakeshore Water and Wastewater Master Plan included consideration and documentation of a number of alternative concepts and solutions with respect to the problems of insufficient treatment capacity at the Denis St. Pierre WPCP. The preferred solutions are the capacity expansion and upgrades of the Denis St. Pierre WPCP to accommodate the existing services areas and the anticipated future growth through 2035.

5.0 PHASES 3 & 4 OF THE CLASS EA

The work that will be undertaken under Phases 3 & 4 of the Class EA process will follow the planning and design process of the Municipal Engineers Association (MEA) Class EA, October 2000, as amended in 2007, 2011 & 2015). The following is a general outline of the tasks that will be included.

6.0 Phase 3

- Publish Notice of Study Commencement.
- Notify mandatory contacts and review agencies of the Study Commencement.
- Identify impacts on the environment of alternative design concepts and the appropriate mitigating measures.
- Conduct a detailed evaluation of alternative designs for the Denis St. Pierre WPCP based on effluent discharge criteria, biosolids management, buffer zone requirements, ultimate plant configuration, etc.
- Summarize preferred designs for the capacity expansion and upgrades of the Denis St. Pierre WPCP.
- Prepare drawings showing the treatment facility flow schematic, plant layout and hydraulic profile.
- Prepare opinions of probable costs of the selected designs including capital and operating costs.
- Prepare preliminary ESR, review with Municipal Administration and present to Council
- Circulate the preliminary ESR to mandatory contacts and review agencies.
- Publish Notice of Public Meeting or Open House.
- Evaluate feedback from public meeting, mandatory contacts and review agencies.

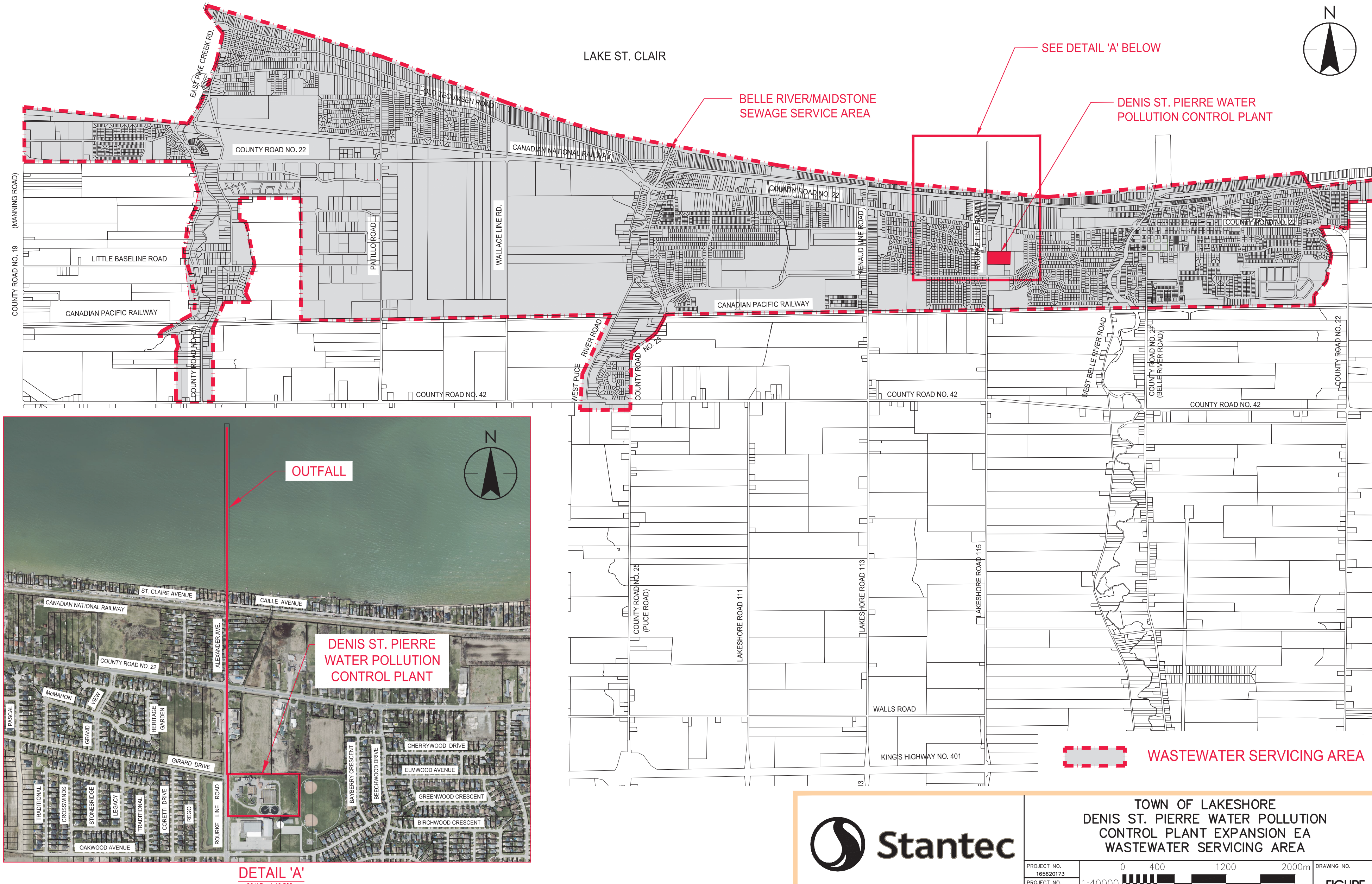
- Select preferred designs for the capacity expansion and upgrades of the Denis St. Pierre WPCP.

7.0 Phase 4

- Update ESR to identify the preferred design and include all comments received from the public, mandatory contacts and review agencies together with responses to comments received.
- File ESR with Town Clerk.
- Publish Notice of Study Completion and allow 30 calendar days for further comments and input.
- If request received for “Part II Order” attempt to resolve concerns in conjunction with Town. If requested, submit copy of ESR and Project File to MOE EA Branch. Upon resolution, complete ESR incorporating details of the “Part II Order”.
- If there is no “Part II Order”, add any comments received to the ESR.
- Obtain Council resolution accepting final ESR.

8.0 PROJECT SCHEDULE

The work outlined above for Phases 3 & 4 of the Class EA is expected to be completed in approximately 48 weeks subject to response time from mandatory contacts and review agencies and also subject to whether or not a “Part II Order” is requested.



Stantec

TOWN OF LAKESHORE
DENIS ST. PIERRE WATER POLLUTION
CONTROL PLANT EXPANSION EA
WASTEWATER SERVICING AREA

PROJECT NO. 165620173	1:40000	0 400 1200 2000m	DRAWING NO.
PROJECT NO. 2019.04.02			FIGURE 1

W:\active\165600944_lakeshore_water_and_wastewater_master_plan\design\report\FIGURE-10.dwg
2008-10-09 08:56AM By: qkho

Title	First Name	Surname	Job Title	Organization	Address	City/Prov	Postal Code
Conservation Authorities							
Mr.	Richard	Wyma	General Manager	Essex Region Conservation Authority	360 Fairview Avenue West, Suite 311	Essex, ON	N8M 1Y6
Mr.	Tim	Byrne	Director, Watershed Management Services	Essex Region Conservation Authority	360 Fairview Avenue West, Suite 311	Essex, ON	N8M 1Y6
Mr.	Michael	Nelson	Watershed Planner	Essex Region Conservation Authority	360 Fairview Avenue West, Suite 311	Essex, ON	N8M 1Y6
Dr.	Katie	Stammler	Water Quality Scientist/Source Water Protection Project Manager	Essex Region Conservation Authority	360 Fairview Avenue West, Suite 311	Essex, ON	N8M 1Y6
Mr.	Jason	Wintermute	Water Management Supervisor	Lower Thames Valley Conservation Authority	100 Thames Street	Chatham, ON	N7L 2Y8
Ms.	Claire	Sanders	RAP Coordinator	Detroit River Canadian Cleanup	360 Fairview Avenue West, Suite 311	Windsor, ON	N8M 1Y6
Ms.	Averil	Parent	Coordinator	Windsor Essex Environment Committee	c/o 350 City Hall Square West	Windsor, ON	N9A 6S1
Local Public Services							
Chief	Bruce	Krauter	Chief	Essex-Windsor EMS	360 Fairview Ave West	Essex, ON	N8M 1Y6
Mr.	Chris	Grant	Deputy Chief	Essex-Windsor EMS	920 Mercer Street	Windsor, ON	N9A 1N6
Mr.	Barry	Horrobin	Director of Planning & Physical Resources	Windsor Police Service	150 Goyeau Street, PO Box 60	Windsor, ON	N9A 6J5
Fire Chief	Stephen	Laforet	Fire Chief	Windsor Fire and Rescue	815 Goyeau Street	Windsor, ON	N9A 1H7
Mr.	Doug	Gooding	Deputy Chief of Operations	Windsor Fire and Rescue	815 Goyeau Street	Windsor, ON	N9A 1H7
Mr.	Beth	Krauter		Central Ambulance Communications Centre	4510 Rhodes Drive, Suite 320	Windsor, ON	N8W 5K5
Sgt.	Rick	Tonial	Detachment Commander	Ontario Provincial Police	963 Lesperance Road	Tecumseh, ON	N8N 1W9
Staff Sgt	Ed	Marocko		Ontario Provincial Police	1219 Hicks Road, PO Box 910	Essex, ON	N8M 2Y2
Ms.	Brian	Yeomans	Operations Manager	Downtown Windsor Business Improvement Association	419 Pelissier St.	Windsor, ON	N9A 4L2
Sir/Madam				Municipal Property Assessment Corporation	1695 Manning Road, Unit 195	Tecumseh, ON	N8N 2L9
Mr.	Rakesh	Naidu	President & CEO	Windsor-Essex Regional Chamber of Commerce	2575 Ouellette Place	Windsor, ON	N8X 1L9
Mr.	Derek	Coronardo	Coordinator	Citizens Environmental Alliance of Southwestern Ontario	1950 Ottawa Street	Windsor, ON	N8Y 1R7
Ms.	Lisa	Tulen	President	Citizens Environmental Alliance of Southwestern Ontario	1950 Ottawa Street	Windsor, ON	N8Y 1R7
Mr.	Steve	Marks	Vice-President	Essex County Field Naturalist's Club	C/O Ojibway Nature Centre 5200 Matchette Road	Windsor, ON	N9C 4E8
Mr.	Paul	Pratt	President	Essex County Field Naturalist's Club	5200 Matchette Road	Windsor, ON	N9C 4E8
Ms.	Susan	Budden	Business Development Manager	Ontario Clean Water Agency	1 Yonge Street, Suite 1700	Toronto, Ontario	M5E 1E5
Mr.	Rob	Dobos	Head	Environment Canada, Ontario Region	867 Lakeshore Road, P.O. Box 5050	Burlington, ON	L7R 4A6

Title	First Name	Surname	Job Title	Organization	Address	City/Prov	Postal Code
Mr.	John	Shaw	Manager	Great Lakes Sustainability Fund	867 Lakeshore Road, PO Box 5050	Burlington, ON	L7R 4A6
Ms.	Sandra	Kok	Acting Manager	Great Lakes Sustainability Fund	867 Lakeshore Road, PO Box 5050	Burlington, ON	L7R 4A6
	Superintendent			Canadian Coast Guard c/o ASI Group Ltd	120 Seaway Road	Sarnia, ON	N7T 8A5
Ms.	Celina	Russell		Fisheries and Oceans Canada	520 Exmouth Street	Sarnia, ON	N7T 8B1
Ms.	Sara	Eddy	Fish Habitat Biologist	Fisheries and Oceans Canada - Central and Arctic Region	867 Lakeshore Road, PO Box 5050	Burlington, ON	L7R 4A6
Ms.	Suzanne	Shea		Transport Canada Marine	100 Front Street South	Sarnia, ON	N7T 2M4
Mr.	Steven	C Salmons	President & CEO	Windsor Port Authority	3190 Sandwich Street	Windsor, ON	N9C 1A6
Mr.	Vince	Diano	Manager of Procurement	Windsor-Detroit Bridge Authority	100 Ouellette Ave, Suite 400	Windsor, ON	N9A 6T3
Mr.	Darren	Winger	Regional Advisor	Ministry of Citizenship, Immigration & International Trade / Ministry of Tourism, Culture & Sport	221 Mill Street	Windsor, ON	N9C 2R1
Ms.	Katherine	Kirzati	Heritage Planner	Ministry of Tourism, Culture and Sport	401 Bay Street, Suite 1700	Toronto, ON	M7A 0A7
Ms.	Karla	Barboza	Team Lead, Heritage	Ministry of Tourism, Culture and Sport	401 Bay Street, Suite 1700	Toronto, ON	M7A 0A7
Ms.	Amanda	Liu	Manager of Business Planning and Finance Unit (Infrastructure)	Ministry of Economic Development, Job Creation and Trade	777 Bay Street, 4th Floor, Suite 425	Toronto, ON	M5G 2E5
Mr.	Craig	Newton	Regional Environnmental Planner / Regional EA Coordinator	Ministry of the Environment, Conservation and Parks	733 Exert Road	London , ON	N6E 1L3
Mr.	Shawn	Howard	Supervisor	Ministry of the Environment, Conservation and Parks	4510 Rhodes Drive, Unit 620	Windsor, ON	N8W 5K5
Ms.	Emily	Awad	Provincial Officer	Ministry of the Environment, Conservation and Parks	4510 Rhodes Drive, Unit 620	Windsor, ON	N8W 5K5
Mr.	Ken	Yaraskavitch	Supervisor	Ontario Ministry of Natural Resources	870 Richmond Street, P.O. Box 910	Chatham, ON	N7M 5L3
Ms.	Sherry	Pineo	Resources Management Supervisor	Ministry of Natural Resources and Forestry	615 John Street North	Aylmer, ON	N5H 2S8
Ms.	Amanda	McCloskey	District Planner	Ministry of Natural Resources and Forestry	615 John Street North	Aylmer, ON	N5H 2S8
Mr.	Erick	Boyd	Manager - Community Planning and Development	Ministry of Municipal Affairs and Housing	659 Exeter Road, 2nd Floor	London, ON	N6E 1L3
Mr.	David	Stubbs	Planner - Community Planning and Development	Ministry of Municipal Affairs and Housing	659 Exeter Road, 2nd Floor	London, ON	N6E 1L3
Mr.	Kevin	Laidley	Regional Manager	Ontario Ministy of Agriculture, Food and Rural Affairs	667 Exeter Road	London, ON	N6E 1L3
Mr.	Terri	Bulman	Manager - Environmental Stewardship Policy	Ontario Ministy of Agriculture, Food and Rural Affairs	1 Stone Road West, 2nd floor	Guelph, ON	N1G 4Y2

Title	First Name	Surname	Job Title	Organization	Address	City/Prov	Postal Code
Ms.	Jodie	Lucente	Corridor Management Planner	Ontario Ministry of Transportation	659 Exeter Road	London, ON	N6E 1L3
Ms.	Cathy	Giesbrecht	Head - Environmental	Ontario Ministry of Transportation	659 Exeter Road	London, ON	N6E 1L3
Mr.	Martin	Favell	Planning & Design Head	Ontario Ministry of Transportation	659 Exeter Road	London, Ontario	N6E 1L3
Ms.	Joanne	Brown	Regional Issues and Integration Manager	Ministry of Community and Social Services, West Region Office	P.O. Box 5217	London, ON	N6A 5R1
Mr.	Sean	Court	Director, Strategic Policy Branch	Ministry of Health and Long Term Care	438 University Ave, 10th Floor	Toronto, ON	M5G 2K8
Local Municipalities							
Mr.	Kevin	Girard	Manager of Environmental Services	Town of Lakeshore	419 Notre Dame Street	Belle River, ON	N0R 1A0
Mrs.	Jane	Mustac	County Engineer	County of Essex	360 Fairview Avenue West	Essex, Ontario	N8M 1Y6
Mr.	Bill	King	County Planning Department	County of Essex	360 Fairview Avenue West	Essex, Ontario	N8M 1Y6
Mr.	Peter	Marra	Manager of Water and Wastewater	Town of LaSalle	5950 Malden Road	LaSalle, Ontario	N9H 1S4
Ms.	Antonietta	Giofu	Director of Engineering & Public Works	Town of Amherstburg	271 Sandwich Street South	Amherstburg, ON	N9V 2A5
Mr.	Phil	Bartnik	Director Public Works & Environmental Services	Town of Tecumseh	917 Lesperance Road	Tecumseh, ON	N8N 1W9
Mr.	Peter	Neufeld	Chief Administravie Officer	Municipality of Leamington	111 Erie Street North	Leamington, ON	N8H 2Z9
Mr.	Chris	Nepszy	Chief Administravie Officer	Town of Essex	33 Talbot Street South	Essex, ON	N8M 1A8
Mr.	Onorio	Colucci	Chief Administravie Officer	City of Windsor	350 City Hall Square West	Windsor, ON	N9A 6S1
Ms.	Peggy	Van Mierlo-West	Chief Administravie Officer	Town of Kingsville	2021 Division Road North	Kingsville, ON	N9Y 2Y9
Mr.	Don	Shropshire	Chief Administravie Officer	Municpality of Chatham Ken	315 King Street West P.O. Box 640	Chatham, ON	N7M 5K8
Mr.	Tim	Sunderland	General Manager	Chatham-Kent Public Utilities	325 Grand Ave E	Chatham, ON	N7L 1W9
Ms.	Erin	Kelly	Director of Education	Greater Essex County District School Board	451 Park Street West	Windsor, ON	N9A 4W7
Mr.	Stephen	Fields	Communications Coordinator	Windsor Essex Catholic District School Board	1325 California Ave	Windsor, ON	N9B 3Y6
Ms.	Tracy	Ramsey	Essex M.P.	Consituency Office	316 Talbot Street N, Unit 6	Essex, ON	N8M 2E1
Mr.	Phil	Wong	Manager of Environmental Health	Windsor Essex County Health Unit	1005 Ouellette Ave	Windsor, ON	N9A 4J8

Title	First Name	Surname	Job Title	Organization	Address	City/Prov	Postal Code
Utilities							
Mr.	Chris	Manzon	Director, Engineering	ENWIN Utilities	4545 Rhodes Drive , PO Box 1625 Stn A	Windsor, ON	N8W 5T1
Mr.	Randy	Matis		Bell Canada	1149 Goyeau Street, PO Box 1601	Windsor, ON	N9A 1H9
Mr.	David	Cowing	Coordinator	Bell Canada	1149 Goyeau Street, PO Box 1601	Windsor, ON	N9A 1H9
Mr.	Clifford	Trepanier		Bell Canada	1149 Goyeau Street, PO Box 1601	Windsor, ON	N9A 1H9
Mr.	Tyson	Fuerth		Bell Canada	1149 Goyeau Street, PO Box 1601	Windsor, ON	N9A 1H9
Mr.	Bill	Sorrell		Cogeco Cable Services	2225 Dougall Avenue	Windsor, ON	N8X 5A7
				Essex Terminal Railway Company	1601 Lincoln Road	Windsor, ON	N8Y 2J3
Ms.	Shirley	Brundritt		Union Gas Ltd	50 Keil Drive North	Chatham, ON	N7M 5M1
Mr.	Stan	Bulkiewicz	Operations Manager	Hydro One	125 Irwin Avenue	Essex, ON	N8M 2T3
Mr.	Paul	Dockrill		Hydro One	P.O. Box 4300	Markham, ON	L3R 5Z5
Ms.	Jenny	Seo		Hydro One	483 Bay Street, 13th Floor North Tower	Toronto, ON	M5G 2P5
Mr.	Rodney	Bouchard	General Manager	Union Water Supply System Joint Board Management	1615 Union Ave P.O. Box 359	Ruthvan, ON	N0P 2G0
Mr.	Dave	Jubenville	General Manager	Ontario Clean Water Agency	276 Rourke Line Road, RR #3	Belle River, ON	N0R 1A0
Ms.	Amber	New	Director, Business Development	Plains Midstream	Box 7277	Windsor, ON	N9C 0C4
Mr.	Raymond	Tracey	President & CEO	Essex Power Corporation	2199 Blackacre Dr. Suite 2	Oldcastle, ON	N0R 1L0
Mr.	Michael	Audet	Chief Executive Officer	ELK Energy Inc	172 Forest Ave	Essex, ON	N8M 3E4
Aboriginal Agencies							
Ms.	Leslie	Brewer-Palhazi		Ministry of Aboriginal Affairs	9th Floor, 160 Bloor Street East	Toronto, ON	M7A 2E6
Ms.	Allison	Berman	Regional Subject Expert	Aboriginal Affairs and Northern Development Canada	10 Wellington St	Gatineau, QC	K1A OH4
Mr.	Corwin	Troje	Manager (Acting)	Ministry of Aboriginal Affairs	9th Floor, 160 Bloor Street East	Toronto, ON	M7A 2E6
Ms.	Johnson	Ashley		Ministry of Aboriginal Affairs	9th Floor, 160 Bloor Street East	Toronto, ON	M7A 2E6
Ms.	Jennifer	Whiteye	Executive Director	Southern First Nations Secretariat	22361 Austin Line	Bothwell, ON	N0P 1L0
Ms.	Leea	Litzgus	Associate Regional Director	Indigenous & Northern Affairs Canada, Ontario Region	25 St Clair Ave East, 8th Floor	Toronto, ON	M4T 1M2
First Nation Communities/Métis Groups							
Mr.	Dean	Jacobs	Heritage Centre Director	Walpole Island First Nation / Bkejwanong Territory	R.R. #3	Wallaceburg, ON	N8A 4K9

Title	First Name	Surname	Job Title	Organization	Address	City/Prov	Postal Code
Chief	Daniel	Miskokomon	Chief	Walpole Island First Nation / Bkejwanong Territory	117 Tahgahoning Road,R.R. #3	Wallaceburg, ON	N8A 4K9
Ms.	Janet	MacBeth	Project Review Coordinator	Walpole Island First Nation / Bkejwanong Territory	117 Tahgahoning Road,R.R. #3	Wallaceburg, ON	N8A 4K9
Chief	Mary	Duckworth	Chief	Caldwell First Nation	14 Orange Street	Leamington, ON	N8H 1P5
Ms.	Nikki	Orosz	Acting Director of Operations	Caldwell First Nation	14 Orange Street	Leamington, ON	N8H 1P5
Chief	Joanne	Rogers	Chief	Aamjiwnaang First Nation	978 Tashmoo Avenue	Sarnia, ON	N7T 7H5
Ms.	Sharilyn	Johnston	Environmental Coordinator	Aamjiwnaang First Nation	978 Tashmoo Avenue	Sarnia, ON	N7T 7H5
Ms.	Christine	Rogers	Environment Worker	Aamjiwnaang First Nation	978 Tashmoo Avenue	Sarnia, ON	N7T 7H5
Chief	Denise	Stonefish	Chief	Moravian of the Thames (Delaware Nation)	14760 School House Line, RR 3	Thamesville, ON	N0P 2K0
Mr.	Aly	Alibhai	Director, Lands, Resources and Consultations	Métis Nation of Ontario	75 Sherbourne Street, Suite 311	Toronto, ON	M5A 2P9
Chief	Tom	Bressette	Chief	Chippewas of Kettle & Stony Point First Nation	6247 Indian Lane, RR#2	Forest, ON	N0N 1J1
Ms.	Valerie	George	Consultation Coordinator	Chippewas of Kettle & Stony Point First Nation	6247 Indian Lane, RR#2	Forest, ON	N0N 1J1
Chief	Henry	Myeengun	Chief	Chippewas of the Thames First Nation	320 Chippewa Road	Muncey, ON	N0L 1Y0
Ms.	Kelly	Riley	Acting Director	Chippewas of the Thames First Nation	320 Chippewa Road	Muncey, ON	N0L 1Y0
Ms.	Rochelle	Smith	Consultation Coordinator	Chippewas of the Thames First Nation	320 Chippewa Road	Muncey, ON	N0L 1Y0
Chief	Randall	Phillips	Political Chief	Onelda Nation of the Thames ONYOTA'A:KA	2212 Elm Avenue	Southwold, ON	N0L 2G0
Ms.	Catherine	Cornellus	Assistant	Onelda Nation of the Thames ONYOTA'A:KA	2212 Elm Avenue	Southwold, ON	N0L 2G0
Other Stakeholders							
Mr.	Ryan	Conner	Project Manager	Jacobs	72 Victoria Street South, Suite 300	Kitchener, ON	N2G 4Y9
Mr.	Raymond	Beshro		CN Rail McMillan Administration Road	1 Administration Road, 1st Floor	Concord, ON	L4K 1B9
Ms.	Josie	Tomei		C.P. Limited Railway Real Estate & Facility Management	800- 1290 Central Parkway	Mississauga, ON	L5C 4R3
	K.C.	Rose	Director	VIA Rail Canada	50 Drummond Street, Building C	Toronto, ON	M8V 4B5
Mr.	Henry	Bustard	President	Carleton Trail Management Inc	#1, 1715 - 27th Avenue N.E.	Calgary, AB	T2E 7E1
Mr.	Hilary	Payne	Development Coordination	Hilary G Payne & Associates	2985 Dougall Avenue	Windsor, ON	N9E 1S1
			Att: Circulations Intake, Planning & Design	MMM Group Limited	100 Commerce Valley Drive West	Thornhill, ON	L3T 0A1
Mr.	Carmen	Starnichuk		Tecumseh Letter Carrier Depot	11910 Tecumseh Road East	Tecumseh, ON	N8N 1M0

Title	First Name	Surname	Job Title	Organization	Address	City/Prov	Postal Code
Mr.	Bruno	DeSando		Canada Post Delivery Planning	955 Highbury Aveneu	London, ON	N5Y 1A3
Mr.	Jeff	Nawalany		Orion Homes Inc	5848 Malden Road Suite 306	LaSalle, ON	N9H 04A
Mr.	Marlo	Piroli		Piroli Construction	1500 Ouellette Ave Unit 201	Windsor, ON	N8X 1K7
Mr.	Tim / Ray	Belanger		Ray Belanger Builders Ltd	536 Brighton Road	Tecumseh, ON	N9N 2L6
Mr.	Ralph	Meo		Seven Lakes Homes Ltd./Meo & Associates Inc	7200 Disputed Road, Suite 200	LaSalle, ON	N9A 6Z6
				Silver Spring construction	7865 Howard Ave.	McGregor, ON	N0R 1J0
Mr.	Tim	McFarlane		T. McFarlane Builders Ltd	1054 Mole	Essex, ON	N8M 2X5
Mr.	Gino	Piccioni		Timberland General Contractors	6224 Wales Crt.	Windsor, ON	N9J 3R7
Mr.	Trevor			TMC Construction	63 Given Road	Chatham, ON	N7L 0C7
Mr.	Brian	Towsley		Towsley Construction Co Inc	2090 Fasan Drive	Old Castle, ON	N0R 1L0
				Tri-World Development	3235 Electricity Drive	Windsor, ON	N8W 5J1
Mr.	Steve	Valente		Valente Construction	25 Amy Croft Drive, Unit 23B	Tecumseh, ON	N9K 1C7
Mr.	Peter	Valente		Valente Real Estate & Development	2985 Dougall Ave	Windsor, ON	N9E 1S1
Mr.	Bill	Maggio		Vanderbilt Homes Ltd	1731 Wyandotte Street East	Windsor, ON	N8Y 1C9
Mr.	Vince	Russo		Affinity Custom Homes	3154 Troup Crescent	Windsor, ON	N8R 0A3
Mr.	Peirre	Amine		Amine Construction Ltd	1051 Chelsea Park Way	Belle River, ON	N0R 1A0
Mr.	Dino	Fantin		Amico Design Build Inc	2199 Blackacre Drive	Old Castle, ON	N0R 1L0
Mr.	Louis			Archambault Contracting	5095 Tecumseh Road	Pointe aux Roches, ON	N0R 1N0
Mr.	Danny	Azar		Azar Homes	1126 Lesperance Road	Tecumseh, ON	N8N 1X2
Ms.	Annalisa	McCarthy		Bart DiGiovanni Construction Ltd	2217 Walker Road	McGregor, ON	N0R 1J0
Mr.	Ben	Klundert		BK Cornerstone	13405 Desro Drive	Tecumseh, ON	N8N 2L9
Mr.	Ted	Bachynski		Bachynski Builders	1061 County Rd 46	Woodslee, ON	N0R 1V0
Mr.	Sam	Jraige		Bayshide Homes Ltd	20 Division Rd N RR 3	Cottam, ON	N0R 1B0
Mr.	Jeff			Boy Construction	432 W Puce Road	Belle River, ON	N0R 1A0
Ms.	Tammy			Brady Homes	339 County Road 34	Essex, ON	N8M 2X5
Mr.	Brian	Klundert		Brian Klundert Builders Ltd	1617 County Rd 46	Woodslee, ON	N0R 1V0
Mr.	Scott			Brian Spakres & Son Ltd	56 Bolohan Dr	Tilbury, ON	N0P 2L0
Mr.	Brian	Sterritt		Brimar Homes Ltd	1616 Chornoby Cres	Tecumseh, ON	N8N 4W3
Mr.	Don			Brouillette Builders	1553 Lakeshore Rd 123	Belle River, ON	N0R 1A0
Ms.	Nicole	Ciarrocchi		Bungalow Group	3409 McKay Ave	Windsor, ON	N9E 2R8
Mr.	Dan	Caster		Caster Custom Homes	13401 Desro Dr	Tecumseh, ON	N8N 2L9
	Mark			Cedar Hill Homes	11500 Tecumseh Rd E	Windsor, ON	N8N 5G6
Mr.	Chris	King		Chris King & Sons Construction	1675 Division Rd North	Kingsville, ON	N9Y 2H1
Ms.	Patti	Fraize		Coco Developments	485 Little Baseline Rd	Tecumseh, ON	N8N 2L9

Title	First Name	Surname	Job Title	Organization	Address	City/Prov	Postal Code
Mr.	Dan			Elite Construction	2005 Candlewood Dr	Tecumseh, ON	N9K 0A3
				Everjonge Homes	782 W Belle River Rd	Belle River, ON	N0R 1A0
Mr.	John	Evola		Evola Builders	2165 Suzanne St	Windsor, ON	N9H 2L4
Mr.	Steve	Shore		Fernwood Builders	1558 County Rd 31	Saint Joachim, ON	N0R 1S0
Mr.	Ezio	Tartaro		Gintar Contractors Ltd	820 Erie Street East	Windsor, ON	N9A 3Y4
Mr.	Joe	Hadi		Hadi Construction	7135 Malden Road	LaSalle, ON	N9J 2T8
Mr.	John			Hanna Homes	34 Carter Ave	Leamington, ON	N8H 5C9
Mr.	Jeff	Rivest		Homes of Integrity	262 Redwood, SS6	Belle River, ON	N0R 1A0
Ms.	Jeannette	Sylvestre		James Sylvestre Ent.	1865 Manning Road	Tecumseh, ON	N8N 2L9
Mr.	John	Rauti		J. Rauti Custom Homes	1357 Tuscany Oaks Drive	LaSalle, ON	N9J 0B6
Mr.	Mo	Kolody		Kolody Contracting	424 Old Tecumseh Road	Windsor, ON	N8N 3S8
Mr.	Sam			Lakepoint Homes	1865 Manning Road	Tecumseh, ON	N8N 2L9
Mr.	Anthony	Lapico		Lapico Homes	2895 Normandy Street	LaSalle, ON	N9H 1C8
Mr.	Bruno			Maple Leaf Homes Ltd	411 Pinehurst Drive	Belle River, ON	N0R 1A0
Ms.	Mary	Morabito		Marpasco Homes	2503 Buttery Street	Windsor, ON	N9E 4L9
Ms.	Laura	Fanelli		Mastercraft Homes Windsor (2011) Inc	3199 Dougall Ave	Windsor, ON	N9E 1S5
Mr.	Jack	Moceri		Moceri, Jack & Sons	11254 Tecumseh Road E	Windsor, ON	N8R 1A8
Mr.	Tom	Jraiche		New Millennium Homes	33 Princess Street	Leamington, ON	N8H 5C5
Mr.	Joe	Noah		Noah Homes	950 Seacliff Dr	Kingsville, ON	N9Y 2K9
Mr.	Norbert	Bolger		Nor-Built Construction	20 Ranaud Street	Amherstburg, ON	N9V 4B1

...ring Fling

Simona Lehan from Leamington's Simona's Flowers and Home Accents demonstrates the art of flower and plant arranging to attendees.

...kend! One-hundred and sixty women joined us at our morn... ...d enjoyed a great lunch together. It was also our pleasure to ...a Life Membership for 65 years of dedicated service. Special ...l Life Membership Officer, for joining us too and Lakeshore ...Bailey.

Lakeshore News, April 11, 2019

Lakeshore

TOWN OF LAKESHORE

DENIS ST. PIERRE WATER POLLUTION CONTROL PLANT EXPANSION

CLASS ENVIRONMENTAL ASSESSMENT

NOTICE OF STUDY COMMENCEMENT

The Study

The Town of Lakeshore adopted its first comprehensive Water and Wastewater Master Plan in November 2008, and then an update of this Master Plan was undertaken and completed in 2017 in accordance with Phases 1 and 2 of the Municipal Class Environmental Assessment (EA) process.

The Water and Wastewater Master Plan and Update identified capacity issues within the Denis St. Pierre Wastewater System. The former Belle River community and the Maidstone urban are serviced by the Denis St. Pierre Wastewater System consisting of sanitary sewers, pumping stations, the Denis St. Pierre Water Pollution Control Plant (WPCP) and an outfall discharging to Lake St. Clair.

It is outlined in the Master Plan and Update that additional treatment capacity at the Denis St. Pierre Water Pollution Control Plant (WPCP) is required to support the existing services areas and the anticipated future growth through 2036. The Master Plan and Update were prepared in accordance with Phases 1 and 2 of the Class EA process to implement the preferred solution which involves capacity expansion of the Denis St. Pierre WPCP which is located on Rourke Line. Further information may be obtained by viewing the Water and Wastewater Master Plan at http://lakeshore.ca

The Town of Lakeshore is now undertaking Phases 3 and 4 of the Class EA process which will involve evaluation of alternative design concepts for the proposed Denis St. Pierre WPCP capacity expansion, and preparation of an Environmental Study Report documenting the activities and recommendations from the Class EA process.

Public Consultation

One of the key components of this Class EA is consultation with the public. This Notice of Study Commencement is a part of the public consultation process. The public is invited to submit comments and express any concerns with respect to the project. During the course of the Class EA as the study work is nearing completion, the public will be invited to an Open House to review the findings of the study and to submit any further comments and concerns. The public will be notified in advance of the Open House through publication of notices in local newspapers.

If you have any questions or wish to be added to the study mailing list, please contact:

Mr. Kevin Girard, P.Eng.
Manager of Environmental Services
419 Notre Dame Street
Belle River, Ontario N0R 1A0
Phone: 519-728-1975 x 239
Fax: 519-728-9530
Email: kgirard@lakeshore.ca

or

Dr. Jian Li, P. Eng.
Stantec Consulting Ltd.
140 Ouellette Place Suite 100
Windsor, Ontario N8X 1L9
Phone: 519-966-2250 x 240
Fax: 519-966-5523
Email: jian.li@stantec.com

...unicate regularly ...ine community to ...nforcement of these ... confirms. "But not ...ner is affiliated with ...p."

...tems Group Greenway to equestri- an use in the future.

"It's important that we find a way for all trail users to enjoy these beautiful trails without conflict," Money adds.

Run on Sunday
Tube Centre

...T and registration IS CLOSED!
...to the Ronald McDonald House in Windsor.
...to several lucky walk/race participants.
...unity of leaders who believe in the healing power of togeth-
...cacy we support the Ronald McDonald House Charities of
...ildren what they need most . . . their families
...amilies of seriously ill children who require medical care by

...nation, please visit Facebook.com/BigRedShoeRun

Shoreline April 12, 2019

Lakeshore

TOWN OF LAKESHORE

DENIS ST. PIERRE WATER POLLUTION CONTROL PLANT EXPANSION

CLASS ENVIRONMENTAL ASSESSMENT

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It is outlined in the Master Plan and Update that additional treatment capacity at the Denis St. Pierre Water Pollution Control Plant (WPCP) is required to support the existing services areas and the anticipated future growth through 2035. The Master Plan and Update were prepared in accordance with Phases 1 and 2 of the Class EA process to implement the preferred solution which involves capacity expansion of the Denis St. Pierre WPCP which is located on Rourke Line. Further information may be obtained by viewing the Water and Wastewater Master Plan at http://lakeshore.ca

The Town of Lakeshore is now undertaking Phases 3 and 4 of the Class EA process which will involve evaluation of alternative design concepts for the proposed Denis St. Pierre WPCP capacity expansion, and preparation of an Environmental Study Report documenting the activities and recommendations from the Class EA process.

Public Consultation

One of the key components of this Class EA is consultation with the public. This Notice of Study Commencement is a part of the public consultation process. The public is invited to submit comments and express any concerns with respect to the project. During the course of the Class EA as the study work is nearing completion, the public will be invited to an Open House to review the findings of the study and to submit any further comments and concerns. The public will be notified in advance of the Open House through publication of notices in local newspapers.

If you have any questions or wish to be added to the study mailing list, please contact:

Mr. Kevin Girard, P.Eng.
Manager of Environmental Services
419 Notre Dame Street
Belle River, Ontario N0R 1A0
Phone: 519-728-1975 x 239
Fax: 519-728-9530
Email: kgirard@lakeshore.ca

or

Dr. Jian Li, P. Eng.
Stantec Consulting Ltd.
140 Ouellette Place Suite 100
Windsor, Ontario N8X 1L9
Phone: 519-966-2250 x 240
Fax: 519-966-5523
Email: jian.li@stantec.com

Lakeshore

OUR COMMUNITIES. OUR HOME.

TOWN OF LAKESHORE

DENIS ST. PIERRE WATER POLLUTION CONTROL PLANT EXPANSION

CLASS ENVIRONMENTAL ASSESSMENT

NOTICE OF STUDY COMMENCEMENT

The Study

The Town of Lakeshore adopted its first comprehensive Water and Wastewater Master Plan in November 2008, and then an update of this Master Plan was undertaken and completed in 2017 in accordance with Phases 1 and 2 of the Municipal Class Environmental Assessment (EA) process.

The Water and Wastewater Master Plan and Update identified capacity issues within the Denis St. Pierre Wastewater System. The former Belle River community and the Maidstone urban are serviced by the Denis St. Pierre Wastewater System consisting of sanitary sewers, pumping stations, the Denis St. Pierre Water Pollution Control Plant (WPCP) and an outfall discharging to Lake St. Clair.

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If you have any questions or wish to be added to the study mailing list, please contact:

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Dr. Jian Li, P. Eng.
Stantec Consulting Ltd.
140 Ouellette Place Suite 100
Windsor, Ontario N8X 1L9
Phone: 519-966-2250 x 240
Fax: 519-966-5523
Email: jian.li@stantec.com

Ontario

Ministry of the Environment, Conservation and Parks
Southwest Region
733 Exeter Road
London ON N6E 1L3
Tel: 519 873-5000

Ministère de l'Environnement, de la Protection de la nature et des Parcs
Direction régionale du Sud-Ouest
733, rue Exeter
London ON N6E 1L3
Tél.: 519 873-5000

May 31st, 2019

Town of Lakeshore
419 Notre Dame Street
Belle River, Ontario
NOR 1A0

Attention: Mr. Kevin Girard, P. Eng., Manager of Environmental Services

Re: Notice of Commencement Denis St. Pierre Water Pollution Control Plant Expansion Class EA

Dear Mr. Girard:

This letter acknowledges the Ministry of Environment, Conservation and Parks (MECP) receipt, with thanks, of the Notice of Commencement for the Denis St. Pierre Water Pollution Control Plant Expansion.

Based on the information submitted, the MECP have identified the following key project details with respect to the proposed undertaking:

Aboriginal Consultation

The Crown has a legal duty to consult Aboriginal communities when it has knowledge, real or constructive, of the existence or potential existence of an Aboriginal or treaty right and contemplates conduct that may adversely impact that right. Before the Town of Lakeshore may proceed with this project, the Crown must ensure that its duty to consult has been fulfilled, where such a duty is triggered. Although the duty to consult with Aboriginal peoples is a duty of the Crown, the Crown may delegate procedural aspects of consultation to project proponents while retaining oversight of the process.

The Town of Lakeshore's proposed project may have the potential to affect Aboriginal or treaty rights protected under section 35 of Canada's *Constitution Act 1982*. Where the Crown's duty to consult is triggered in relation to the Town of Lakeshore's proposed project, the MECP is delegating the procedural aspects of rights-based consultation to the Town of Lakeshore through this letter. The Crown intends to rely on the delegated consultation process in discharging its duty to consult and maintains the right to participate in the consultation process as it sees fit.

Based on information you have provided to date and the Crown`s preliminary assessment the Town of Lakeshore is required to consult with the following communities who have been identified as potentially affected by your proposed project:

Aamjiwnaang First Nation	Aamjiwnaang First Nation 978 Tashmoo Ave. Sarnia, ON N7T 7H5 519-336-8410 Chief Chris Plain chief@aamjiwnaang.ca Other Contacts: Sharilyn Johnston, Environment Coordinator sjohnston@aamjiwnaang.ca Christine James, Environment Worker cjames@aamjiwnaang.ca (same mailing address for all)	Sarnia, ON
Bkejwanong Territory (Walpole Island First Nation)	Bkejwanong Territory 117 Tahgahoning Road R.R.#3 Wallaceburg, ON N8K 4K9 519-627-1481 Chief Dan Miskokomon drskoke@wifn.org Other Contacts: Dean Jacobs, Consultation Manager Walpole Island Heritage Centre 2185 River Road R.R.#3 Wallaceburg, ON N8K 4K9 519-627-1475 dean.jacobs@wifn.org and Janet Macbeth, Project Review Coordinator janet.macbeth@wifn.org	Wallaceburg, ON
Chippewas of Kettle and Stony Point First Nation	Chippewas of Kettle and Stony Point First Nation 6247 Indian Lane, R.R.#2 Forest, ON N0N 1J1 519-786-2125 Chief Jason Henry jason.henry@kettlepoint.org Other Contact: Valerie George Consultation Officer valerie.george@kettlepoint.org	Forest, ON
Chippewas of the Thames First Nation	Chippewas of the Thames First Nation 320 Chippewa Rd., Muncey, ON N0L 1Y0 519-289-5555 Chief Myeengun Henry myeengun@cottfn.com Other Contacts: Kelly Riley, Acting Director - Lands & Environment kriley@cottfn.com Consultation Manager : Fallon Burch (Notices should be sent to Chief with an email copy to consultation@cottfn.com) Consultation email: consultation@cottfn.com	Muncey, ON
Caldwell First Nation	Caldwell First Nation 14 Orange St. Leamington, ON N8H 3W3 519-322-1766 or 1-800-206-7522 Chief Mary Duckworth chief.duckworth@caldwellfirstnation.ca Executive Administrator Nikki Orosz nikki.orosz@caldwellfirstnation.ca	Leamington, ON
Oneida Nation of the Thames ONYOTA'A:KA	Oneida Nation of the Thames 2212 Elm Ave. Southwold, ON N0L 2G0 519-652-3244 Chief Jessica Hill jessica.hill@oneida.on.ca Other Contact: Political Office Manager Email: cherilyn.hill@oneida.on.ca Tel: (519) 318-4593 Environment Contact: Brandon Doxtator, Environment Coordinator Email: environment@oneida.on.ca Phone (519) 652-6922	London, ON

Steps that you may need to take in relation to Aboriginal consultation for your proposed project are outlined in the "Code of Practice for Consultation in Ontario's Environmental Assessment Process" which can be found at the following link:

https://www.ontario.ca/document/consultation-ontarios-environmental-assessment-process

Additional information related to Ontario's *Environmental Assessment Act* is available online at:

www.ontario.ca/environmentalassessments

You must contact the Director of Environmental Assessment and Permissions Branch (Director) under the following circumstances subsequent to initial discussions with the communities identified by MOECC:

- Aboriginal or treaty rights impacts are identified to you by the communities;
- You have reason to believe that your proposed project may adversely affect an Aboriginal or treaty right;
- Consultation has reached an impasse;
- A Part II Order request or elevation request is expected.

The Director can be notified either by email, mail or fax using the information provided below:

Email:	enviropermissions@ontario.ca Subject: Potential Duty to Consult
Fax:	416-314-8452
Address:	Environmental Assessment and Permissions Branch 135 St. Clair Avenue West, 1st Floor Toronto, ON, M4V 1P5

The MECP will then assess the extent of any Crown duty to consult for the circumstances and will consider whether additional steps should be taken, including what role the Town of Lakeshore will be asked to play should additional steps and activities be required.

Source Water Protection

As per the recent amendments to the Municipal Engineers Association (MEA) Class Environmental Assessment parent document approved October 2015, proponents undertaking a Municipal Class EA project must identify early in the process whether a project is occurring within a source water protection vulnerable area. This must be clearly documented in an ESR. If the project is occurring in a vulnerable area, then there may be policies in the local Source Protection Plan (SPP) that need to be addressed (requirements under the Clean Water Act). The proponent should contact and consult with the appropriate Conservation Authority/Source Protection Authority (CA/SPA) to discuss potential considerations and policies in the SPP that apply to the project.

Please include a section in the report on Source Water Protection. Specifically, it should discuss whether or not the project is located in a vulnerable area or changes or creates new vulnerable areas and provide applicable details about the area. If located in a vulnerable area, proponents should document whether any project activities are a prescribed drinking water threat and thus pose a risk to drinking water (this should be consulted on with the appropriate CA/SPA). Where an activity poses a risk to drinking water, the proponent must document and discuss in the Project File Report/ESR how the project adheres to or has regard to applicable policies in the local SPP. If creating or changing a vulnerable area, proponents should document whether any existing uses or activities may potentially be affected by the implementation of source protection policies. This section should then be used to inform and should be reflected in other sections of the report, such as the identification of net positive/ negative effects of alternatives, mitigation measures, evaluation of alternatives etc. As a note, even if the project activities in a vulnerable area are deemed not to be a drinking water risk, there may be other policies that apply and so consultation with the local CA/SPA is important.

Climate Change

The Town of Lakeshore is strongly encouraged to include climate change in this EA. Climate change should be considered in the context of mitigation and the context of adaptation. The Ministry has recently released a guidance document to support proponents in including climate change in environmental assessments. The guide can be found online: https://www.ontario.ca/page/considering-climate-change-environmental-assessment-process. It should be noted that Climatic Features is identified in Appendix 2 of the Municipal Class EA page 2-7 (2015).

Part II Order Request Form

Please note that as of July 1, 2018, a Part II Order Request Form must be used to request a Part II Order as per O. Reg. 152/18. Accordingly, please include those details when conveying information regarding the Part II Order process such as on the Notice of Completion. The following sample text would cover this requirement in the Notice of Completion for this project:

"As of July 1, 2018, a Part II Order Request Form must be used to request a Part II Order in accordance with O. Reg. 152/18. The Part II Order Request Form is available online on the Forms Repository website (http://www.forms.ssb.gov.on.ca/) by searching "Part II Order" or "012-2206E" (the form ID number)."

Conclusion

Thank you for the opportunity to comment on this project. Please keep this office fully informed of the status of this project as it proceeds through the Class EA process. All future correspondence with respect to this project should be sent to my attention, as I am this ministry's one window contact for this project, Craig Newton, Regional Environmental Planner / Regional EA Coordinator at (519) 873-5014 or by email at craig.newton@ontario.ca

A draft copy of the Environmental Study Report (ESR) should be sent to the appropriate MECP regional office before the Town of Lakeshore issues its notice of completion of the final report. Allow a minimum of 30 days for MECP's technical reviewers to provide comments on the draft ESR.

When the ESR is finalized, please send the Notice of Completion and final documentation to me.

Should you or any members of your project team have any questions regarding the material above, please contact me directly.

Yours truly,

Craig Newton
Regional Environmental Planner / Regional EA Coordinator
Ministry of Environment, Conservation and Parks
733 Exeter Road
London ON, N6E 1L3
519-873-5014

cc Mr. Marc Bechard, Supervisor, Safe Drinking Water, MECP Windsor / Sarnia District
Dr. Jian Li, P. Eng., Stantec Consulting Ltd., Windsor

From:	Newton, Craig (MECP)
To:	Li, Jian
Cc:	kgirard@lakeshore.ca
Subject:	FW: Denis St. Pierre Water Pollution Control Plant Expansion Class EA - Town of Lakeshore
Date:	Wednesday, April 10, 2019 11:18:23 AM
Attachments:	20190410091236270.pdf

Dear Dr. Li:

This e-mail acknowledges my receipt of the Notice of Study Commencement for this project.

That said, this may have just be an oversight, or perhaps you have just not gotten to this task as yet given your competing priorities, but if you are not already aware, **please resubmit this and future Notices of Commencement to the MECP SWR Regional EA mail**

When you get an opportunity, sometime in the next few days, please re-submit this Notice of Commencement in the manner described immediately below:

As of May 1, 2018, proponents must follow the planning process set out in the approved class environmental assessments or streamlined environmental assessment processes, and send their notices and completed project information form project information form *to the region where the project is located. If your project is located in more than one ministry region, you need to submit your notices to all appropriate regions. This is in addition to the existing notification requirements in each class environmental assessments and streamlined environmental assessment process.*

To submit your notice you need to do the following:
1.download and complete the project information form
2.the subject line of your email must include the project location, type of streamlined environmental assessment and project name, for example: ◦York Region, MEA Class EA, Elgin Mills Rd East (Bayview to Woodbine)
◦Durham Region, Electricity Screening Process, New Cogeneration Station
◦City of Ottawa, Waste Management Screening Process, Landfill Expansion Project

3.attach a copy of your project notice in PDF format and your completed project information form in Excel format to the email
4.send your email to the appropriate ministry regional office:
◦Central Region – eanotification.cregion@ontario.ca
◦Eastern Region – eanotification.eregion@ontario.ca
◦Northern Region – eanotification.nregion@ontario.ca
◦South West Region – eanotification.swregion@ontario.ca
◦West Central Region – eanotification.wcregion@ontario.ca

Thanks in advance.

Yours truly,

Craig Newton
Regional Environmental Planner / Regional EA Coordinator
Ministry of the Environment, Conservation and Parks
Southwestern Region
733 Exeter Road
London, Ontario
N6E 1L3

Telephone: (519) 873-5014
E-mail: craig.newton@ontario.ca

From:	Cerniavskaja, Karina (MNRF)
To:	kgirard@lakeshore.ca; Li, Jian
Subject:	Town of Lakeshore - Denis St. Pierre Water Pollution Control Plant Expansion Class EA
Date:	Wednesday, April 10, 2019 10:30:58 AM
Attachments:	2019-04-09_Lakeshore - Denis St. Pierre Water Pollution Control Plant Expansion Class EA.pdf

Good morning Kevin and Jian,

Thank you for circulating the attached Class Environmental Assessment Notice to the Ministry of Natural Resources and Forestry (MNRF) office. Please note, the Ministry of Environment, Conservation and Parks (MECP) has now assumed responsibility for the Endangered Species Act (ESA), including species at risk (SAR) in Ontario. All future correspondence related to ESA or SAR should be sent to SAROntario@ontario.ca to reach the MECP directly.

MNRF will continue to review projects for matters that fall within the scope of the ministry's mandate and provide guidance with respect to legislation under the ministry's jurisdiction. I just wanted to make sure that you are aware of the above changes.

Please let me know if you have any questions.

Thank you,
Karina

Karina Cerniavskaja, District Planner
Ministry of Natural Resources and Forestry, Aylmer District
615 John St. N. Aylmer, ON N5H 2S8
Tel: 519-773-4757 | Cell: 519-630-5292 | Fax: 519-773-9014 | Email: karina.cerniavskaja@ontario.ca

Ministry of Tourism, Culture and Sport

Programs and Services Branch
401 Bay Street, Suite 1700
Toronto ON M7A 0A7
Tel: 416.314.7643

Ministère du Tourisme, de la Culture et du Sport

Direction des programmes et des services
401, rue Bay, Bureau 1700
Toronto ON M7A 0A7
Tél: 416.314.7643

Ontario

08 May 2019 EMAIL ONLY

Jian Li, P.Eng.
Project Manager
Stantec Consulting Ltd.
100-140 Ouellette Place
Windsor, ON N8X 1L9
jian.li@stantec.com

MTCS File	**:**	**0010508**
Your File	**:**	**165620173**
Proponent	**:**	**Town of Lakeshore**
Subject	**:**	**Notice of Commencement**
Project	**:**	**Denis St. Pierre Water Pollution Control Plant Expansion**
Location	**:**	**Rourke Line Road, South of County Road 22, Town of Lakeshore**

Dear Mr. Li:

Thank you for providing the Ministry of Tourism, Culture and Sport (MTCS) with the Notice of Commencement for the above-referenced project. MTCS's interest in this Municipal Class Environmental Assessment (EA) project relates to its mandate of conserving Ontario's cultural heritage, which includes:

- archaeological resources, including land and marine;
- built heritage resources, including bridges and monuments; and,
- cultural heritage landscapes.

Under the EA process, the proponent is required to determine a project's potential impact on cultural heritage resources.

Project Summary
The Town of Lakeshore is proposing the expansion of the Denis St. Pierre Water Pollution Control Plant in anticipation of anticipated future growth and expansion through to 2035 for the former Belle River Community and the Maidston Urban Area.

The project is following Phases 3 and 4 of the Municipal Class EA, which began in 2008 as a Master Plan (completing Phases 1 and 2 in 2017) and had identified capacity issues this for plant.

Identifying Cultural Heritage Resources
While some cultural heritage resources may have already been formally identified, others may be identified through screening and evaluation. Indigenous communities may have knowledge that can contribute to the identification of cultural heritage resources, and we suggest that any engagement with Indigenous communities includes a discussion about known or potential cultural heritage resources that are of value to these communities. Municipal Heritage Committees, historical societies and other local heritage organizations may also have knowledge that contributes to the identification of cultural heritage resources.

Archaeological Resources
This EA project may impact archaeological resources and should be screened using the MTCS *Criteria for Evaluating Archaeological Potential* and *Criteria for Evaluating Marine Archaeological Potential* to determine if an archaeological assessment is needed. MTCS archaeological sites data are available at *archaeology@ontario.ca*. If the EA project area exhibits archaeological potential, then an archaeological assessment (AA) should be undertaken by an archaeologist licenced under the *OHA*, who is responsible for submitting the report directly to MTCS for review.

Built Heritage and Cultural Heritage Landscapes
The MTCS *Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes* should be completed to help determine whether this EA project may impact cultural heritage resources. The Clerk for theTown of Lakeshore can provide information on property registered or designated under the *Ontario Heritage Act*. Municipal Heritage Planners can also provide information that will assist in completing the checklist.

If potential or known heritage resources exist, MTCS recommends that a Heritage Impact Assessment (HIA), prepared by a qualified consultant, should be completed to assess potential project impacts. Our Ministry's *Info Sheet #5: Heritage Impact Assessments and Conservation Plans* outlines the scope of HIAs. Please send the HIA to MTCS and the Town of Lakeshore for review, and make it available to local organizations or individuals who have expressed interest in review.

Environmental Assessment Reporting
All technical cultural heritage studies and their recommendations are to be addressed and incorporated into EA projects. Please advise MTCS whether any technical cultural heritage studies will be completed for this EA project, and provide them to MTCS before issuing a Notice of Completion or commencing any work on the site. If screening has identified no known or potential cultural heritage resources, or no impacts to these resources, please include the completed checklists and supporting documentation in the EA report or file.

Thank you for consulting MTCS on this project and please continue to do so throughout the EA process. If you have any questions or require clarification, do not hesitate to contact me.

Sincerely,

Katherine Kirzati
Heritage Planner
katherine.kirzati@ontario.ca

c: Kevin Girard, Manager of Environmental Services, Town of Lakeshorse

It is the sole responsibility of proponents to ensure that any information and documentation submitted as part of their EA report or file is accurate. MTCS makes no representation or warranty as to the completeness, accuracy or quality of the any checklists, reports or supporting documentation submitted as part of the EA process, and in no way shall MTCS be liable for any harm, damages, costs, expenses, losses, claims or actions that may result if any checklists, reports or supporting documents are discovered to be inaccurate, incomplete, misleading or fraudulent.

Please notify MTCS if archaeological resources are impacted by EA project work. All activities impacting archaeological resources must cease immediately, and a licensed archaeologist is required to carry out an archaeological assessment in accordance with the *Ontario Heritage Act* and the *Standards and Guidelines for Consultant Archaeologists*.

If human remains are encountered, all activities must cease immediately and the local police as well as the Registrar, Burials of the Ministry of Government and Consumer Services (416-326-8800) must be contacted. In situations where human remains are associated with archaeological resources, MTCS should also be notified to ensure that the site is not subject to unlicensed alterations which would be a contravention of the *Ontario Heritage Act*.

From:	EnviroOnt
To:	kgirard@lakeshore.ca; Li, Jian
Subject:	NEATS 49807- Denis St. Pierre Water Pollution control plant expansion- Town of Lakeshore
Date:	Thursday, May 9, 2019 9:47:11 AM
Attachments:	NEATS 49807.pdf

Greetings,

Thank you for your correspondence.

Please note Transport Canada **does not** require receipt of all individual or Class EA related notifications. We are requesting project proponents to self-assess if their project:

1. Will interact with a federal property and/or waterway by reviewing the Directory of Federal Real Property, available at at www.tbs-sct.gc.ca/dfrp-rbif/; **and**
2. Will require approval and/or authorization under any Acts administered by Transport Canada* available at http://www.tc.gc.ca/eng/acts-regulations/menu.htm.

Projects that will occur on federal property prior to exercising a power, performing a function or duty in relation to that project, will be subject to a determination of the likelihood of significant adverse environmental effects, per Section 67 of the *Canadian Environmental Assessment Act, 2012*.

If the aforementioned does not apply, the Environmental Assessment program should not be included in any further correspondence and future notifications will not receive a response. If there is a role under the program, correspondence should be forwarded *electronically* to: EnviroOnt@tc.gc.ca with a **brief description of Transport Canada's expected role**.

*Below is a summary of the most common Acts that have applied to projects in an Environmental Assessment context:

- ***Navigation Protection Act (NPA)*** – the Act applies primarily to works constructed or placed in, on, over, under, through, or across scheduled navigable waters set out under the Act. The Navigation Protection Program administers the NPA through the review and authorization of works affecting scheduled navigable waters. Information about the Program, NPA and approval process is available at: http://www.tc.gc.ca/eng/programs-621.html. Enquiries can be directed to NPPONT-PPNONT@tc.gc.ca or by calling (519) 383-1863.

- ***Railway Safety Act (RSA)*** – the Act provides the regulatory framework for railway safety, security, and some of the environmental impacts of railway operations in Canada. The Rail Safety Program develops and enforces regulations, rules, standards and procedures governing safe railway operations. Additional information about the Program is available at: https://www.tc.gc.ca/eng/railsafety/menu.htm. Enquiries can be directed to RailSafety@tc.gc.ca or by calling (613) 998-2985.

- ***Transportation of Dangerous Goods Act (TDGA)*** – the transportation of dangerous goods by air, marine, rail and road is regulated under the TDGA. Transport Canada, based on risks, develops safety standards and regulations, provides oversight and gives expert advice on dangerous goods to promote public safety. Additional information about the transportation of dangerous goods is available at: https://www.tc.gc.ca/eng/tdg/safety-menu.htm. Enquiries can be directed to TDG-TMDOntario@tc.gc.ca or by calling (416) 973-1868.

- ***Aeronautics Act*** – Transport Canada has sole jurisdiction over aeronautics, which includes aerodromes and all related buildings or services used for aviation purposes. Aviation safety in Canada is regulated under this Act and the Canadian Aviation Regulations (CARs). Elevated Structures, such as wind turbines and communication towers, would be examples of projects that must be assessed for lighting and marking requirements in accordance with the CARs. Transport Canada also has an interest in projects that have the potential to cause interference between wildlife and aviation activities. One example would be waste facilities, which may attract birds into commercial and recreational flight paths. The *Land Use In The Vicinity of Aerodromes* publication recommends guidelines for and uses in the vicinity of aerodromes, available at: https://www.tc.gc.ca/eng/civilaviation/publications/tp1247-menu-1418.htm. Enquires can be directed to at tc.aviationservicesont-servicesaviationont.tc@tc.gc.ca or by calling 1 (800) 305-2059 / (416) 952-0230.

Please advise if additional information is needed.

Thank you,

Environmental Assessment Program, Ontario Region
Transport Canada / Government of Canada / 4900 Yonge St., Toronto, ON M2N 6A5
EnviroOnt@tc.gc.ca / Facsimile : (416) 952-0514 / TTY: 1-888-675-6863

Programme d'évaluation environnementale, Région de l'Ontario
Transports Canada / Gouvernement du Canada / 4900, rue Yonge, Toronto, ON, M2N 6A5
EnviroOnt@tc.gc.ca / télécopieur: (416) 952-0514

From:	Corinne Chiasson
To:	Li, Jian
Subject:	Notice of Study Commencement: Denis St. Pierre Water Pollution Control Plant Expansion Class EA
Date:	Wednesday, May 29, 2019 10:20:37 AM

Good morning Dr. Jian Li.

We have had an opportunity to review the circulation of the Notice of Study Commencement for the Denis St. Pierre Water Pollution Control Plant Expansion Class EA and introductory brief. We are interested in providing support and comments to the Town as this study progresses. Please keep us informed through our general planning mailbox at: planning@erca.org.

Sincerely,

Essex Region Conservation Authority
sustaining the place for life

CORINNE CHIASSON
Resource Planner
Essex Region Conservation Authority
360 Fairview Avenue West, Suite 311
Essex, Ontario Ÿ N8M 1Y6
P. 519-776-5209 x 330 Ÿ F. 519-776-8688
essexregionconservation.ca cchiasson@erca.org

Please consider the environment before printing this email

Indigenous Services Canada | Services aux Autochtones Canada

MAY 0 6 2019

ON7249

Mr. Jian Li, Ph.D., P.Eng., PE
Project Manager
Stantec Consulting Ltd.
100-140 Ouellette Place
WINDSOR ON N8X 1L9

Dear Mr. Li:

This is in follow up to your correspondence of April 3, 2019, in which you included the Introductory Brief regarding the Denis St. Pierre Water Pollution Control Plant Expansion and Class Environmental Assessment.

While the Department has no comments concerning the project at the present time, we would appreciate if you could continue to keep us apprised of the project's progress moving forward.

I wish you success in your project.

Yours sincerely,

Lina Letiecq
Director of Lands and Economic Development
Indigenous Services Canada

655 Bay Street, 3rd Floor
TORONTO ON M5G 2K4

Canada

Hydro One Networks Inc
483 Bay St
Toronto, ON

July 30, 2019

Re: Denis St. Pierre Water Pollution Control Plant Expansion

Attention:
Kevin Girard, P.Eng
Manager of Environmental Services

Following our preliminary assessment, we confirm there are no existing Hydro One Transmission assets in the subject area. Please be advised that this is only a preliminary assessment based on current information. No further consultation with Hydro One Networks Inc. is required if no changes are made to the current information.

However, if plans for the undertaking change or the study area expands beyond that shown, please contact Hydro One to assess impacts of existing or future planned electricity infrastructure.

Any future communications are sent to Secondarylanduse@hydroone.com.

Sent on behalf of,

Secondary Land Use
Asset Optimization
Strategy & Integrated Planning
Hydro One Networks Inc.

CHIPPEWAS OF THE THAMES FIRST NATION

May 8, 2019

VIA EMAIL

Mr. Kevin Girard, P.Eng
Manager of Environmental Services
419 Notre Dame Street
Belle River, Ontario N0R 1A0

RE: Denis St. Pierre Water Pollution Control Plant Expansion
Class Environmental Assessment, Notice of Study Commencement

Dear Mr. Girard,

We have received the *Notice of Study Commencement* regarding the aforementioned project. The proposed project is located within the Mckee Treaty area (1790) to which Chippewas of the Thames First Nation is a signatory (COTTFN), as well as the Big Bear Creek Additions to Reserve (ATR) land selection area, and COTTFN's Traditional Territory.

We presently have minimal concerns with the proposed project. However, upon completion of any environmental study reports, we request a digital copy be electronically sent to consultation@cottfn.com. If there is an archaeology assessment conducted, we require notification and the opportunity to actively participate by sending an Archaeology Field Liaison on behalf of the First Nation.

We look forward to continuing this open line of communication. To Implement meaningful consultation, COTTFN has developed its own protocol – a document and a process that will guide positive working relationships. We would be happy to meet with you to review COTTFN's Consultation Protocol.

Please do not hesitate to contact me if you need further clarification of this letter.

Sincerely,

Fallon Burch
Consultation Coordinator
Chippewas of the Thames First Nation
(519) 289-5555 Ext. 251
consultation@cottfn.com

c: Dr. Jian Li, P.Eng, Stantec Consulting Ltd.

Aboriginal Consultation Log
Municipal Class Environmental Assessment
Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion

Contact Information	Date/Method of Communication	Correspondence Received and/or Project Information Distributed	Consultant Response
Ministry of Aboriginal Affairs Leslie Brewer-Palhazi Corwin Troje Ashley Johnson Ministry Partnerships Unit, Aboriginal Relations and Ministry Partnerships Branch	**Notice of Commencement** Date: April 3, 2019 Method: Newspaper and Canada Post	The Notice of Commencement was sent to Leslie Brewer-Palhazi, Corwin Troje and Ashley Johnson on April 3, 2019 via Canada Post. The Notice was published in the April 11, 2019 edition of the Lakeshore News and Tilbury Times, and the April 12, 2019 edition of the Shoreline News.	N/A
	Phase 3 Open House and Draft ESR Date: September 11, 2019 Method: Newspaper and Canada Post	The Notice of Phase 3 Open House was in the August 24, 2019 edition of the Windsor Star, August 27, 2019 edition of Tilbury Times, August 29, 2019 edition of the Lakeshore News, and August 30, 2019 edition of the Shoreline News. The print copy of handout materials was mailed to Leslie Brewer-Palhazi, Corwin Troje and Ashley Johnson to solicit comments and inputs on September 10, 2019.	N/A
	Notice of Completion		
Ministry of Aboriginal Affairs and Northern Development Canada Allison Berman Consultation and Accommodation Unit	**Notice of Commencement** Date: April 3, 2019 Method: Newspaper and Canada Post	The Notice of Commencement was sent to Allison Berman on April 3, 2019 via Canada Post. The Notice was published in the April 11, 2019 edition of the Lakeshore News and Tilbury Times, and the April 12, 2019 edition of the Shoreline News.	N/A
	Phase 3 Open House and Draft ESR Date: September 11, 2019 Method: Newspaper and Canada Post	The Notice of Phase 3 Open House was in the August 24, 2019 edition of the Windsor Star, August 27, 2019 edition of Tilbury Times, August 29, 2019 edition of the Lakeshore News, and August 30, 2019 edition of the Shoreline News. The print copy of handout materials was mailed to Allison Berman to solicit comments and inputs on September 10, 2019.	N/A
	Notice of Completion		
Indigenous & Northern Affairs Canada Leea Litzgus Ontario Region	**Notice of Commencement** Date: April 3, 2019 Method: Newspaper and Canada Post	The Notice of Commencement was sent to Leea Litzgus on April 3, 2019 via Canada Post. The Notice was published in the April 11, 2019 edition of the Lakeshore News and Tilbury Times, and the April 12, 2019 edition of the Shoreline News.	requested in a letter dated May 6, 2019 that ISC be kept informed of progress of this project. ISC has no comments concerning the project at this time
	Phase 3 Open House and Draft ESR Date: September 11, 2019 Method: Newspaper and Canada Post	The Notice of Phase 3 Open House was in the August 24, 2019 edition of the Windsor Star, August 27, 2019 edition of Tilbury Times, August 29, 2019 edition of the Lakeshore News, and August 30, 2019 edition of the Shoreline News. The print copy of handout materials was mailed to Leea Litzgus to solicit comments and inputs on September 10, 2019.	N/A
	Notice of Completion		
Southern First Nations Secretariat Jennifer Whiteye Consultation and Accommodation Unit	**Notice of Commencement** Date: April 3, 2019 Method: Newspaper and Canada Post	The Notice of Commencement was sent to Jennifer Whiteye on April 3, 2019 via Canada Post. The Notice was published in the April 11, 2019 edition of the Lakeshore News and Tilbury Times, and the April 12, 2019 edition of the Shoreline News.	N/A
	Phase 3 Open House and Draft ESR Date: September 11, 2019 Method: Newspaper and Canada Post	The Notice of Phase 3 Open House was in the August 24, 2019 edition of the Windsor Star, August 27, 2019 edition of Tilbury Times, August 29, 2019 edition of the Lakeshore News, and August 30, 2019 edition of the Shoreline News. The print copy of handout materials was mailed to Jennifer Whiteye to solicit comments and inputs on September 10, 2019.	N/A
	Notice of Completion		

Aboriginal Consultation Log
Municipal Class Environmental Assessment
Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion

Contact Information	Date/Method of Communication	Correspondence Received and/or Project Information Distributed	Consultant Response
Delaware Nation (Moravian of the Thames) Denise Stonefish 14760 School House Line Thamesville ON N0P 2K0	**Notice of Commencement** Date: April 3, 2019 Method: Newspaper and Canada Post	The Notice of Commencement was sent to Denise Stonefish on April 3, 2019 via Canada Post. The Notice was published in the April 11, 2019 edition of the Lakeshore News and Tilbury Times, and the April 12, 2019 edition of the Shoreline News.	N/A
	Phase 3 Open House and Draft ESR Date: September 11, 2019 Method: Newspaper and Canada Post	The Notice of Phase 3 Open House was in the August 24, 2019 edition of the Windsor Star, August 27, 2019 edition of Tilbury Times, August 29, 2019 edition of the Lakeshore News, and August 30, 2019 edition of the Shoreline News. The print copy of handout materials was mailed to Denise Stonefish to solicit comments and inputs on September 10, 2019.	N/A
	Notice of Completion		
Aamjiwnaang First Nation Chris Plain (chief@aamjiwnaang.ca) Joanne Rogers (jrogers@aamjiwnaang.ca) Sharilyn Johnston (sjohnston@aamjiwnaang.ca) Christine Rogers ((crogers@aamjiwnaang.ca) 978 Tashmoo Avenue Sarnia ON N7T 7H5	**Notice of Commencement** Date: April 3, 2019 Method: Newspaper and Canada Post	The Notice of Commencement was sent to Joanne Rogers, Sharilyn Johnston and Christine Rogers on April 3, 2019 via Canada Post. The Notice was published in the April 11, 2019 edition of the Lakeshore News and Tilbury Times, and the April 12, 2019 edition of the Shoreline News.	N/A
	Phase 3 Open House and Draft ESR Date: September 11, 2019 Method: Newspaper and Canada Post	The Notice of Phase 3 Open House was in the August 24, 2019 edition of the Windsor Star, August 27, 2019 edition of Tilbury Times, August 29, 2019 edition of the Lakeshore News, and August 30, 2019 edition of the Shoreline News. The print copy of handout materials was mailed to Chris Plain, Sharilyn Johnston and Christine Rogers to solicit comments and inputs on September 10, 2019.	N/A
	Notice of Completion		
Caldwell First Nation Mary Duckworth Nikki Orosz PO Box 388 Leamington ON N8H 3W3	**Notice of Commencement** Date: April 3, 2019 Method: Newspaper and Canada Post	The Notice of Commencement was sent to Mary Duckworth and Nikki Orosz on April 3, 2019 via Canada Post. The Notice was published in the April 11, 2019 edition of the Lakeshore News and Tilbury Times, and the April 12, 2019 edition of the Shoreline News.	N/A
	Phase 3 Open House and Draft ESR Date: September 11, 2019 Method: Newspaper and Canada Post	The Notice of Phase 3 Open House was in the August 24, 2019 edition of the Windsor Star, August 27, 2019 edition of Tilbury Times, August 29, 2019 edition of the Lakeshore News, and August 30, 2019 edition of the Shoreline News. The print copy of handout materials was mailed to Mary Duckworth and Nikki Orosz to solicit comments and inputs on September 10, 2019.	N/A
	Notice of Completion		
Bkejwanong Territory (Walpole Island) First Nation Dan Miskokomon (drskoke@wifn.org) Dean Jacobs (dean.jacobs@wifn.org) Janet Macbeth (janet.macbeth@wifn.org) 117 Tahgahoning Road, RR#3 Wallaceburg ON N8A 4K95	**Notice of Commencement** Date: April 3, 2019 Method: Newspaper and Canada Post	The Notice of Commencement was sent to Dan Miskokomon, Dean Jacobs and Janet Macbeth on April 3, 2019 via Canada Post The Notice was published in the April 11, 2019 edition of the Lakeshore News and Tilbury Times, and the April 12, 2019 edition of the Shoreline News.	N/A
	Phase 3 Open House and Draft ESR Date: September 11, 2019 Method: Newspaper and Canada Post	The Notice of Phase 3 Open House was in the August 24, 2019 edition of the Windsor Star, August 27, 2019 edition of Tilbury Times, August 29, 2019 edition of the Lakeshore News, and August 30, 2019 edition of the Shoreline News. The print copy of handout materials was mailed to Dan Miskokomon, Dean Jacobs and Janet Macbeth to solicit comments and inputs on September 10, 2019.	N/A
	Notice of Completion		

Aboriginal Consultation Log
Municipal Class Environmental Assessment
Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion

Contact Information	Date/Method of Communication	Correspondence Received and/or Project Information Distributed	Consultant Response
Metis Nation of Ontario Aly Alibhai (alya@metisnation.org) 500 Old St. Patrick Street, Unit 3 Ottawa ON K1N 9G4 75 Sherbourne Street, Unit 311 Toronto ON M5A 2P9	**Notice of Commencement** Date: April 3, 2019 Method: Newspaper and Canada Post	The Notice of Commencement was sent to Aly Alibhai on April 3, 2019 via Canada Post. The Notice was published in the April 11, 2019 edition of the Lakeshore News and Tilbury Times, and the April 12, 2019 edition of the Shoreline News.	N/A
	Phase 3 Open House and Draft ESR Date: September 11, 2019 Method: Newspaper and Canada Post	The Notice of Phase 3 Open House was in the August 24, 2019 edition of the Windsor Star, August 27, 2019 edition of Tilbury Times, August 29, 2019 edition of the Lakeshore News, and August 30, 2019 edition of the Shoreline News. The print copy of handout materials was mailed to Aly Alibhai to solicit comments and inputs on September 10, 2019.	N/A
	Notice of Completion		
Chippewas of Kettle and Stony Point First Nation Jason Henry (Jason.henry@ kettlepoint.org) Tom Bressette (Thomas.bressette@kettlepoint.org) Valerie George (Valerie.george@kettlepoint.org) 6247 Indian Lane, R.R. #2 Forest, ON N0N 1J1	**Notice of Commencement** Date: April 3, 2019 Method: Newspaper and Canada Post	The Notice of Commencement was sent to Tom Bressette and Valerie George on April 3, 2019 via Canada Post. The Notice was published in the April 11, 2019 edition of the Lakeshore News and Tilbury Times, and the April 12, 2019 edition of the Shoreline News.	N/A
	Phase 3 Open House and Draft ESR Date: September 11, 2019 Method: Newspaper and Canada Post	The Notice of Phase 3 Open House was in the August 24, 2019 edition of the Windsor Star, August 27, 2019 edition of Tilbury Times, August 29, 2019 edition of the Lakeshore News, and August 30, 2019 edition of the Shoreline News. The print copy of handout materials was mailed to Jason Henry and Valerie George to solicit comments and inputs on September 10, 2019.	N/A
	Notice of Completion		
Chippewas of the Thames First Nation Henry Myeengun (myeengun@cottfn.com) Kelly Riley (kriley@cottfn.com) Fallon Burch Rochelle Smith (rsmith@cottfn.com) 320 Chippewa Road Muncey ON N0L 1Y0	**Notice of Commencement** Date: April 3, 2019 Method: Newspaper and Canada Post	The Notice of Commencement was sent to Henry Myeengun, Kelly Riley and Rochelle Smith on April 3, 2019 via Canada Post. The Notice was published in the April 11, 2019 edition of the Lakeshore News and Tilbury Times, and the April 12, 2019 edition of the Shoreline News.	Chippewas of the Thames First Nation (COTTFN) advised in a letter dated May 8, 2019 that the proposed project is located within the Mckee Treaty area (1790) to which COTTFN is a signatory, as well as the Big Bear Creek Addition to Reserve (ATR) land selection area, and COTTFN's Traditional Territory. COTTFN has minimal concerns with the proposed project. It is requested that COTTFN be kept informed of progress of this project including distribution of a digital copy of the study report.
	Phase 3 Open House and Draft ESR Date: September 11, 2019 Method: Newspaper and Canada Post	The Notice of Phase 3 Open House was in the August 24, 2019 edition of the Windsor Star, August 27, 2019 edition of Tilbury Times, August 29, 2019 edition of the Lakeshore News, and August 30, 2019 edition of the Shoreline News. The print copy of handout materials was mailed to Henry Myeengun, Kelly Riley and Rochelle Smith to solicit comments and inputs on September 10, 2019.	N/A
	Notice of Completion		

Aboriginal Consultation Log
Municipal Class Environmental Assessment
Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion

Contact Information	Date/Method of Communication	Correspondence Received and/or Project Information Distributed	Consultant Response
Onelda Nation of the Thames ONYOTA'A:KA Jessica Hill (Jessica.hill@oneida.on.ca) Brandon Doxtator (environment@oneida.on.ca) Randall Phillips Catherine Cornellus 2212 Elm Avenue Southwold, ON N0L 2G0	**Notice of Commencement** Date: April 3, 2019 Method: Newspaper and Canada Post	The Notice of Commencement was sent to Randall Phillips and Catherine Cornellus on April 3, 2019 via Canada Post. The Notice was published in the April 11, 2019 edition of the Lakeshore News and Tilbury Times, and the April 12, 2019 edition of the Shoreline News.	N/A
	Phase 3 Open House and Draft ESR Date: September 11, 2019 Method: Newspaper and Canada Post	The Notice of Phase 3 Open House was in the August 24, 2019 edition of the Windsor Star, August 27, 2019 edition of Tilbury Times, August 29, 2019 edition of the Lakeshore News, and August 30, 2019 edition of the Shoreline News. The print copy of handout materials was mailed to Jessica Hill and Brandon Doxtator to solicit comments and inputs on September 10, 2019.	
	Notice of Completion		

APPENDIX F-2

Phase 3 Consultation & Draft ESR

- Copy of Phase 3 Open House Advertisement published on August 22, 2019
- Phase 3 Open House Attendee List
- Phase 3 Open House Display
- Distribution list and letter distributing Phase 3 consultation material to review agencies
- Information handout and responses
- Comments received from review agencies and the public

Lakeshore News August 29, 2019

; dual axle utility trailer; good implement
- 3 ph chopper; 1000 gal water tank; transfer

er: Honda Big Red three wheeler; Yamaha
TO generator, used once; 2 large truck axles
itions or deletions to the items consigned by

personalized cheque day of sale.
C with 3% premium.
t responsible for accidents day of sale.
, 519-776-7403 (home), 519-257-0577 (cell).
is, 519-687-2530 or 1-800-462-3561
w.jackmorrisauctions.com

CTION SALE

Auctions Inc

inery Auction Sale
v Hour Tractors
ptember 7 at 10:00 am

ette at 2357 Essex Cty Rd 42 approx. 1
Reserve. Farm is Rented. This is a very
machinery. Tractors: Int. model 3688
w by the Barrettes in 1984, has new AC
TO shafts, 2 hydr. outlets, good rubber,
tires, this tractor is sharp & clean; Case
9-38 rear tires, 3 hydr. outlets, two speed
very clean tractor; Duals: 18.4-38 T-rail
e PGB series 21' pull type cult w/wire
wheel disc, approx. 18' cut, new blades;
cker unit w/3 – 7' units, will be sold as
lel 540 plow w/Triple K mouldboards &
board; Wagons & Auger: three approx.
e smaller seed wagon; Westfield W70-46
is is the only consigned item in the sale
Case Int. 5100 – 21 run grain drill, hydr.
ndition; Other Items: Woods SB8-C – 3
r, like new; Bush Hog Squealer 6' – 3 ph
hydr. auger; new 12.5L-16 tire; table saw
ights for Super A tractor; milk can; hydr.
to tractor; plus a few misc. items. Grain
n bin w/aeration floor, fan & unloading
20 to run both fan & auger, purchaser
removes.
quipment & it will be a short sale.
r personalized cheque day of sale.
t responsible for accidents day of sale.
s & Jeanne Barrette, 519-728-2008
ris, 519-687-2530 or 1-800-462-3561
ww.jackmorrisauctions.com

NOTICE

Lakeshore
OUR COMMUNITIES. OUR HOME.

NOTICE OF PUBLIC INFORMATION CENTRE
CLASS ENVIRONMENTAL ASSESSMENT

DENIS ST. PIERRE WATER POLLUTION CONTROL PLANT EXPANSION

The Town of Lakeshore adopted its first comprehensive Water and Wastewater Master Plan in November 2008, and then an update of this Master Plan was undertaken and completed in 2017. The Master Plan and Update, which were prepared in accordance with Phases 1 and 2 of the Municipal Class Environmental Assessment, identified the need for additional treatment capacity within the Denis St. Pierre Wastewater System servicing the Belle River and Maidstone communities.

The Denis St. Pierre Wastewater System consists of sanitary sewers, pumping stations, the Denis St. Pierre Water Pollution Control Plant (WPCP) including an outfall discharging to Lake St. Clair. The expansion of the Denis St. Pierre WPCP was identified as the preferred solution to support the existing services areas and the anticipated future growth.

The Town of Lakeshore has commenced a study to investigate alternatives and develop a preferred design for the Denis St. Pierre WPCP Capacity Expansion. This project is being planned as a **Schedule C** project under the **Municipal Class Environmental Assessment** (Municipal Engineers Association, October 2000 as amended in 2007, 2011 & 2015).

The project is now in Phase 3 of the Class EA process which involves evaluation of alternative designs for the Denis St. Pierre WPCP Capacity Expansion leading to selection of a preferred design for this application.

A Public Consultation Centre is planned to provide further information to the public on the project and to receive input and comment from interested persons:

PUB C INFORMATION CENTRE
September 11, 2019
4:00 p.m. – 7:00 p.m.
Atlas Tube Centre – Lobby (447 Renaud Line Rd., Belle River N0R 1A0)

Following the public information centre, further comments are invited, for incorporation into the planning and design of this project, and will be received until October 18, 2019. For further information, please visit the Town of Lakeshore's website at www.lakeshore.ca or contact:

Mr. Kevin Girard, P.Eng.
Manager of Environmental Services
419 Notre Dame Street
Belle River, Ontario N0R 1A0
Phone: 519-728-1975 x 239
Fax: 519-728-9530
Email: kgirard@lakeshore.ca

or

Dr. Jian Li, P. Eng.
Stantec Consulting Ltd.
140 Ouellette Place Suite 100
Windsor, Ontario N8X 1L9
Phone: 519-966-2250 x 240
Fax: 519-966-5523
Email: jian.li@stantec.com

TOWN OF LAKESHORE
CLASS ENVIRONMENTAL ASSESSMENT
DENIS ST. PIERRE WATER POLLUTION CONTROL PLANT EXPANSION
PUBLIC INFORMATION CENTRE
Atlas Tube Centre
September 11, 2019 – 4:00 p.m. to 7:00 p.m.
SIGN-IN SHEET

No.	Name (Please Print)	Address	Telephone Number
1	WM ROSIER	1567 Oakwood Ave	5197276143
2	Emerson	"	"
3	Kelsey Santarossa	council	519.995.3223
4	Kirk Walstedt	"	519-999-9027
5	LEN JANISSE	COUNCIL	
6	Marco [illegible]	OCWA	
7	DAVE JUBENVILLE	OCWA	
8	JOHN KERR	Council	
9	Chris Nepszy	Essex	
10			
11			
12			

Stantec Consulting Ltd
100-140 Ouellette Place, Windsor ON N8X 1L9

September 10, 2019
File: 165620173

«Company»
«Address1»
«Address2»
«Address3»
«City», Ontario
«PostalCode»

Attention: **«FirstName»**
«Title»

Dear Sir/Madam:

Reference: **Denis St. Pierre Water Pollution Control Plant Expansion**
Class Environmental Assessment
Town of Lakeshore

The Town of Lakeshore adopted its first comprehensive Water and Wastewater Master Plan in November 2008, and then an update of this Master Plan was undertaken and completed in 2018. The Master Plan and Update, which were prepared in accordance with Phases 1 and 2 of the Municipal Class Environmental Assessment, identified the need for additional capacity within the Denis St. Pierre Wastewater System servicing the Belle River and Maidstone communities.

The Town of Lakeshore has commenced a study to investigate options and develop a preferred alternative for the Denis St. Pierre Wastewater System. This project is being planned as a **Schedule C** project under the **Municipal Class Environmental Assessment** (Municipal Engineers Association, October 2000 as amended in 2007, 2011 & 2015).

The Water and Wastewater Master Plan and Update were prepared in accordance with Phases 1 and 2 of the Class EA process. The preferred wastewater solution for servicing the Belle River and Maidstone areas is to expand the Denis St. Pierre Water Pollution Control Plant (WPCP).

The project is now in Phase 3 of the Class EA process which involves evaluation of alternative designs for the Denis St. Pierre WPCP expansion leading to selection of a preferred design for this application. Your agency is invited to submit comments on the *"Draft"* Environmental Study Report. In an effort to conserve paper and reduce printing costs, the report is being distributed in electronic format as a PDF file on the FTP site below. If you would prefer, a hard copy of the draft report will be provided on request.

Login Information

Browser link: https://projsftp.stantec.com
Login name: 165620173DENISSTPIERREWATERPOLLUTIONCONTROLPLANTEXPANSIONEASTUDY1044
Password: 4779676

A public information centre has been held on September 11, 2019 to provide information on this project and to solicit public input. Copies of the public information centre material are also available on the FTP site above.

Reference: Error! Reference source not found.

We would appreciate receiving any comments you care to offer on the draft report by October 18, 2019. Any comments or questions should be submitted to the following:

Mr. Kevin Girard, P.Eng.
Manager of Environmental Services
419 Notre Dame Street
Belle River, Ontario N0R 1A0
Phone: 519-728-1975 x 239
Fax: 519-728-9530
Email: kgirard@lakeshore.ca

Dr. Jian Li, P. Eng.
Stantec Consulting Ltd.
140 Ouellette Place Suite 100
Windsor, Ontario N8X 1L9
Phone: 519-966-2250 x 240
Fax: 519-966-5523
Email: jian.li@stantec.com

Sincerely,

STANTEC CONSULTING LTD.

Jian Li

Jian Li, Ph.D., P. Eng., PE
Project Manager
Phone: (519) 966-2250
Fax: (519) 966-5523
jian.li@stantec.com

Attachment: public information centre material

jcl w:\active\165620173\planning\notice of commencement\letter to mandatory contacts and review agencies.doc

Denis St. Pierre Water Pollution Control Plant Expansion

Class Environmental Assessment

Phase 3 Public Consultation

PUBLIC INFORMATION CENTRE

Wednesday, September 11, 2019
4:00 p.m.– 7:00 p.m.

Atlas Tube Centre – Lobby
447 Renaud Line Road
Lakeshore, Ontario

Prepared for:

The Town of Lakeshore

Prepared by:

Stantec Consulting Ltd.
Windsor, Ontario

165620173

September 11, 2019

BACKGROUND

The Town of Lakeshore adopted its first comprehensive Water and Wastewater Master Plan in November 2008, and then an update of this Master Plan was undertaken and completed in 2018. The Master Plan and Update, which were prepared in accordance with Phases 1 and 2 of the Municipal Class Environmental Assessment, identified the need for additional capacity within the Denis St. Pierre Wastewater System servicing the Belle River and Maidstone communities. The Denis St. Pierre Wastewater System consists of sanitary sewers, pumping stations, and the Denis St. Pierre Water Pollution Control Plant (WPCP) including an outfall discharging to Lake St. Clair.

There are pressures from residential and industrial development in the Belle River and Maidstone areas and to avoid a restriction to development, additional treatment capacity is required. The expansion of the Denis St. Pierre WPCP was identified as the preferred solution to support the existing services areas and the anticipated future growth.

CLASS ENVIRONMENTAL ASSESSMENT

The Town of Lakeshore has commenced a study to investigate alternatives and develop a preferred design for the Denis St. Pierre WPCP Expansion. This project is being planned as a **Schedule C** undertaking following the provisions of the **Municipal Class Environmental Assessment** document. The overall objective of this project is to identify a preferred solution and design that will satisfy wastewater servicing requirements for the anticipated future growth that is acceptable to the public and all concerned review agencies.

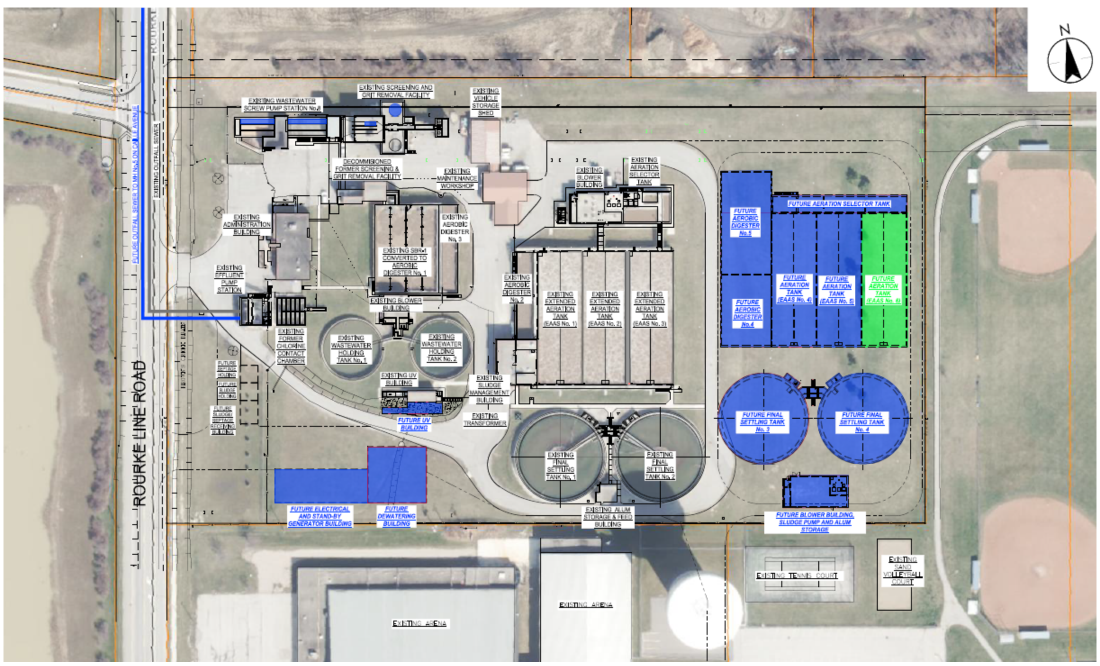
The Water and Wastewater Master Plan and Update were prepared in accordance with Phases 1 & 2 of the Class EA process, which identified the problem that needs to be addressed and consideration of alternative solutions leading to selection of the preferred solution. Through this process, the expansion of the Denis St. Pierre WPCP was identified as the preferred solution to meet future growth and development needs in the Belle River and Maidstone areas.

A draft Environmental Study Report has been prepared which presents a number of possible alternative designs for the preferred solution. The merits and disadvantages of these alternatives are discussed with the decision-making process being structured to select the design that minimizes undesirable impacts on the natural, social and economic environments. Through this evaluation process, a recommended design has been identified and is provided for consideration as the preferred design. The recommended design consists of the following main elements:

Stantec

- Add third screw pumps at the existing Maidstone Pumping Station No.8
- Add second fine screen and vortex grit tank in the existing Screening and Grit Removal Facility

- Add two new aeration tanks and final clarifiers
- Build new UV disinfection facility
- Construct new service building accommodating blowers, sludge pumps, and chemical feed and storage
- Add two new aerobic digesters
- Construct new centrifugal dewatering facility
- Construct new electrical and standby generator building
- Twinning of inland portion of outfall sewer along Rourke Line Road from the plant to Caille Avenue and enlarging outfall diffusers from 5” to 10”.



Copies of a draft study report have been distributed to mandatory contacts and review agencies. Feedback from review agencies and input gained through this public information centre will be included in the evaluation process to finalize selection of the preferred design.

FURTHER PLANNING

The Environmental Study Report will be finalized with modifications, as necessary, to reflect input from the public and review agencies. The completed Environmental Study Report will then be placed on the public record for a 30 day review period and notice of completion will be issued to review agencies, the public and the Ministry of the Environment, Conservation, and Parks Environmental Approvals Branch.

THANK YOU

Thank you for your interest in this project and attendance at this public information centre.

DENIS ST. PIERRE WATER POLLUTION CONTROL PLANT EXPANSION
CLASS ENVIORNMENTAL ASSESSMENT
PUBLIC INFORMATION CENTRE

You are invited to provide comments about the proposed alternative designs for the expansion of the Denis St. Pierre WPCP.

Copies of the Public Information Centre material are available on the FTP site below:

Login Information

Browser link: https://projsftp.stantec.com
Login name: 165620173DENISSTPIERREWATERPOLLUTIONCONTROLPLANTEXPANSIONEASTUDY1044
Password: 4779676

Hard copies of the report can be made available for review on request and is available at the Town of Lakeshore Town Hall at 419 Notre Dame St, Belle River. Input from this Public Information Centre and from review agencies will be included in the evaluation process to select the preferred design alternative and finalize the study report. Thereafter the Environmental Study Report will be placed on the public record for a 30 day review period and notice of completion will be issued to review agencies, the public and the Ministry of the Environment, Conservation, and Parks Environmental Approvals Branch.

Please return your completed questionnaire on or before October 18, 2019 to:

Stantec Consulting Ltd.
140 Ouellette Place, Suite 100
Windsor ON N8X 1L9
Attention: Dr. Jian Li, P. Eng.

COMMENTS OR CONCERNS: ______________________________

____

____

____

____

____

(Attach additional sheets if needed)

NAME ______________________________

ADDRESS ______________________________

TELEPHONE NO. (   ) ______________________________

FAX NO. (IF ANY) (   ) ______________________________

AFFILIATION OR GROUP (IF ANY) ______________________________

DATE ______________________________ SIGNATURE ______________________________

Stantec

Town of Lakeshore

Denis St. Pierre Water Pollution Control Plant Expansion

PUBLIC OPEN HOUSE

WELCOME

Municipal Class Environmental Assessment

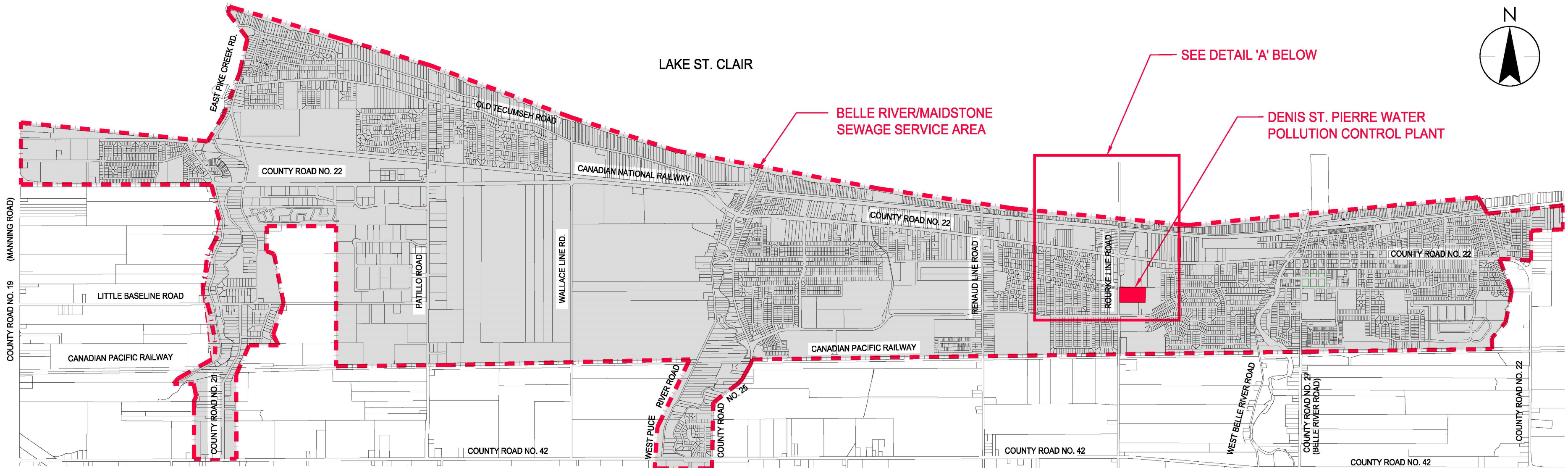
September 11, 2019
4:00pm -7:00pm

Study Overview

Purpose of this project is to select preferred design for the Denis St. Pierre Water Pollution Control Plant Expansion.

This Public Open House is to introduce the project, describe work completed to date, and obtain comments on the preferred design of the plant expansion.

Belle River and Maidstone Wastewater Servicing Area



DETAIL 'A'

Stantec

TOWN OF LAKESHORE
DENIS ST. PIERRE WATER POLLUTION CONTROL PLANT EXPANSION EA
WASTEWATER SERVICING AREA

PROJECT NO. 165620173

0 400 1200 2000m

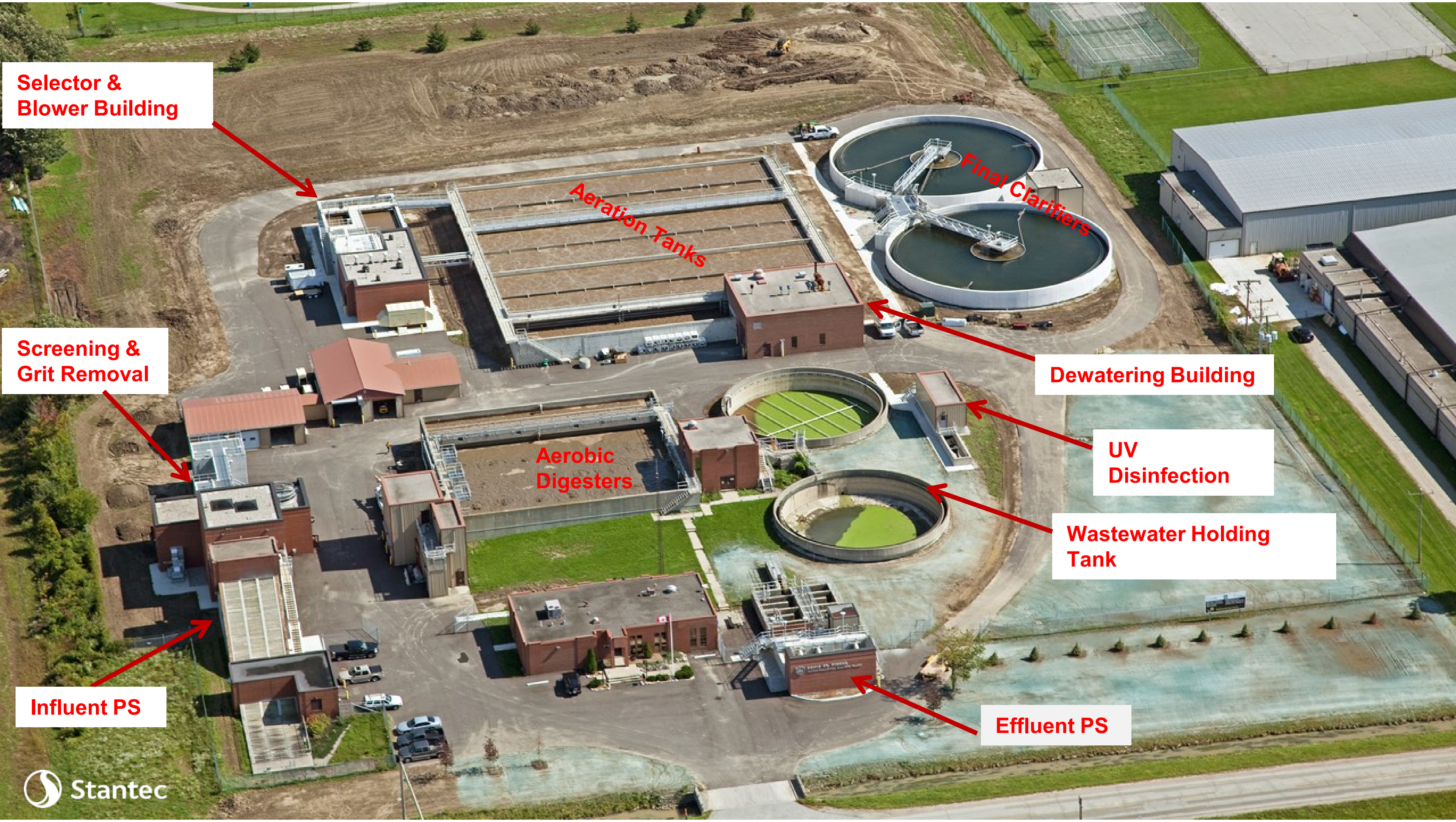
DRAWING NO.

FIGURE 1

Wastewater Servicing in Belle River and Maidstone Area

- The Belle River and Maidstone Area can be described as an urban community. It contains a mixture of residential, commercial and industrial developments.
- The Belle River community and Maidstone urban area are serviced by a sanitary sewage works system consisting of sanitary sewers, pumping stations, the Denis St. Pierre Water Pollution Control Plant(WPCP) and an outfall discharging to Lake St. Clair.
- The Belle River and Maidstone area are serviced by a gravity collection system with a series of lift stations conveying wastewater to the Denis St. Pierre WPCP for treatment.
- The Denis St. Pierre WPCP is located on Rourke Line Road south of County Road 22 and provides secondary level biological treatment.

Denis St. Pierre Water Pollution Control Plant



The treatment plant was designed for an average daily sewage flow of 14,500 m^3/d and a peak flow capacity of 35,069 m^3/d.

Historical Wastewater Flows to Denis St. Pierre WPCP (2010-2018)

Year	Daily Average Flow (m^3/d)	Daily Max Flow (m^3/d)	Annual Precipitation (mm)	Annual Average Lake Level (m)
2018	14,228	37,657	935	175.408
2017	13,332	35,872	1,014	175.281
2016	12,399	36,650	1,020	175.031
2015	11,887	-	981	175.139
2014	11,302	33,579	1,053	174.983
2013	9,646	25,677	1,148	174.747
2012	8,089	25,677	782	174.481
2011	13,819	33,966	1,568	174.895

- An average treated flow of 14,228 m^3/d was recorded for 2018, which is approximately 98% percent of the plant's rated capacity of 14,500 m^3/d.
- Lake level records obtained from 9044049 Windmill Point Station

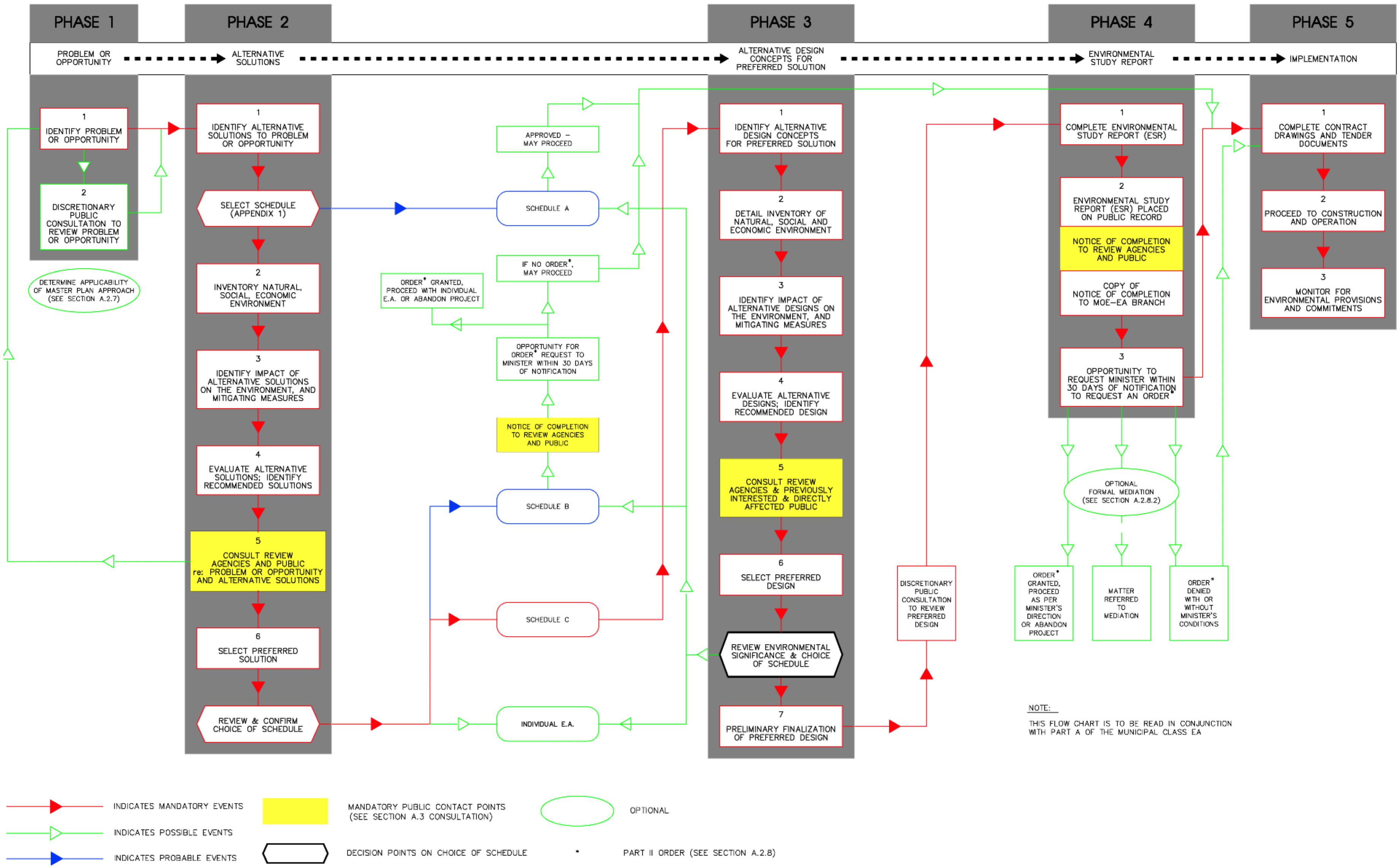
Projected Wastewater Flows to Denis St. Pierre WPCP

Daily Flow	Existing	20 Year Design	Ultimate Design
Average Daily Flow, m^3/d	14,500 (3.2 MIGD)	25,000 (5.5 MIGD)	30,000 (6.6 MIGD)
Maximum Dry Weather Flow, m^3/d	37,300 (8.2 MIGD)	64,000 (14.1 MIGD)	77,000 (16.9 MIGD)
Maximum Wet Weather Flow, m^3/d	72,100 (15.9 MIGD)	90,000 (19.9 MIGD)	108,000 (23.9 MIGD)

Problem Statement

- The existing capacity of the Denis St. Pierre WPCP is not adequate to accommodate the projected future flows from the Belle River and Maidstone wastewater service area.
- Additional wastewater treatment capacity required to support the existing service area and the anticipated future growth.
- Frequently experiences periods of high infiltration and inflow (I/I) entering sanitary sewer system during storm events. Capacity of existing sewers, pumping station and treatment plant unable to accommodate handle all wet weather flows during severe storm events.
- Failure to have adequate infrastructure in place may result in the inability to accommodate community growth.

OVERVIEW OF THE CLASS ENVIRONMENTAL ASSESSMENT PROCESS



KEY FEATURES OF THE CLASS EA PROCESS

The project is being conducted in accordance with the Class EA requirements for Schedule "C projects", which is to be approved subject to completion of Phase 1, 2, 3, 4 and 5 Class EA, including:

- *Phase 1 – Review and identify problem or opportunity*
- *Phase 2 – Alternative solutions to problem*
- *Phase 3 – Alternative design concepts for the preferred solution*
- *Phase 4 – Environmental Study Report*
- *Phase 5 – Implementation of the preferred design*

The Town of Lakeshore adopted its first comprehensive Water and Wastewater Master Plan in November 2008, and then an update of this Master Plan was undertaken and completed in 2018 in accordance with Phases 1 and 2 of the Class EA process.

The above Phases 1 and 2 were covered under Lakeshore Water and Wastewater Master Plan and Update.

Phase 1 and Phase 2 EA - Completed

The need for additional wastewater treatment capacity in the Belle River and Maidstone Area has been identified.

After consultation with review agencies and the public, the preferred solution was determined as follows

- ***Capacity expansion to the Denis St. Pierre WPCP***

Ongoing Phase 3 Class EA

- Review alternative designs for the Denis St. Pierre WPCP Capacity Expansion
- Select the preferred design
- Preferred design is one that satisfies wastewater collection and treatment criteria, minimizes undesirable impacts on the natural, social and economic environment, and is acceptable to the public and regulatory agencies

This open house is held as part of Phase 3 Class EA.

DESIGN ALTERNATIVES – Wastewater Treatment

WASTEWATER TREATMENT PROCESSES CONSIDERED

Activated Sludge Systems

- *Conventional Activated Sludge (CAS)*
- *Extended Aeration Activated Sludge (EAAS)*
- *Sequencing Batch Reactor (SBR)*

Attached Growth Systems

- *Trickling Filter/Solids Contact (TF/SC)*
- *Rotating Biological Contactor (RBC)*
- *Biological Aerated Filter (BAF)*

Membrane Bioreactors (MBR)

PREFERRED WASTEWATER TREATMENT PROCESS

Selected Wastewater Treatment Process

- *The existing site has difficulty accommodating any of alternatives that require primary settling tanks.*
- *EAAS and the SBR treatment processes do not require primary settling tanks are particularly well suited to the existing site.*
- *Town of Lakeshore has experience with both the EAAS and the SBR treatment processes. The Denis St. Pierre WPCP was upgraded in 2008 and, at the same time, the treatment process was converted from an SBR to an EAAS system.*
- *To date, operating experience with the EAAS system has been very good and there is definite merit in utilizing the same process for the plant expansion.*
- *By using the same process at the existing plant, operator training would be confined to a single process and assignment of operating staff to any treatment facilities would be simplified.*

The preferred design is EAAS wastewater treatment process

BIOSOLIDS MANAGEMENT
Introduction

- *EASS processes produce excess solids known as waste activated sludge*
- *Biosolids management deals with all aspects of handling the waste sludge stream including storage, dewatering or thickening, stabilization and ultimate disposal*
- *Terms “sludge“ and “biosolids” often used interchangeably, although biosolids is more commonly used to describe sludge that has undergone treatment to make it suitable for land application*

BIOSOLIDS MANAGEMENT ALTERNATIVES

ALTERNATIVES CONSIDERED

1. *Biosolids Thickening including gravity thickening, gravity belt thickeners, and rotary drum thickeners*

2. *Biosolids Stabilization including anaerobic digestion, aerobic digestion, lime stabilization, composting and pelletization*

3. *Biosolids Dewatering including belt presses, rotary presses, and screw presses, and centrifuges*

4. *Biosolids Disposal including incineration, re-sale or giveaway, landfilling, and farmland application*

PREFERRED BIOSOLIDS MANAGEMENT

Preferred Biosolids Management System is

Aerobic digestion → centrifugal dewatering → Land application

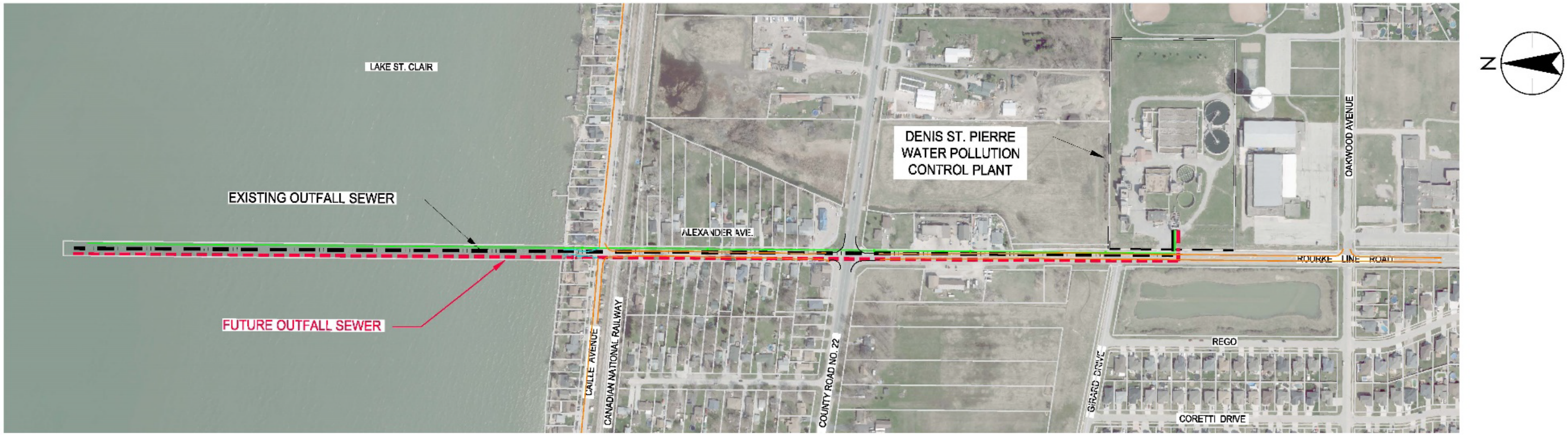
It is recommended as the preferred design for biosolids management because it is a proven process and has been used successfully at the existing plant for many years.

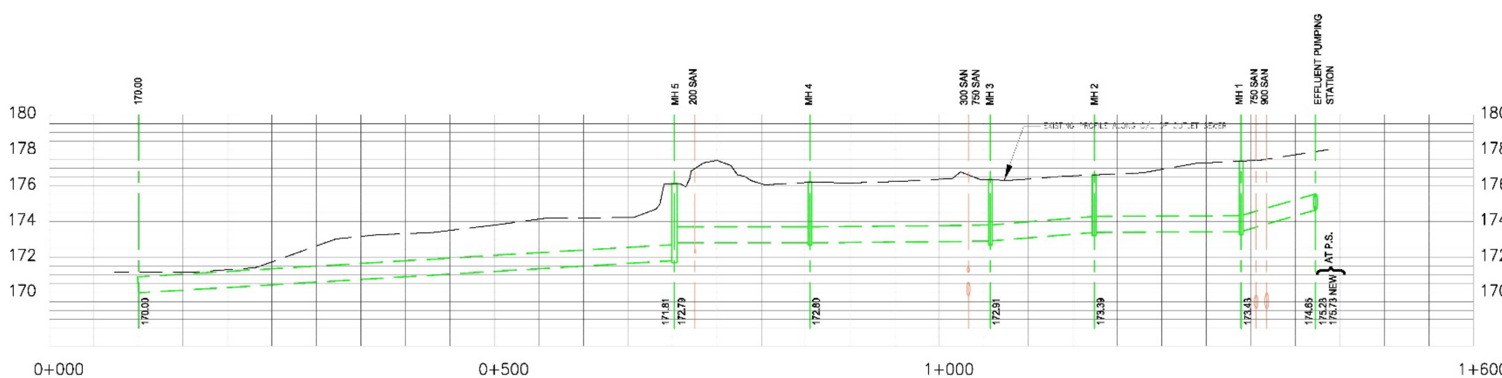
Proposed Plant Expansion for Biosolids Management

- *Add aerobic digestion*
- *Construct new centrifugal dewatering facilities*
- *Use of existing sludge cake storage/transfer site*
- *Land Application*

DESIGN ALTERNATIVES - OUTFALL SEWER

Alternative 1 - Twining of Entire Outfall Sewer



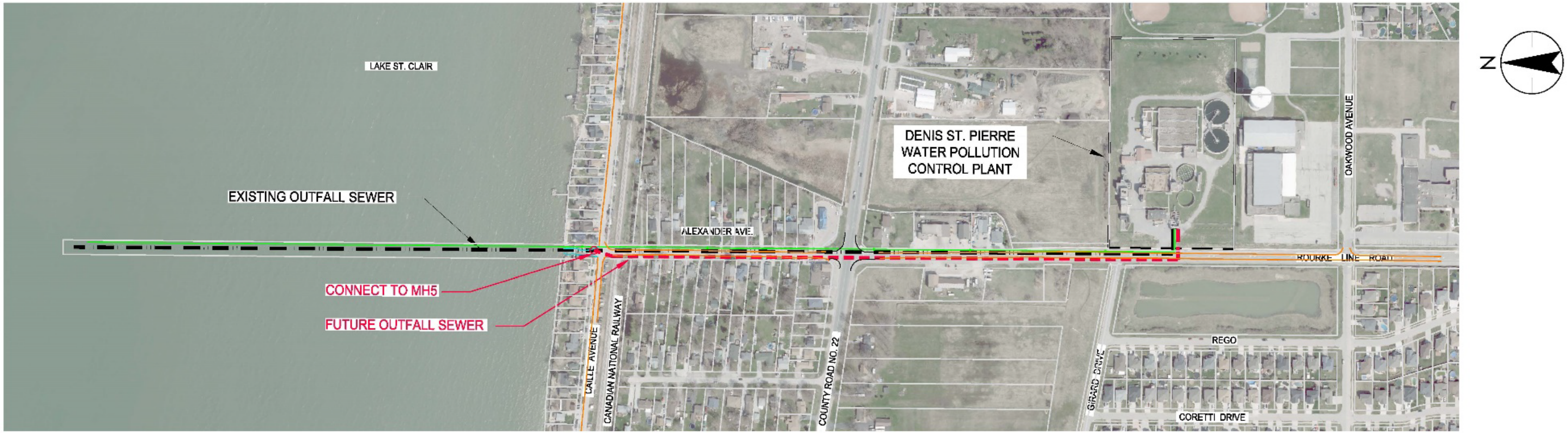


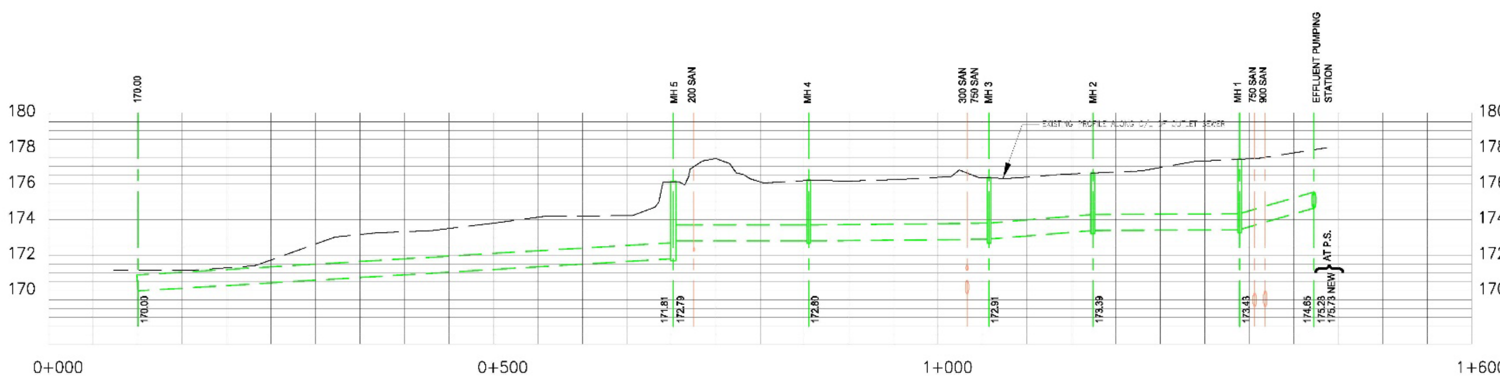
- Costly and complex outfall construction into the lake

Not carried forward for detailed consideration

DESIGN ALTERNATIVES - OUTFALL SEWER

Alternative 2 – Twining Inland Portion of Outfall Sewer and Enlarging Diffusers from 5" to 10"





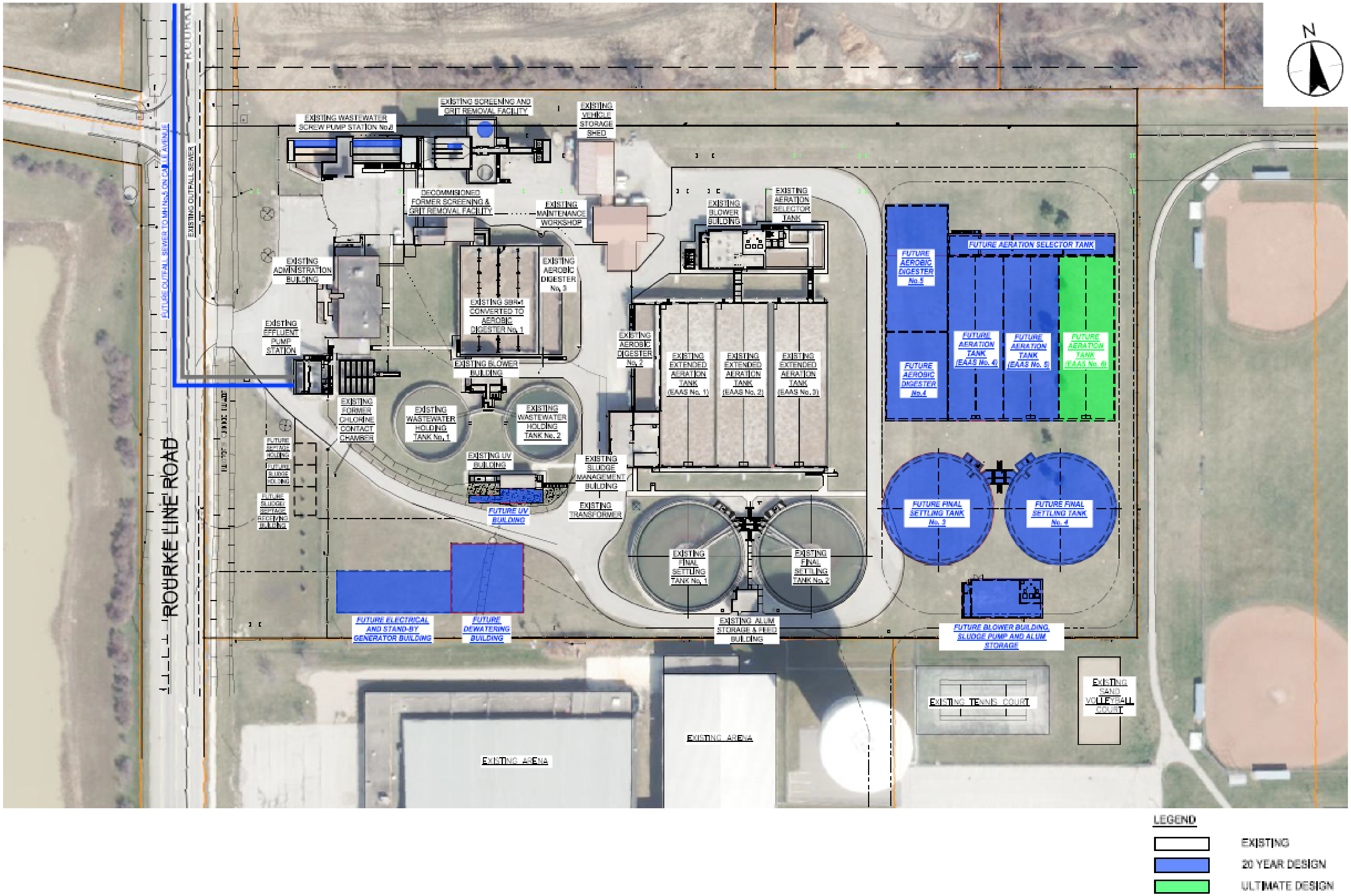
- Suitable for ultimate flow condition

This alternative recommended as the preferred design

Summary of Recommended Design for Plant Expansion

- Increase pumping capacity of the existing Maidstone Pumping Station No.8
- Add second fine screen and vortex grit tank in the existing Screening and Grit Removal Facility
- Add two new aeration tanks and final clarifiers
- Build new UV disinfection facility
- Construct new service building accommodating blowers, sludge pumps, and chemical feed and storage
- Add two new aerobic digesters
- Construct new centrifugal dewatering facility
- Construct new electrical and standby generator building
- Twinning of inland portion of outfall sewer along Rourke Line Road from the Denis St. Pierre WPCP to Caille Avenue.

Summary of Recommended Plant Expansion



OPINION OF PROBABLE COST

Description	Cost
Inlet Works and Grit Building	$1,500,000
Extended Aeration Tanks and Blower Facility	$5,500,000
Final Settling Tanks and Alum Storage/Feed Facility	$4,800,000
UV disinfection	$1,200,000
Outfall	$3,500,000
Aerobic Digester	$1,500,000
Dewatering Building	$2,500,000
Electrical and Standby Generator Building	$1,200,000
Sub-total	$21,700,000
Contingency 10%	$2,170,000
Engineering Allowance 15%	$3,255,000
TOTAL	**$27,125,000**

Future Class EA Work

- Draft Phase 3 Environmental Study Report (ESR) has been distributed to mandatory and discretionary contacts and agencies for review
- Open house being held to present information and solicit public input on recommended design
- Complete the ESR including modifications as necessary to reflect input from the public and review agencies
- Present ESR to Town Council for final approval and adoption
- Place ESR on public record and issue notice of completion

Class Environmental Assessment - Schedule C
Central Box Study Area, City of Windsor
Stakeholder Contact List
August 7, 2014

Title	First Name	Surname	Job Title	Organization	Address	City/Prov	Postal Code
Conservation Authorities							
Mr.	Richard	Wyma	General Manager	Essex Region Conservation Authority	360 Fairview Avenue West, Suite 311	Essex, ON	N8M 1Y6
Mr.	Tim	Byrne	Director, Watershed Management Services	Essex Region Conservation Authority	360 Fairview Avenue West, Suite 311	Essex, ON	N8M 1Y6
Mr.	Michael	Nelson	Watershed Planner	Essex Region Conservation Authority	360 Fairview Avenue West, Suite 311	Essex, ON	N8M 1Y6
Dr.	Katie	Stammler	Water Quality Scientist/Source Water Protection Project Manager	Essex Region Conservation Authority	360 Fairview Avenue West, Suite 311	Essex, ON	N8M 1Y6
Ms.	Corinne	Chiasson	Resource Planner	Essex Region Conservation Authority	360 Fairview Avenue West, Suite 311	Essex, ON	N8M 1Y6
Mr.	Jason	Wintermute	Water Management Supervisor	Lower Thames Valley Conservation Authority	100 Thames Street	Chatham, ON	N7L 2Y8
Ms.	Claire	Sanders	RAP Coordinator	Detroit River Canadian Cleanup	360 Fairview Avenue West, Suite 311	Windsor, ON	N8M 1Y6
Ms.	Averil	Parent	Coordinator	Windsor Essex Environment Committee	c/o 350 City Hall Square West	Windsor, ON	N9A 6S1
Local Public Services							
Chief	Bruce	Krauter	Chief	Essex-Windsor EMS	360 Fairview Ave West	Essex, ON	N8M 1Y6
Mr.	Chris	Grant	Deputy Chief	Essex-Windsor EMS	920 Mercer Street	Windsor, ON	N9A 1N6
Mr.	Barry	Horrobin	Director of Planning & Physical Resources	Windsor Police Service	150 Goyeau Street, PO Box 60	Windsor, ON	N9A 6J5
Fire Chief	Stephen	Laforet	Fire Chief	Windsor Fire and Rescue	815 Goyeau Street	Windsor, ON	N9A 1H7
Mr.	Doug	Gooding	Deputy Chief of Operations	Windsor Fire and Rescue	815 Goyeau Street	Windsor, ON	N9A 1H7
Mr.	Beth	Krauter		Central Ambulance Communications Centre	4510 Rhodes Drive, Suite 320	Windsor, ON	N8W 5K5
Sgt.	Rick	Tonial	Detachment Commander	Ontario Provincial Police	963 Lesperance Road	Tecumseh, ON	N8N 1W9
Staff Sgt	Ed	Marocko		Ontario Provincial Police	1219 Hicks Road, PO Box 910	Essex, ON	N8M 2Y2
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Sir/Madam				Municipal Property Assessment Corporation	1695 Manning Road, Unit 195	Tecumseh, ON	N8N 2L9
Mr.	Rakesh	Naidu	President & CEO	Windsor-Essex Regional Chamber of Commerce	2575 Ouellette Place	Windsor, ON	N8X 1L9
Mr.	Derek	Coronardo	Coordinator	Citizens Environmental Alliance of Southwestern Ontario	1950 Ottawa Street	Windsor, ON	N8Y 1R7
Ms.	Lisa	Tulen	President	Citizens Environmental Alliance of Southwestern Ontario	1950 Ottawa Street	Windsor, ON	N8Y 1R7
Mr.	Steve	Marks	Vice-President	Essex County Field Naturalist's Club	C/O Ojibway Nature Centre 5200 Matchette Road	Windsor, ON	N9C 4E8
Mr.	Paul	Pratt	President	Essex County Field Naturalist's Club	5200 Matchette Road	Windsor, ON	N9C 4E8

Title	First Name	Surname	Job Title	Organization	Address	City/Prov	Postal Code
Ms.	Susan	Budden	Business Development Manager	Ontario Clean Water Agency	1 Yonge Street, Suite 1700	Toronto, Ontario	M5E 1E5
Mr.	Rob	Dobos	Head	Environment Canada, Ontario Region	867 Lakeshore Road, P.O. Box 5050	Burlington, ON	L7R 4A6
Mr.	John	Shaw	Manager	Great Lakes Sustainability Fund	867 Lakeshore Road, PO Box 5050	Burlington, ON	L7R 4A6
Ms.	Sandra	Kok	Acting Manager	Great Lakes Sustainability Fund	867 Lakeshore Road, PO Box 5050	Burlington, ON	L7R 4A6
	Superintendent			Canadian Coast Guard c/o ASI Group Ltd	120 Seaway Road	Sarnia, ON	N7T 8A5
Ms.	Celina	Russell		Fisheries and Oceans Canada	520 Exmouth Street	Sarnia, ON	N7T 8B1
Ms.	Sara	Eddy	Fish Habitat Biologist	Fisheries and Oceans Canada - Central and Arctic Region	867 Lakeshore Road, PO Box 5050	Burlington, ON	L7R 4A6
Ms.	Suzanne	Shea		Transport Canada Marine	100 Front Street South	Sarnia, ON	N7T 2M4
Mr.	Steven	C Salmons	President & CEO	Windsor Port Authority	3190 Sandwich Street	Windsor, ON	N9C 1A6
Mr.	Vince	Diano	Manager of Procurement	Windsor-Detroit Bridge Authority	100 Ouellette Ave, Suite 400	Windsor, ON	N9A 6T3
Mr.	Darren	Winger	Regional Advisor	Ministry of Citizenship, Immigration & International Trade / Ministry of Tourism, Culture & Sport	221 Mill Street	Windsor, ON	N9C 2R1
Ms.	Katherine	Kirzati	Heritage Planner	Ministry of Tourism, Culture and Sport	401 Bay Street, Suite 1700	Toronto, ON	M7A 0A7
Ms.	Karla	Barboza	Team Lead, Heritage	Ministry of Tourism, Culture and Sport	401 Bay Street, Suite 1700	Toronto, ON	M7A 0A7
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Mr.	Craig	Newton	Regional Environnmental Planner / Regional EA Coordinator	Ministry of the Environment, Conservation and Parks	733 Exert Road	London , ON	N6E 1L3
Mr.	Shawn	Howard	Supervisor	Ministry of the Environment, Conservation and Parks	4510 Rhodes Drive, Unit 620	Windsor, ON	N8W 5K5
Ms.	Emily	Awad	Provincial Officer	Ministry of the Environment, Conservation and Parks	4510 Rhodes Drive, Unit 620	Windsor, ON	N8W 5K5
Mr.	Ken	Yaraskavitch	Supervisor	Ontario Ministry of Natural Resources	870 Richmond Street, P.O. Box 910	Chatham, ON	N7M 5L3
Ms.	Sherry	Pineo	Resources Management Supervisor	Ministry of Natural Resources and Forestry	615 John Street North	Aylmer, ON	N5H 2S8
Ms.	Amanda	McCloskey	District Planner	Ministry of Natural Resources and Forestry	615 John Street North	Aylmer, ON	N5H 2S8
Mr.	Erick	Boyd	Manager - Community Planning and Development	Ministry of Municipal Affairs and Housing	659 Exeter Road, 2nd Floor	London, ON	N6E 1L3
Mr.	David	Stubbs	Planner - Community Planning and Development	Ministry of Municipal Affairs and Housing	659 Exeter Road, 2nd Floor	London, ON	N6E 1L3

Title	First Name	Surname	Job Title	Organization	Address	City/Prov	Postal Code
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Ms.	Jodie	Lucente	Corridor Management Planner	Ontario Ministry of Transportation	659 Exeter Road	London, ON	N6E 1L3
Ms.	Cathy	Giesbrecht	Head - Environmental	Ontario Ministry of Transportation	659 Exeter Road	London, ON	N6E 1L3
Mr.	Martin	Favell	Planning & Design Head	Ontario Ministry of Transportation	659 Exeter Road	London, Ontario	N6E 1L3
Ms.	Joanne	Brown	Regional Issues and Integration Manager	Ministry of Community and Social Services, West Region Office	P.O. Box 5217	London, ON	N6A 5R1
Local Municipalities							
Mr.	Kevin	Girard	Manager of Environmental Services	Town of Lakeshore	419 Notre Dame Street	Belle River, ON	N0R 1A0
Mrs.	Jane	Mustac	County Engineer	County of Essex	360 Fairview Avenue West	Essex, Ontario	N8M 1Y6
Mr.	Bill	King	County Planning Department	County of Essex	360 Fairview Avenue West	Essex, Ontario	N8M 1Y6
Mr.	Peter	Marra	Manager of Water and Wastewater	Town of LaSalle	5950 Malden Road	LaSalle, Ontario	N9H 1S4
Ms.	Antonietta	Giofu	Director of Engineering & Public Works	Town of Amherstburg	271 Sandwich Street South	Amherstburg, ON	N9V 2A5
Mr.	Phil	Bartnik	Director Public Works & Environmental Services	Town of Tecumseh	917 Lesperance Road	Tecumseh, ON	N8N 1W9
Mr.	Peter	Neufeld	Chief Administravie Officer	Municipality of Leamington	111 Erie Street North	Leamington, ON	N8H 2Z9
Mr.	Chris	Nepszy	Chief Administravie Officer	Town of Essex	33 Talbot Street South	Essex, ON	N8M 1A8
Mr.	Onorio	Colucci	Chief Administravie Officer	City of Windsor	350 City Hall Square West	Windsor, ON	N9A 6S1
Ms.	Peggy	Van Mierlo-West	Chief Administravie Officer	Town of Kingsville	2021 Division Road North	Kingsville, ON	N9Y 2Y9
Mr.	Don	Shropshire	Chief Administravie Officer	Municpality of Chatham Ken	315 King Street West P.O. Box 640	Chatham, ON	N7M 5K8
Mr.	Tim	Sunderland	General Manager	Chatham-Kent Public Utilities	325 Grand Ave E	Chatham, ON	N7L 1W9
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Mr.	Stephen	Fields	Communications Coordinator	Windsor Essex Catholic District School Board	1325 California Ave	Windsor, ON	N9B 3Y6
Ms.	Tracy	Ramsey	Essex M.P.	Consituency Office	316 Talbot Street N, Unit 6	Essex, ON	N8M 2E1
Mr.	Phil	Wong	Manager of Environmental Health	Windsor Essex County Health Unit	1005 Ouellette Ave	Windsor, ON	N9A 4J8

Title	First Name	Surname	Job Title	Organization	Address	City/Prov	Postal Code
Utilities							
Mr.	Chris	Manzon	Director, Engineering	ENWIN Utilities	4545 Rhodes Drive , PO Box 1625 Stn A	Windsor, ON	N8W 5T1
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Mr.	Clifford	Trepanier		Bell Canada	1149 Goyeau Street, PO Box 1601	Windsor, ON	N9A 1H9
Mr.	Tyson	Fuerth		Bell Canada	1149 Goyeau Street, PO Box 1601	Windsor, ON	N9A 1H9
Mr.	Bill	Sorrell		Cogeco Cable Services	2225 Dougall Avenue	Windsor, ON	N8X 5A7
				Essex Terminal Railway Company	1601 Lincoln Road	Windsor, ON	N8Y 2J3
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Mr.	Paul	Dockrill		Hydro One	P.O. Box 4300	Markham, ON	L3R 5Z5
Ms.	Jenny	Seo		Hydro One	483 Bay Street, 13th Floor North Tower	Toronto, ON	M5G 2P5
Mr.	Rodney	Bouchard	General Manager	Union Water Supply System Joint Board Management	1615 Union Ave P.O. Box 359	Ruthvan, ON	N0P 2G0
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Ms.	Amber	New	Director, Business Development	Plains Midstream	Box 7277	Windsor, ON	N9C 0C4
Mr.	Raymond	Tracey	President & CEO	Essex Power Corporation	2199 Blackacre Dr. Suite 2	Oldcastle, ON	N0R 1L0
Mr.	Michael	Audet	Chief Executive Officer	ELK Energy Inc	172 Forest Ave	Essex, ON	N8M 3E4
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Ms.	Leslie	Brewer-Palhazi		Ministry of Aboriginal Affairs	9th Floor, 160 Bloor Street East	Toronto, ON	M7A 2E6
Ms.	Allison	Berman	Regional Subject Expert	Aboriginal Affairs and Northern Development Canada	10 Wellington St	Gatineau, QC	K1A OH4
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Ms.	Johnson	Ashley		Ministry of Aboriginal Affairs	9th Floor, 160 Bloor Street East	Toronto, ON	M7A 2E6
Ms.	Jennifer	Whiteye	Executive Director	Southern First Nations Secretariat	22361 Austin Line	Bothwell, ON	N0P 1L0
Ms.	Leea	Litzgus	Associate Regional Director	Indigenous & Northern Affairs Canada, Ontario Region	25 St Clair Ave East, 8th Floor	Toronto, ON	M4T 1M2
First Nation Communities/Métis Groups							
Mr.	Dean	Jacobs	Heritage Centre Director	Walpole Island First Nation / Bkejwanong Territory	R.R. #3	Wallaceburg, ON	N8A 4K9

Title	First Name	Surname	Job Title	Organization	Address	City/Prov	Postal Code
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Ms.	Janet	MacBeth	Project Review Coordinator	Walpole Island First Nation / Bkejwanong Territory	117 Tahgahoning Road,R.R. #3	Wallaceburg, ON	N8A 4K9
Chief	Mary	Duckworth	Chief	Caldwell First Nation	14 Orange Street	Leamington, ON	N8H 1P5
Ms.	Nikki	Orosz	Acting Director of Operations	Caldwell First Nation	14 Orange Street	Leamington, ON	N8H 1P5
Chief	Chris	Plain	Chief	Aamjiwnaang First Nation	978 Tashmoo Avenue	Sarnia, ON	N7T 7H5
Ms.	Sharilyn	Johnston	Environmental Coordinator	Aamjiwnaang First Nation	978 Tashmoo Avenue	Sarnia, ON	N7T 7H5
Ms.	Christine	James	Environment Worker	Aamjiwnaang First Nation	978 Tashmoo Avenue	Sarnia, ON	N7T 7H5
Chief	Denise	Stonefish	Chief	Moravian of the Thames (Delaware Nation)	14760 School House Line, RR 3	Thamesville, ON	N0P 2K0
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Chief	Jason	Henry	Chief	Chippewas of Kettle & Stony Point First Nation	6247 Indian Lane, RR#2	Forest, ON	N0N 1J1
Ms.	Valerie	George	Consultation Coordinator	Chippewas of Kettle & Stony Point First Nation	6247 Indian Lane, RR#2	Forest, ON	N0N 1J1
Chief	Henry	Myeengun	Chief	Chippewas of the Thames First Nation	320 Chippewa Road	Muncey, ON	N0L 1Y0
Ms.	Kelly	Riley	Acting Director	Chippewas of the Thames First Nation	320 Chippewa Road	Muncey, ON	N0L 1Y0
Ms.	Rochelle	Smith	Consultation Coordinator	Chippewas of the Thames First Nation	320 Chippewa Road	Muncey, ON	N0L 1Y0
Chief	Jessica	Hill	Chief	Onelda Nation of the Thames ONYOTA'A:KA	2212 Elm Avenue	Southwold, ON	N0L 2G0
Ms.	Brandon	Doxtator	Environment Coordinator	Onelda Nation of the Thames ONYOTA'A:KA	2212 Elm Avenue	Southwold, ON	N0L 2G0
Other Stakeholders							
				CN Rail Regional Engineering Services	1 Administration Road P.O. Box 1000	Concord, ON	L4K 1B9
				CN Rail Support Real Estate Group	1 Administration Road P.O. Box 1000	Concord, ON	L4K 1B9
Mr.	Raymond	Beshro		CN Rail McMillan Administration Road	1 Administration Road, 1st Floor	Concord, ON	L4K 1B9
Ms.	Josie	Tomei		C.P. Limited Railway Real Estate & Facility Management	800- 1290 Central Parkway	Mississauga, ON	L5C 4R3
	K.C.	Rose	Director	VIA Rail Canada	50 Drummond Street, Building C	Toronto, ON	M8V 4B5
Mr.	Henry	Bustard	President	Carleton Trail Management Inc	#1, 1715 - 27th Avenue N.E.	Calgary, AB	T2E 7E1
Mr.	Hilary	Payne	Development Coordination	Hilary G Payne & Associates	2985 Dougall Avenue	Windsor, ON	N9E 1S1
			Att: Circulations Intake, Planning & Design	MMM Group Limited	100 Commerce Valley Drive West	Thornhill, ON	L3T 0A1

Title	First Name	Surname	Job Title	Organization	Address	City/Prov	Postal Code
Mr.	Carmen	Starnichuk		Tecumseh Letter Carrier Depot	11910 Tecumseh Road East	Tecumseh, ON	N8N 1M0
				TSSA Intake & Licensing	3300 Bloor Street West	Toronto, ON	M8X 2X4
				Windsor-Essex Family Network & Resource Centre	7025 Enterprise Way	Windsor, ON	N8T 3N6
Mr.	Bruno	DeSando		Canada Post Delivery Planning	955 Highbury Aveneu	London, ON	N5Y 1A3
Other Stakeholders							
Mr.	Jeff	Nawalany		Orion Homes Inc	5848 Malden Road Suite 306	LaSalle, ON	N9H 04A
Mr.	Mario	Piroli		Piroli Construction	3850 Dougall Ave, Unit 10	Windsor, ON	N9G 1X2
Mr.	Tim / Ray	Belanger		Ray Belanger Builders Ltd	536 Brighton Road	Tecumseh, ON	N9N 2L6
Mr.	Ralph	Meo		Seven Lakes Homes Ltd./Meo & Associates Inc	Suite 200, 3600 Seven Lakes Drive	LaSalle, ON	N9H 0E5
				Silver Spring construction	7865 Howard Ave.	McGregor, ON	N0R 1J0
Mr.	Tim	McFarlane		T. McFarlane Builders Ltd	1054 Mole	Essex, ON	N8M 2X5
Mr.	Gino	Piccioni		Timberland General Contractors	6224 Wales Crt.	Windsor, ON	N9J 3R7
Mr.	Trevor			TMC Construction	63 Given Road	Chatham, ON	N7L 0C7
Mr.	Brian	Towsley		Towsley Construction Co Inc	2090 Fasan Drive	Old Castle, ON	N0R 1L0
				Tri-World Development	3235 Electricity Drive	Windsor, ON	N8W 5J1
Mr.	Steve	Valente		Valente Construction	25 Amy Croft Drive, Unit 23B	Tecumseh, ON	N9K 1C7
Mr.	Peter	Valente		Valente Real Estate & Development	2985 Dougall Ave	Windsor, ON	N9E 1S1
Mr.	Bill	Maggio		Vanderbilt Homes Ltd	1731 Wyandotte Street East	Windsor, ON	N8Y 1C9
Mr.	Vince	Russo		Affinity Custom Homes	3154 Troup Crescent	Windsor, ON	N8R 0A3
Mr.	Peirre	Amine		Amine Construction Ltd	1051 Chelsea Park Way	Belle River, ON	N0R 1A0
Mr.	Dino	Fantin		Amico Design Build Inc	2199 Blackacre Drive	Old Castle, ON	N0R 1L0
Mr.	Louis			Archambault Contracting	5095 Tecumseh Road	Pointe aux Roches, ON	N0R 1N0
Mr.	Danny	Azar		Azar Homes	1126 Lesperance Road	Tecumseh, ON	N8N 1X2
Ms.	Annalisa	McCarthy		Bart DiGiovanni Construction Ltd	2217 Walker Road	McGregor, ON	N0R 1J0
Mr.	Ben	Klundert		BK Cornerstone	13405 Desro Drive	Tecumseh, ON	N8N 2L9
Mr.	Ted	Bachynski		Bachynski Builders	1061 County Rd 46	Woodslee, ON	N0R 1V0
Mr.	Sam	Jraige		Bayshide Homes Ltd	20 Division Rd N RR 3	Cottam, ON	N0R 1B0
Mr.	Jeff			Boy Construction	432 W Puce Road	Belle River, ON	N0R 1A0
Ms.	Tammy			Brady Homes	339 County Road 34	Essex, ON	N8M 2X5
Mr.	Brian	Klundert		Brian Klundert Builders Ltd	1617 County Rd 46	Woodslee, ON	N0R 1V0
Mr.	Scott			Brian Spakres & Son Ltd	56 Bolohan Dr	Tilbury, ON	N0P 2L0
Mr.	Brian	Sterritt		Brimar Homes Ltd	1616 Chornoby Cres	Tecumseh, ON	N8N 4W3
Mr.	Don			Brouillette Builders	1553 Lakeshore Rd 123	Belle River, ON	N0R 1A0

Title	First Name	Surname	Job Title	Organization	Address	City/Prov	Postal Code
Ms.	Nicole	Ciarrocchi		Bungalow Group	3409 McKay Ave	Windsor, ON	N9E 2R8
Mr.	Dan	Caster		Caster Custom Homes	13401 Desro Dr	Tecumseh, ON	N8N 2L9
	Mark			Cedar Hill Homes	11500 Tecumseh Rd E	Windsor, ON	N8N 5G6
Mr.	Chris	King		Chris King & Sons Construction	1675 Division Rd North	Kingsville, ON	N9Y 2H1
Ms.	Patti	Fraize		Coco Developments	485 Little Baseline Rd	Tecumseh, ON	N8N 2L9
Mr.	Dan			Elite Construction	2005 Candlewood Dr	Tecumseh, ON	N9K 0A3
				Everjonge Homes	782 W Belle River Rd	Belle River, ON	N0R 1A0
Mr.	John	Evola		Evola Builders	2165 Suzanne St	Windsor, ON	N9H 2L4
Mr.	Steve	Shore		Fernwood Builders	1558 County Rd 31	Saint Joachim, ON	N0R 1S0
Mr.	Ezio	Tartaro		Gintar Contractors Ltd	820 Erie Street East	Windsor, ON	N9A 3Y4
Mr.	Joe	Hadi		Hadi Construction	7135 Malden Road	LaSalle, ON	N9J 2T8
Mr.	John			Hanna Homes	34 Carter Ave	Leamington, ON	N8H 5C9
Mr.	Jeff	Rivest		Homes of Integrity	262 Redwood, SS6	Belle River, ON	N0R 1A0
Ms.	Jeannette	Sylvestre		James Sylvestre Ent.	1865 Manning Road	Tecumseh, ON	N8N 2L9
Mr.	Joe	Rauti		J. Rauti Custom Homes	1290 Monty St	Windsor, ON	N9J 3S2
Mr.	Mo	Kolody		Kolody Contracting	424 Old Tecumseh Road	Windsor, ON	N8N 3S8
Mr.	Sam			Lakepoint Homes	1865 Manning Road	Tecumseh, ON	N8N 2L9
Mr.	Anthony	Lapico		Lapico Homes	2895 Normandy Street	LaSalle, ON	N9H 1C8
Mr.	Bruno			Maple Leaf Homes Ltd	P.O. Box 332	Emeryville, ON	N0R 1C0
Ms.	Mary	Morabito		Marpasco Homes	2503 Buttery Street	Windsor, ON	N9E 4L9
Ms.	Laura	Fanelli		Mastercraft Homes Windsor (2011) Inc	3199 Dougall Ave	Windsor, ON	N9E 1S5
Mr.	Jack	Moceri		Moceri, Jack & Sons	11254 Tecumseh Road E	Windsor, ON	N8R 1A8
Mr.	Tom	Jraiche		New Millennium Homes	33 Princess Street	Leamington, ON	N8H 5C5
Mr.	Joe	Noah		Noah Homes	950 Seacliff Dr	Kingsville, ON	N9Y 2K9
Mr.	Norbert	Bolger		Nor-Built Construction	20 Ranaud Street	Amherstburg, ON	N9V 4B1

Li, Jian

From: Li, Jian
Sent: Wednesday, February 5, 2020 3:51 PM
To: Slattery, Barbara (MECP); Munro, Alison (MECP)
Cc: Awad, Emily (MECP); Kevin Girard (kgirard@lakeshore.ca); ncavacas@lakeshore.ca
Subject: RE: Draft ESR Report for Denis St. Pierre WPCP Expansion Class EA - Town of Lakeshore - Effluent Criteria/Assimilative Capacity Study

Hi Barb,

Thank you very much for the quick response.

As per your email below received earlier this afternoon, we'll proceed with completing the EA for the capacity expansion at the Denis St. Pierre WPCP on the basis of the following limits and objectives for effluent quality:

- An effluent discharge limit of 0.5 mg/L TP, and an effluent objective of 0.4 mg/L TP;
- Effluent discharge limits and objectives for all other effluent parameters, which include cBOD5, TSS, Total Ammonia Nitrogen, E. coli and pH, are in keeping with previously approved limits and objectives from the existing plant
- The loading limits (including TP, cBOD5, TSS and Total Ammonia Nitrogen) are in keeping with previously approved loading from the existing plant

Upon the completion of the EA, the Notice of Completion along with electronic copy of the ESR report is to be submitted to you and South West Region.

Best regards,

Jian Li, Ph.D., P.Eng., PE
Project Manager

Direct: 519 966-2250
Mobile: 519 562-7541

Stantec
100-140 Ouellette Place
Windsor ON N8X 1L9 CA

Stantec

From: Slattery, Barbara (MECP) <barbara.slattery@ontario.ca>
Sent: Wednesday, February 5, 2020 2:09 PM
To: Li, Jian <jian.li@stantec.com>; Munro, Alison (MECP) <Alison.Munro@ontario.ca>
Cc: Awad, Emily (MECP) <Emily.Awad@ontario.ca>; Kevin Girard (kgirard@lakeshore.ca) <kgirard@lakeshore.ca>; ncavacas@lakeshore.ca
Subject: RE: Draft ESR Report for Denis St. Pierre WPCP Expansion Class EA - Town of Lakeshore - Effluent Criteria/Assimilative Capacity Study

Good afternoon,

Please be advised that upon review of the February 4th response, we are in agreement with the limits and objectives as proposed in the February 4th email to Alison Munro. Please proceed with completing the EA for the capacity expansion at the Denis St. Pierre WPCP on the basis of these limits and objectives for effluent quality. Once the EA is completed, please notify me and provide the Notice of Completion to the EA notification email address:

South West Region – eanotification.swregion@ontario.ca

Also, please ensure that a means of reviewing the document is available either by sending a printed document or some manner of electronic copy.

Barb Slattery, EA/Planning Coordinator
Ministry of the Environment, Conservation and Parks
West Central Region
(905) 521-7864

We want to hear from you. How was my service? You can provide feedback at 1-888-745-8888.

From: Li, Jian <jian.li@stantec.com>
Sent: February 04, 2020 10:42 AM
To: Munro, Alison (MECP) <Alison.Munro@ontario.ca>
Cc: Slattery, Barbara (MECP) <barbara.slattery@ontario.ca>; Awad, Emily (MECP) <Emily.Awad@ontario.ca>; Kevin Girard (kgirard@lakeshore.ca) <kgirard@lakeshore.ca>; ncavacas@lakeshore.ca
Subject: RE: Draft ESR Report for Denis St. Pierre WPCP Expansion Class EA - Town of Lakeshore - Effluent Criteria/Assimilative Capacity Study

Dear Ms. Munro,

Thank you for your review comments dated January 28, 2020 on my responses, which was prepared and submitted to the MECP on January 7, 2020 to address the MECP's review comments on the Draft ESR (Dated September 10, 2019) for the capacity expansion to the Denis St. Pierre Water Pollution Control Plant (WPCP), Town of Lakeshore.

The following is in response to your comments received on January 28, 2020.

1. Effluent Discharge Limit of Total Phosphorus

The Canada Ontario Water Quality Agreement is calling for Ontario to work with partners to establish an effluent discharge limit of 0.5 mg/L TP in Lake Erie. Although Lake St. Clair is not the Western Basin of Lake Erie, it is noted by the MECP that Lake St. Clair faces issues similar to those of the Western Basin, inducing cyanobacteria blooms. Therefore, when considering discharge limits and objectives for the proposed expansion, it is preferred by the MECP that the maximum proposed effluent limit considered be in keeping with the COA agreement.

Based on the above MECP's comments, the TP discharge limit for the proposed expansion is revised to be 0.5 mg/L. The TP discharge objective for the proposed expansion is proposed to be 0.4 mg/L.

2. Loading Limits

The TP loading limits for the proposed expansion are anticipated to be in keeping with previously approved loading from the existing plant. The reasons are given as follows:

- The plant has continued to consistently achieve a high-quality effluent, and the average effluent TP concentration is consistently in the range of 0.2 mg/L. The maximum effluent TP was less than 0.4 mg/L, which is significantly less than the previously approved limit of 0.8 mg/L.
- The existing plant utilizes an extended aerated activated sludge (EAAS) system combined with chemical precipitation for phosphorus removal. The operating experience with the existing treatment process has been good. The same treatment process is to be utilized for the plant expansion.

For the same reasons, it is also anticipated that the proposed plant expansion has no increase in other loading limits including $cBOD_5$, TSS and Total Ammonia Nitrogen.

3. Existing and Proposed Treatment System

The proposed treatment process for the plant expansion is to be an extended aerated activated sludge (EAAS) system combined with chemical precipitation for phosphorus removal, which is the same treatment process utilized for the existing plant. The existing plant has continued to consistently achieve a high-quality effluent with the average and maximum effluent TP concentrations of 0.2 mg/L and 0.4 mg/L, respectively. Therefore, the expanded plant is anticipated to achieve similar performance capabilities as the existing plant.

The existing plant provides secondary treatment for wastewater from the Belle River-Maidstone collection system. The Belle River-Maidstone collection system is a separate sanitary sewer system that was designed to carry domestic wastewater to the treatment plant. It is not aware of any history of plant upsets or historical performance issues under normal conditions. However, extraneous flows into the sewer system resulted in significant flow increases during storm events. The plant frequently experiences periods of high flows for extended durations that are typically associated with snow melt and wet weather events. Excess flows resulting from storm events are bypassed into the outfall sewer. The emergency overflow is intended to minimize sewage backup and flooding in the event of emergency and unavoidable conditions. Currently, the average TP for all overflow events in 2019 was 0.55 mg/L, with an individual high of 0.82 mg /L. To minimize overflow bypasses at the plant, the proposed plant expansion is to increase the plant influent pumping capacity as well as treatment capacity. As a result, the proposed expansion and upgrades is anticipated to reduce the frequency of the plant overflow bypass events, resulting in the reduction of loadings into the lake.

I trust that the above responses adequately address your comments. Should you have any questions or require additional information, please contact the undersigned.

Best regards,

Jian Li, Ph.D., P.Eng., PE
Project Manager

Direct: 519 966-2250
Mobile: 519 562-7541

Stantec
100-140 Ouellette Place
Windsor ON N8X 1L9 CA

From: Slattery, Barbara (MECP) <barbara.slattery@ontario.ca>
Sent: Tuesday, January 28, 2020 11:14 AM
To: Li, Jian <jian.li@stantec.com>
Cc: Munro, Alison (MECP) <Alison.Munro@ontario.ca>; Awad, Emily (MECP) <Emily.Awad@ontario.ca>
Subject: RE: Draft ESR Report for Denis St. Pierre WPCP Expansion Class EA - Town of Lakeshore - Effluent Criteria/Assimilative Capacity Study

Good Morning Jian apologies for not being able to get these comments to you sooner.

Staff have completed their review and offer the following comments for your consideration:

- It was mentioned in previous correspondence with Stantec and also quoted in the report, the Canada Ontario Water Quality Agreement is calling for Ontario to work with partners to establish a effluent discharge limit of 0.5 mg/L TP in Lake Erie. Although Lake St. Clair is not the Western Basin of Lake Erie, MECP recognizes that Lake St. Clair faces issues similar to those of the Western Basin, inducing cyanobacteria blooms. Therefore, when considering discharge limits and objectives for the proposed expansion, it is preferred that the maximum proposed effluent limit considered be in keeping with the COA agreement.

- Generally, the Ministry does not encourage increased loading from the re-rating or expansion of sewage treatment plants. There was no discussion provided in the study that addressed future loading limits. Please provide a discussion on loading from the plant and how the proposed limits are in keeping with, or close to, previously approved loading from the plant.

- The historical annual averages for the plant were included in the report. It appears that the plant consistently treats the effluent to, at, or below 0.2 mg/L. Provided the new plant runs at the same efficiency as the old plant, it is reasonable to expect similar effluent characteristics. Therefore an effluent limit of 0.6mg/L and an objective of 0.5 mg/L may not correspond to proven treatment capabilities. The MECP expects that any proposed expansion can, and will achieve similar performance capabilities as the existing facility. Please demonstrate why the facility would require anything above a 0.5 mg/L limit. Is there a history of plant upsets or historical performance issues that would merit the 0.6mg/L limit?

In order to expedite the review process, please provide responses to these three points directly to Ms. Alison Munro, the Surface Water Evaluator assigned to this file with copies to myself and Ms. Emily Awad.

Barb Slattery, EA/Planning Coordinator
Ministry of the Environment, Conservation and Parks
West Central Region
(905) 521-7864

We want to hear from you. How was my service? You can provide feedback at 1-888-745-8888.

From: Li, Jian <jian.li@stantec.com>
Sent: January 07, 2020 2:05 PM
To: Slattery, Barbara (MECP) <barbara.slattery@ontario.ca>
Subject: RE: Draft ESR Report for Denis St. Pierre WPCP Expansion Class EA - Town of Lakeshore

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Hi Barb,

I can have the ESR report completed within two weeks of the acceptance of the assimilative capacity study. A Notice of Completion will be posted immediately once the final ESR is available for public review.

Thanks,
Jian

Jian Li, Ph.D., P.Eng., PE
Project Manager

Direct: 519 966-2250
Mobile: 519 562-7541

Stantec
100-140 Ouellette Place
Windsor ON N8X 1L9 CA

From: Slattery, Barbara (MECP) <barbara.slattery@ontario.ca>
Sent: Tuesday, January 7, 2020 1:55 PM
To: Li, Jian <jian.li@stantec.com>
Subject: RE: Draft ESR Report for Denis St. Pierre WPCP Expansion Class EA - Town of Lakeshore

Assuming that we accept the assimilative capacity study, when do you anticipate having the EA completed and posting the Notice of Completion?

Barb Slattery, EA/Planning Coordinator
Ministry of the Environment, Conservation and Parks
West Central Region
(905) 521-7864

We want to hear from you. How was my service? You can provide feedback at 1-888-745-8888.

From: Li, Jian <jian.li@stantec.com>
Sent: January 07, 2020 1:35 PM
To: Slattery, Barbara (MECP) <barbara.slattery@ontario.ca>
Cc: Kevin Girard (kgirard@lakeshore.ca) <kgirard@lakeshore.ca>
Subject: RE: Draft ESR Report for Denis St. Pierre WPCP Expansion Class EA - Town of Lakeshore

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Thanks, Barb. Sewage flows to the Denis St. Pierre WPCP is very close to the plant's rated capacity of 14,500 m^3/d. There are pressures for residential and industrial development in the service area.

If possible, we would much appreciate if you could provide review comments by January 22, 2020. Upon the completion of Phase 4 ESR, the Town is prepared to proceed with Phase 5 Implementation immediately

Jian Li, Ph.D., P.Eng., PE
Project Manager

Direct: 519 966-2250
Mobile: 519 562-7541

Stantec
100-140 Ouellette Place
Windsor ON N8X 1L9 CA

From: Slattery, Barbara (MECP) <barbara.slattery@ontario.ca>
Sent: Tuesday, January 7, 2020 1:03 PM
To: Li, Jian <jian.li@stantec.com>
Subject: RE: Draft ESR Report for Denis St. Pierre WPCP Expansion Class EA - Town of Lakeshore

Thank you Jian,

I have downloaded the report and will be assigning it for technical review. Can you give me a due date so that we are able to manage our workload?

Barb Slattery, EA/Planning Coordinator
Ministry of the Environment, Conservation and Parks
West Central Region
(905) 521-7864

We want to hear from you. How was my service? You can provide feedback at 1-888-745-8888.

From: Li, Jian <jian.li@stantec.com>
Sent: January 07, 2020 12:02 PM
To: Slattery, Barbara (MECP) <barbara.slattery@ontario.ca>
Cc: Kevin Girard (kgirard@lakeshore.ca) <kgirard@lakeshore.ca>
Subject: RE: Draft ESR Report for Denis St. Pierre WPCP Expansion Class EA - Town of Lakeshore

Hi Barb,

Thank you very much for your response.

Attached is the email with attachments in regards to MECP's review comments on the September 10th, 2019 draft ESR for Denis St. Pierre WPCP Expansion, Town of Lakeshore.

A copy of the assimilative capacity study (ACS) along with the September 10th, 2019 draft ESR is available from the FTP site below:

Login Information

Browser link: https://tmpsftp.stantec.com
FTP Client Hostname: tmpsftp.stantec.com **Port:** 22 (can be used within an FTP client to view and transfer files and folders; e.g., FileZilla)
Login name: s0120141148
Password: 6516751
Disk Quota: 2GB
Expiry Date: 1/20/2020

Please contact the undersigned should you have any questions or require additional information.

Best regards,

Jian Li, Ph.D., P.Eng., PE
Project Manager

Direct: 519 966-2250
Mobile: 519 562-7541

Stantec
100-140 Ouellette Place
Windsor ON N8X 1L9 CA

From: Slattery, Barbara (MECP) <barbara.slattery@ontario.ca>
Sent: Tuesday, January 7, 2020 11:50 AM
To: Li, Jian <jian.li@stantec.com>
Subject: RE: Draft ESR Report for Denis St. Pierre WPCP Expansion Class EA - Town of Lakeshore

Hello Jian,

As you now know, my counterpart in the ministry's SWR office has retire and I have agreed to assist that Region with their EA and Planning files for the foreseeable future.

With respect to this EA for the Denis St. Pierre WPCP Expansion, I see by your letter that an assimilative capacity study (ACS) has been completed to determine the required effluent criteria for the propose expansion. Unfortunately, through the forwarding of emails, the attached study has not been sent to me.

Therefore, can you please send me an electronic copy so that it can be reviewed? Can you also give me a sense of timing for our comments ? we will do our best to meet your timing

Thank you

Barb Slattery, EA/Planning Coordinator
Ministry of the Environment, Conservation and Parks
West Central Region
(905) 521-7864

We want to hear from you. How was my service? You can provide feedback at 1-888-745-8888.

From: Li, Jian <jian.li@stantec.com>
Sent: January 06, 2020 4:37 PM
To: Lafrance, Crystal (MECP) <Crystal.Lafrance@ontario.ca>
Cc: Kevin Girard (kgirard@lakeshore.ca) <kgirard@lakeshore.ca>
Subject: FW: Draft ESR Report for Denis St. Pierre WPCP Expansion Class EA - Town of Lakeshore

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Dear Crystal,

I sent Craig the email below in regard to our responses to MECP's review comments on the September 10th, 2019 draft ESR for Denis St. Pierre WPCP Expansion, Town of Lakeshore. However, I received the attached automatic reply indicating that Craig is retired.

Please advise of MECP's new contact for the subject Class EA.

Thanks,
Jian

Jian Li, Ph.D., P.Eng., PE
Project Manager

Direct: 519 966-2250
Mobile: 519 562-7541

Stantec
100-140 Ouellette Place
Windsor ON N8X 1L9 CA

From: Li, Jian
Sent: Monday, January 6, 2020 4:17 PM
To: 'Newton, Craig (MECP)' <Craig.Newton@ontario.ca>
Cc: Bechard, Marc (MECP) <Marc.Bechard@ontario.ca>; kgirard@lakeshore.ca; Awad, Emily (MECP) <Emily.Awad@ontario.ca>; Abernethy, Scott (MECP) <Scott.Abernethy@ontario.ca>; Rising, Lareina (MECP) <Lareina.Rising@ontario.ca>; Source Protection Screening (MECP) <SourceProtectionScreening@ontario.ca>; DesLauriers, Angelune (MECP) <Angelune.DesLauriers@ontario.ca>; Lafrance, Crystal (MECP) <Crystal.Lafrance@ontario.ca>; Iskra, Igor <Igor.Iskra@stantec.com>
Subject: RE: Draft ESR Report for Denis St. Pierre WPCP Expansion Class EA - Town of Lakeshore

Dear Mr. Newton,

Happy New Year!

We appreciate your comments on the September 10th, 2019 draft ESR for the Denis St. Pierre Water Pollution Control Plant (WPCP) Expansion, Town of Lakeshore.

Please find the attached responses to your comments offered in your email below dated October 18th, 2019. A copy of the Assimilative Capacity Study Report is available from the FTP site below:

Login Information
Browser link: https://tmpsftp.stantec.com

FTP Client Hostname: tmpsftp.stantec.com **Port:** 22 (can be used within an FTP client to view and transfer files and folders; e.g., FileZilla)
Login name: s0120141148
Password: 6516751
Disk Quota: 2GB
Expiry Date: 1/20/2020

We hope the attached responses along with the Assimilative Capacity Study Report will meet your expectations.

The ESA for the subject EA will be finalized and notice of completion will be issued upon your acceptance of our responses to your review comments.

Thanks,
Jian

Jian Li, Ph.D., P.Eng., PE
Project Manager

Direct: 519 966-2250
Mobile: 519 562-7541

Stantec
100-140 Ouellette Place
Windsor ON N8X 1L9 CA

From: Newton, Craig (MECP) <Craig.Newton@ontario.ca>
Sent: Friday, October 18, 2019 9:03 AM
To: Li, Jian <jian.li@stantec.com>
Cc: Bechard, Marc (MECP) <Marc.Bechard@ontario.ca>; kgirard@lakeshore.ca; Awad, Emily (MECP) <Emily.Awad@ontario.ca>; Abernethy, Scott (MECP) <Scott.Abernethy@ontario.ca>; Rising, Lareina (MECP) <Lareina.Rising@ontario.ca>; Source Protection Screening (MECP) <SourceProtectionScreening@ontario.ca>; DesLauriers, Angelune (MECP) <Angelune.DesLauriers@ontario.ca>; Lafrance, Crystal (MECP) <Crystal.Lafrance@ontario.ca>
Subject: RE: Draft ESR Report for Denis St. Pierre WWTP Expansion Class EA - Town of Lakeshore

Dear Dr. Li:

This email acknowledges this ministry's receipt, with thanks, your immediately preceding email of September 16th, 2018 wherein you provided this ministry the opportunity to review and comment on the September 10th, 2019 Draft ESR Report for Denis St. Pierre WWTP Expansion Class EA – Town of Lakeshore. Ministry comments, if any, were requested by today, October 18th, 2019.

This ministry offers the following comments with respect to the September 16th, 2018 Draft ESR for yours and the Town of Lakeshore's due consideration:

GENERAL SUFACEWATER COMMENTS

The Draft ESR seeks a plant capacity expansion from 14,500 m3/day to an ultimate design of 30,000 m3/day (average daily flow) with no proposed changes in effluent quality criteria. This is not acceptable for surface water concerns. The design of the upgraded sewage works would depend on the effluent limits and effluent limits are set in an assimilative capacity study. An assimilative capacity study is required as a basis for the proposed plant expansion. The study should consider the Lake Erie Action Plan (February 2018) and the need to tighten the effluent limit on total phosphorus at larger-sized municipal facilities in the Lake Erie Basin such as Denis St. Pierre. The Denis St. Pierre discharge is to Lake St. Clair. The MECP SWR Regional Office has been monitoring lake water quality for several years and it is apparent that it suffers from seasonal cyanobacterial (Microcystis) blooms in areas near Lakeshore's drinking water intakes. General guidance on study requirements can be provided by staff of the MECP SWR Regional Office upon request.

SECTION 6.0 ENVIRONMENTAL IMPACTS AND MITIGATING MEASURES

Section 6.1 Overview

There is a single reference to an RTB in Table 6.1 Environmental Effects and Mitigating Measures, under the Visual Effects Category. The reference reads as follows: *"Tunnel sewer and RTB will be buried and have no impact on aesthetics".* During the course of MECP's review of the Draft ESR, Staff of MECP Windsor Area Office sought further clarification on this statement from Stantec Consultants. In an e-mail response dated October 2nd, 2019, MECP was advised by Stantec Consultants *"… the proposed Denis St. Pierre WWTP Expansion is not to include any RTB facilities".* The statement *"Tunnel sewer and RTB will be buried and have no impact on aesthetics",* will reportedly be revised to read as follows*: Proposed plant expansion is to match exiting treatment plant and no impact on aesthetics is anticipated." .* Please ensure that this revision is incorporated into the Final ESR.

Section 6.2 Natural Environment Impacts And Mitigating Measures

Section 6.2.1 Aquatic and Terrestrial Habitat

According to the discussion provided in this Section, this property reportedly has potential habitat for Species at Risk. It is the proponents responsibility to determine if any Species at Risk or Species at Risk habitat exists within the proposed development. Once the proponent has completed the preliminary screening they can reach out to SAROntario@ontario.ca with their findings. (Refer to attached Guide).

It is recommended that MECP be further consulted during project planning/design phases to ensure compliance with the *Endangered Species Act, 2007* (ESA). If this project is likely to impact species at risk, or protected habitat, authorization under the Endangered Species Act may be required.

Section 6.2.2 Floodplain Hazard Management:

It is stated in this Section that *"Water quality measures shall be considered to ensure no adverse impact on the downstream watercourse. The new preferred outfall sewer will run parallel to the existing outfall sewer that is located along Rourke Line Road, and out letting to the Lake St. Clair. Surface water monitoring program is to be implemented to verify no adverse impact on the downstream watercourse."* In addition to the monitoring program referenced in the Draft EA, please refer above, under the heading General Surface Water Comments, to the requirement for the preparation of an Assimilative Capacity Study.

Section 6.2.3 Source Water Protection:

This Ministry's Source Protection Programs Branch assessed all the wastewater treatment plants in the Province to determine whether they would be significant drinking water threats. This project was completed in 2018.

The Denis St. Pierre WWTP was screened and determined that it didn't meet the criteria to be a significant drinking water threat because the facility and related discharge are located in an IPZ-2 with a score of 6.3. With a vulnerability score of 6.3, there are no activities that could be considered significant drinking water threats. This means that even an expansion of the existing WWTP would not cause the activity to be a significant drinking water threat.

The purpose of this EA study is to investigate and report on alternative means of treating wastewater in the Belle River and Maidstone areas. The proposed project for expanding the plant treatment capacity and therefore minimizing the plant bypass during extreme storm events will have an important beneficial impact on the source of drinking water quality.

This Ministry has reviewed the Section on Source Protection, namely Section 6.2.3 in the Draft ESR. The discussion on Source Protection aligns with the Municipal Engineers Association Municipal Class EA Section on drinking water source protection. Therefore, this ministry has no further comments at this time with respect to Source Protection and this Draft ESR.

Section 6.2.6 Climate Change

MECP SWR, in its letter of May 31st, 2019, encouraged the Town of Lakeshore to include Climate Change in this EA. MECP SWR acknowledges, with thanks, that the Section 6..2. Climate Change does discuss Climate Change. As noted in MECP's May 31st, 2019 letter, the Ministry released a guidance document to support proponents in including climate change in environmental assessments. The guide can be found online: https://www.ontario.ca/page/considering-climate-change-environmental-assessment-process Also, it should be noted that Climatic Features are identified in Appendix 2 of the Municipal Class EA page 2-17 (2015). MECP SWR encourages the Town of Lakeshore to review the aforementioned ministry guideline and the MEA Class EA, to see what specific mitigation and adaptation measures, if any, can be incorporated into this proposed project.

SECTION 7 PUBLIC CONSULTATION

Section 7.4 First Nations Consultation

Upon receipt of the Notice of Commencement of this proposed project, MECP SWR responded to the Town of Lakeshore with a letter dated May 31st, 2019 (refer to attachment). In that letter, this ministry delegated procedural aspects of rights-based consultation to the Town of Lakeshore. MECP SWR provided a listing of six Indigenous Communities that are required to be consulted with respect to this proposed project.. The Ministry also provided some guidance, or steps if you will, that should be taken in relation to Indigenous Consultation.

MECP has reviewed the Draft EA's Sections on Aboriginal Consultation. The Indigenous Consultation Log shows that Notices of Commencement were provided, by Canada Post, to the listed communities, as well as copies of the open house materials. That said, there is no evidence from the documentation provided in the Draft EA of follow up or an attempt to determine if the communities have concerns (although COTTFN did respond by letter).

MECP recommends that prior to finalizing the EA, there be follow up with the communities to see if there are concerns. The proponent to fully document their attempts to reach the community contacts and document any concerns raised and how they were addressed.

Finally, thank you for providing this ministry the opportunity to review and comment on the Draft EA. This ministry awaits the proponent's response to this ministry's comments as described herein. Thank you in advance. Please feel free to approach me with any questions, and I will do my best to answer them

Yours truly,

Craig Newton
Regional Environmental Planner / Regional EA Coordinator
Ministry of the Environment, Conservation and Parks
Southwestern Region
733 Exeter Road
London, Ontario
N6E 1L3

Telephone: (519) 873-5014
E-mail: craig.newton@ontario.ca

From: Li, Jian <jian.li@stantec.com>
Sent: September-16-19 2:05 PM
To: Newton, Craig (MECP) <Craig.Newton@ontario.ca>
Cc: Bechard, Marc (MECP) <Marc.Bechard@ontario.ca>; kgirard@lakeshore.ca
Subject: Draft ESR Report for Denis St. Pierre WWTP Expansion Class EA - Town of Lakeshore

Dear Mr. Newton,

As you are aware, the Town of Lakeshore has commenced a study to investigate options and develop a preferred alternative for the Denis St. Pierre Wastewater System. This project is being planned as a **Schedule C** project under the **Municipal Class Environmental Assessment** (Municipal Engineers Association, October 2000 as amended in 2007, 2011 & 2015).

The Town of Lakeshore adopted its first comprehensive Water and Wastewater Master Plan in November 2008, and then an update of this Master Plan was undertaken and completed in 2018. The Master Plan and Update, which were prepared in accordance with Phases 1 and 2 of the Municipal Class Environmental Assessment, identified the need for additional capacity within the Denis St. Pierre Wastewater System servicing the Belle River and Maidstone communities. The Water and Wastewater Master Plan and Update were prepared in accordance with Phases 1 and 2 of the Class EA process. The preferred wastewater solution for servicing the Belle River and Maidstone areas is to expand the Denis St. Pierre Water Pollution Control Plant (WPCP).

The project is now in Phase 3 of the Class EA process which involves evaluation of alternative designs for the Denis St. Pierre WPCP expansion leading to selection of a preferred design for this application. Your agency is invited to submit comments on the *"Draft"* Environmental Study Report. In an effort to conserve paper and reduce printing costs, the report is being distributed in electronic format as a PDF file on the FTP site below. If you would prefer, a hard copy of the draft report will be provided on request.

Login Information

Browser link: https://projsftp.stantec.com
Login name: 165620173DENISSTPIERREWATERPOLLUTIONCONTROLPLANTEXPANSIONEASTUDY1044
Password: 4779676

A public information centre was held on September 11, 2019 to provide information on this project and to solicit public input. Copies of the public information centre material are also available on the FTP site above.

We would appreciate receiving any comments you care to offer on the draft report by October 18, 2019.

Sincerely,

Jian Li, Ph.D., P.Eng., PE
Project Manager

Direct: 519 966-2250
Mobile: 519 562-7541

Stantec
100-140 Ouellette Place
Windsor ON N8X 1L9 CA

From: Newton, Craig (MECP) <Craig.Newton@ontario.ca>
Sent: Friday, May 31, 2019 9:16 AM
To: kgirard@lakeshore.ca
Cc: Bechard, Marc (MECP) <Marc.Bechard@ontario.ca>; Li, Jian <jian.li@stantec.com>
Subject: MECP Response To Notice of Commencement Denis St. Pierre WWTP Expansion Class EA - Town of Lakeshore

Dear Mr. Girard:

Please find attached the MECP's response to the Notice of Commencement for the above noted project. Please note that this serves as the ministry's formal correspondence and will only be delivered via this e-mail.

Yours truly,

Craig Newton
Regional Environmental Planner / Regional EA Coordinator
Ministry of the Environment, Conservation and Parks
Southwestern Region
733 Exeter Road
London, Ontario
N6E 1L3

Telephone: (519) 873-5014cm
E-mail: craig.newton@ontario.ca

Stantec

Stantec Consulting Ltd.
100-140 Ouellette Place, Windsor ON N8X 1L9

January 6, 2020
File: 165620173

Attention: Mr. Craig Newton, Regional Environmental Planner and Regional EA Coordinator

Ministry of the Environment, Conservation and Parks
733 Exeter Road
London ON, N6E 1L3

Dear Mr. Newton,

Reference: Class Environmental Assessment – Draft ESR Report for Denis St. Pierre Water Pollution Control Plant Expansion, Town of Lakeshore

Thank you for your review comments on the Draft ESR (Dated September 10, 2019) for the capacity expansion to the Denis St. Pierre Water Pollution Control Plant (WPCP), Town of Lakeshore. The following is in response to your comments on the draft ESR, which was received on October 18, 2019.

GENERAL SURFACE WATER COMMENTS

An assimilative capacity study has been completed to support the environmental assessment and develop effluent quality criteria for the proposed plant capacity expansion. The proposed effluent limits and objectives are presented in the table below. A copy of the assimilative capacity study report, which documents the approach and results of the dilution mixing assessment of Lake St. Clair in response to the effluent being discharged from the Denis St. Pierre WPCP, is appended.

Parameter	Monthly Average Concentration	
	Effluent Limits	**Effluent Objectives**
$cBOD_5$	14 mg/L	10 mg/L
TSS	14 mg/L	10 mg/L
Total Phosphorus	0.6 mg/L	0.5 mg/L
Total Ammonia (Nitrogen)		
Summer (May 1 to Nov 31)	1.4 mg/L	1.0 mg/L
Winter (Dec 1 to April 30)	2.8 mg/L	2.0 mg/L
E. coli (monthly geometric mean)	200 organisms/100 mL	150 organisms/100 mL
pH (grab sample)	6.5 - 8.5 inclusive	6.5 - 8.5 inclusive

Reference: Class Environmental Assessment – Draft ESR Report for Denis St. Pierre Water Pollution Control Plant Expansion, Town of Lakeshore

SECTION 6.0 ENVIRONMENTAL IMPACTS AND MITIGATING MEASURES

Section 6.1 Overview

The statement "Tunnel sewer and RTB will be buried and have no impact on aesthetics" in Table 6.1 Environmental Effects and Mitigating Measures, under the Visual Effects Category, will be revised to read as follows: Proposed plant expansion is to match exiting treatment plant and no impact on aesthetics is anticipated." This revision will be incorporated into the Final ESR.

Section 6.2 Natural Environment Impacts and Mitigating Measures

Section 6.2.1 Aquatic and Terrestrial Habitat

During the preliminary design phase and prior to the detailed design phase, a preliminary screening is to be completed in accordance with the MECP's guideline "Species at Risk Branch, Permissions and Compliance (DRAFT - May 2019)". The objective of the preliminary screening is to determine whether any species at risk or their habitat exist or are likely to exist at or near their proposed activity, and whether their proposed activity is likely to contravene the Endangered Species Act, 2007 (ESA). Existing conditions (terrestrial and aquatic) at the proposed work site is to be documented based on publicly available data from a variety of secondary sources as described in the guideline. Once the preliminary screening is completed. A memo is to be prepared to describe existing conditions, recommend general mitigation measures to include during design, and identify permits that may be required prior to construction of the proposed work. The MECP is to be contacted by email at SAROntario@ontario.ca with the findings.

The MECP is to be further consulted during the design phase to ensure compliance with the ESA. It shall be noted that, if this project is likely to impact species at risk, or protected habitat, authorization under the Endangered Species Act may be required.

Section 6.2.2 Floodplain Hazard Management:

A copy of the assimilative capacity study report, which has been prepared to support the environmental assessment and develop effluent quality criteria for the proposed plant capacity expansion, is appended to this letter.

Section 6.2.6 Climate Change

We will include the following statement at the end of Climate Change section in the final ESR.

The Provincial Policy Statement (2014), which is issued under section 3 of the Planning Act, provides policy direction on matters of provincial interest related to land use planning and development. A listing of applicable policies related to climate changes include:

- Policies 1.6.2, 1.6.6.7 — Encourage green infrastructure (e.g. permeable surfaces) and strengthen stormwater management requirements
- Policy 1.8 — Require the consideration of energy conservation and efficiency, reduced greenhouse gas emissions and climate change adaptation (e.g. tree cover for shade and for carbon sequestration)

Reference: **Class Environmental Assessment – Draft ESR Report for Denis St. Pierre Water Pollution Control Plant Expansion, Town of Lakeshore**

- Policy 3.1.3 — Requires consideration of the potential impacts of climate change that may increase the risk associated with natural hazards (e.g. flooding due to severe weather)

To complement and support the above climate-focused policies of the 2014 Provincial Policy Statement, the MECP has issued a guidance “Considering Climate change in the Environmental Assessment Process”. The consideration of the Climatic Features including drought, increased flooding, changes in water levels, increases in surface water runoff due to extreme weather events and climate changes, is also noted in Appendix 2 of the Municipal Class EA (2015).

During the design phase, the primary technical considerations when evaluating alternative treatment process components shall include the ability of a component to consistently meet requirements for energy conservation and greenhouse gas emission reductions, the established treatment requirements, the feasibility of locating a suitable space for the plant expansion, the ability of the improved process to handle variations in hydraulic and organic loadings, and capital and operating costs. Green infrastructure (e.g. permeable surfaces, trees and planting), which can help reduce flooding and water pollution by absorbing and filtering stormwater, is to be incorporated into the final design of the plant expansion.

SECTION 7 PUBLIC CONSULTATION

Section 7.4 First Nations Consultation

Follow-up reminders will be sent to First Nation communities prior to the issuance of the final ESR for review. Attempts to reach the community contacts are to be fully documented as well as any concerns raised and how they were addressed.

Respectfully yours,

Stantec Consulting Ltd.

Jian Li Ph.D., P.Eng., PE
Project Manager
Phone: 519 966 2250
Fax: 519-966-5523
jian.li@stantec.com

c. Mr. Kevin Girard, P. Eng., Manager of Environmental Services, Town of Lakeshore

Ministry of Heritage, Sport, Tourism, and Culture Industries

Programs and Services Branch
401 Bay Street, Suite 1700
Toronto, ON M7A 0A7
Tel: 416.314.7643

Ministère des Industries du Patrimoine, du Sport, du Tourisme et de la Culture

Direction des programmes et des services
401, rue Bay, Bureau 1700
Toronto, ON M7A 0A7
Tél: 416.314.7643

25 October 2019

Email Only

Jian Li, P. Eng.
Consultant Project Manager
Stantec Consulting Ltd.
140 Ouellette Place, Ste 100
Windsor, ON N8X 1L9
jian.li@stantec.com

MHSTCI File	**:**	**0010508**
Your File	**:**	**165620173**
Proponent	**:**	**Town of Lakeshore**
Subject	**:**	**Draft Environmental Study Report**
Project	**:**	**Denis St. Pierre Water Pollution Control Plant Expansion**
Location	**:**	**Rourke Line Road, Town of Lakeshore**

Dear Mr. Li:

Thank you for providing the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI) with a copy of the Draft Environmental Study Report (ESR) (Stantec, September 10, 2019). Please find our comments below.

Project Summary

The Town of Lakeshore is proposing the expansion of the Denis St. Pierre Water Pollution Control Plant in anticipation of anticipated future growth and expansion through to 2035 for the former Belle River Community and the Maidstone Urban Area. The project is following Phases 3 and 4 of the Municipal Class EA, which began in 2008 as a Master Plan (completing Phases 1 and 2 in 2017) and had identified capacity issues this for plant.

The study area is generally bounded by Manning Rd/East Pike Creek Rd, County Road 42/Canadian Pacific Railway, County Road 22, Lake St. Clair shoreline.

Comments

6.0 Environmental Impacts and Mitigating Measures

Entries in Table 6.1, in section 6.3.1 and section 6.3.2 indicate that, due to the proposed work being located within a disturbed area and away from cultural heritage resources, it is not expected to impact these resources. These statements must be supported by documentary evidence.

Therefore, with respect to known and potential built heritage resources and cultural heritage landscapes, a Cultural Heritage Evaluation Report (CHER) should be undertaken, the results of which should be included in the ESR. The CHER should include a map that illustrates their location within the study area and their proximity to any project construction activity.

As to archaeological sites, our ministry mapping shows that many are found within the study area and several retain their cultural heritage value or interest. Therefore, at a minimum, a Stage 1 archaeological assessment should be undertaken and a summary of the results be included in the ESR.

Appendix B

The checklist for archaeological resources has been completed in a manner that indicates archaeological resources are not located within the study area. As noted above, our mapping reveals numerous archaeological sites within the study area. Therefore, this checklist should be redone to accurately reflect that archaeological resources exist within the study area.

Similarly, the completed checklist for built heritage resources and cultural heritage landscapes should be redone to reflect, at the very least, that known cultural heritage resources are found within the study area.

Should you have any questions, please contact the undersigned.

Regards,

Katherine Kirzati
Heritage Planner
Heritage Planning Unit
katherine.kirzati@ontario.ca

c: Kevin Girard, Manager of Environmental Services, Town of Lakeshore
Craig Newton, Regional Environmental Planner, MECP

Stantec Consulting Ltd
100-140 Ouellette Place, Windsor ON N8X 1L9

RECEIVED

SEP 2 3 2019

STANTEC CONSULTING LTD.
Consulting Engineers

September 10, 2019
File: 165620173

Ontario Ministry of Transportation
659 Exeter Road
London, Ontario N6E 1L3

Attention: Mr. Martin Favell
Planning & Design Head

Dear Martin:

Reference: Denis St. Pierre Water Pollution Control Plant Expansion
Class Environmental Assessment
Town of Lakeshore

The Town of Lakeshore adopted its first comprehensive Water and Wastewater Master Plan in November 2008, and then an update of this Master Plan was undertaken and completed in 2018. The Master Plan and Update, which were prepared in accordance with Phases 1 and 2 of the Municipal Class Environmental Assessment, identified the need for additional capacity within the Denis St. Pierre Wastewater System servicing the Belle River and Maidstone communities.

The Town of Lakeshore has commenced a study to investigate options and develop a preferred alternative for the Denis St. Pierre Wastewater System. This project is being planned as a **Schedule C** project under the **Municipal Class Environmental Assessment** (Municipal Engineers Association, October 2000 as amended in 2007, 2011 & 2015).

The Water and Wastewater Master Plan and Update were prepared in accordance with Phases 1 and 2 of the Class EA process. The preferred wastewater solution for servicing the Belle River and Maidstone areas is to expand the Denis St. Pierre Water Pollution Control Plant (WPCP).

The project is now in Phase 3 of the Class EA process which involves evaluation of alternative designs for the Denis St. Pierre WPCP expansion leading to selection of a preferred design for this application. Your agency is invited to submit comments on the *"Draft"* Environmental Study Report. In an effort to conserve paper and reduce printing costs, the report is being distributed in electronic format as a PDF file on the FTP site below. If you would prefer, a hard copy of the draft report will be provided on request.

Login Information

Browser link: https://projsftp.stantec.com
Login name: 165620173DENISSTPIERREWATERPOLLUTIONCONTROLPLANTEXPANSIONEASTUDY1044
Password: 4779676

A public information centre has been held on September 11, 2019 to provide information on this project and to solicit public input. Copies of the public information centre material are also available on the FTP site above.
We would appreciate receiving any comments you care to offer on the draft report by October 18, 2019. Any comments or questions should be submitted to the following:

Reference: Denis St. Pierre Water Pollution Control Plant Expansion
Class Environmental Assessment
Town of Lakeshore

Mr. Kevin Girard, P.Eng.
Manager of Environmental Services
419 Notre Dame Street
Belle River, Ontario N0R 1A0
Phone: 519-728-1975 x 239
Fax: 519-728-9530
Email: kgirard@lakeshore.ca

Dr. Jian Li, P. Eng.
Stantec Consulting Ltd.
140 Ouellette Place Suite 100
Windsor, Ontario N8X 1L9
Phone: 519-966-2250 x 240
Fax: 519-966-5523
Email: jian.li@stantec.com

Sincerely,

STANTEC CONSULTING LTD.

Jian Li, Ph.D., P. Eng., PE
Project Manager
Phone: (519) 966-2250
Fax: (519) 966-5523
jian.li@stantec.com

Attachment: public information centre material

nt document1

Stantec

Denis St. Pierre Water Pollution Control Plant Expansion

Class Environmental Assessment

Phase 3 Public Consultation

PUBLIC INFORMATION CENTRE

Wednesday, September 11, 2019
4:00 p.m.– 7:00 p.m.

Atlas Tube Centre – Lobby
447 Renaud Line Road
Lakeshore, Ontario

Prepared for:

The Town of Lakeshore

Prepared by:

Stantec Consulting Ltd.
Windsor, Ontario

165620173

September 11, 2019

DENIS ST. PIERRE WATER POLLUTION CONTROL PLANT EXPANSION
CLASS ENVIORNMENTAL ASSESSMENT
PUBLIC INFORMATION CENTRE

BACKGROUND

The Town of Lakeshore adopted its first comprehensive Water and Wastewater Master Plan in November 2008, and then an update of this Master Plan was undertaken and completed in 2018. The Master Plan and Update, which were prepared in accordance with Phases 1 and 2 of the Municipal Class Environmental Assessment, identified the need for additional capacity within the Denis St. Pierre Wastewater System servicing the Belle River and Maidstone communities. The Denis St. Pierre Wastewater System consists of sanitary sewers, pumping stations, and the Denis St. Pierre Water Pollution Control Plant (WPCP) including an outfall discharging to Lake St. Clair.

There are pressures from residential and industrial development in the Belle River and Maidstone areas and to avoid a restriction to development, additional treatment capacity is required. The expansion of the Denis St. Pierre WPCP was identified as the preferred solution to support the existing services areas and the anticipated future growth.

CLASS ENVIRONMENTAL ASSESSMENT

The Town of Lakeshore has commenced a study to investigate alternatives and develop a preferred design for the Denis St. Pierre WPCP Expansion. This project is being planned as a **Schedule C** undertaking following the provisions of the **Municipal Class Environmental Assessment** document. The overall objective of this project is to identify a preferred solution and design that will satisfy wastewater servicing requirements for the anticipated future growth that is acceptable to the public and all concerned review agencies.

The Water and Wastewater Master Plan and Update were prepared in accordance with Phases 1 & 2 of the Class EA process, which identified the problem that needs to be addressed and consideration of alternative solutions leading to selection of the preferred solution. Through this process, the expansion of the Denis St. Pierre WPCP was identified as the preferred solution to meet future growth and development needs in the Belle River and Maidstone areas.

A draft Environmental Study Report has been prepared which presents a number of possible alternative designs for the preferred solution. The merits and disadvantages of these alternatives are discussed with the decision-making process being structured to select the design that minimizes undesirable impacts on the natural, social and economic environments. Through this evaluation process, a recommended design has been identified and is provided for consideration as the preferred design. The recommended design consists of the following main elements:

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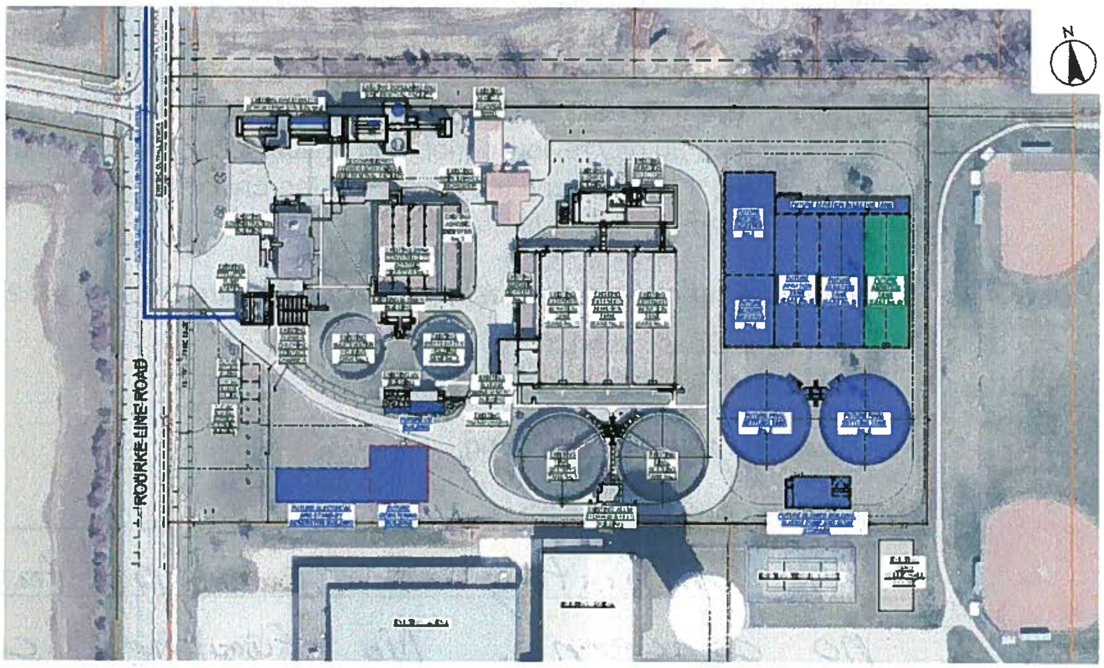
- Add third screw pumps at the existing Maidstone Pumping Station No.8
- Add second fine screen and vortex grit tank in the existing Screening and Grit Removal Facility

- Add two new aeration tanks and final clarifiers
- Build new UV disinfection facility
- Construct new service building accommodating blowers, sludge pumps, and chemical feed and storage
- Add two new aerobic digesters
- Construct new centrifugal dewatering facility
- Construct new electrical and standby generator building
- Twinning of inland portion of outfall sewer along Rourke Line Road from the plant to Caille Avenue and enlarging outfall diffusers from 5" to 10".



Copies of a draft study report have been distributed to mandatory contacts and review agencies. Feedback from review agencies and input gained through this public information centre will be included in the evaluation process to finalize selection of the preferred design.

FURTHER PLANNING

The Environmental Study Report will be finalized with modifications, as necessary, to reflect input from the public and review agencies. The completed Environmental Study Report will then be placed on the public record for a 30 day review period and notice of completion will be issued to review agencies, the public and the Ministry of the Environment, Conservation, and Parks Environmental Approvals Branch.

Stantec

THANK YOU

Thank you for your interest in this project and attendance at this public information centre.

Michael. Fyi + action if necessary
Reddh

DENIS ST. PIERRE WATER POLLUTION CONTROL PLANT EXPANSION
CLASS ENVIORNMENTAL ASSESSMENT
PUBLIC INFORMATION CENTRE

You are invited to provide comments about the proposed alternative designs for the expansion of the Denis St. Pierre WPCP.

Copies of the Public Information Centre material are available on the FTP site below:

Login Information

Browser link: https://projsftp.stantec.com
Login name: 165620173DENISSTPIERREWATERPOLLUTIONCONTROLPLANTEXPANSIONEASTUDY1044
Password: 4779676

Hard copies of the report can be made available for review on request and is available at the Town of Lakeshore Town Hall at 419 Notre Dame St, Belle River. Input from this Public Information Centre and from review agencies will be included in the evaluation process to select the preferred design alternative and finalize the study report. Thereafter the Environmental Study Report will be placed on the public record for a 30 day review period and notice of completion will be issued to review agencies, the public and the Ministry of the Environment, Conservation, and Parks Environmental Approvals Branch.

Please return your completed questionnaire on or before October 18, 2019 to:

Stantec Consulting Ltd.
140 Ouellette Place, Suite 100
Windsor ON N8X 1L9
Attention: Dr. Jian Li, P. Eng.

COMMENTS OR CONCERNS:
The ministry of transportation has no concerns. No further contact is needed on this project.

(Attach additional sheets if needed)

NAME Michael Swim

ADDRESS 659 Exeter Rd. London ON N6E 1L3

TELEPHONE NO. (226) 378-6648

FAX NO. (IF ANY) ( )

AFFILIATION OR GROUP (IF ANY) Ministry of Transportation

DATE Sept 17/19 SIGNATURE [signature]

Stantec

Stantec
Stantec Consulting Ltd.
100-140 Ouellette Place, Windsor ON N8X 1L9

March 6, 2020
File: 165620132

Attention: Ms. Corinne Chiasson, Resource Planner

Essex Region Conservation Authority
360 Fairview Avenue West
Suite 311, Essex, ON N8M 1Y6

Dear Ms. Chiasson,

Reference: Class Environmental Assessment – Draft ESR Report for Denis St. Pierre Water Pollution Control Plant Expansion, Town of Lakeshore

Thank you for your review comments on the September 10, 2019 Draft ESR for Denis St. Pierre Water Pollution Control Plant Expansion, Town of Lakeshore. The following is in response to your comments on the draft ESR, which was received on October 17, 2019.

1.0 REGULATORY APPROVAL UNDER SECTION 28 OF THE CONSERVATION AUTHORITIES ACT

Comments noted. We include a section below in the final ESR on Floodplain Hazard Management:

The proposed work site is under the jurisdiction of the Essex Region Conservation Authority (ERCA). The preferred route and location of this project was reviewed in accordance with ERCA's floodplain mapping of this area, and it has been determined that the proposed work site fall within the Limit of Regulated Area of the Lake St. Clair. The proposed excavations, construction of structures, drain crossings, and placement and grading of fill, within the regulated area will require permits from the ERCA under Ontario Regulation 158/06, (Development, Interference with Wetlands and Alteration to Shorelines and Watercourse Regulations - Section 28 of the Conservation Authorities Act).

During the final design phase, an application of flood proofing measures must be submitted to the ERCA for review and approval. The permit application shall meet the following requirements:

- Specific "Best Management Practices" regarding erosion control measures, sedimentation, and the removal of vegetation, which is provided in the MECP Stormwater Management Planning and Design Manual (2003)
- The Windsor-Essex Region Stormwater Management Standards Manual (2018), https://essexregionconservation.ca/wp-content/uploads/2018/12/WE-Region-SWM-Standards-Manual.pdf

Reference: **Class Environmental Assessment – Draft ESR Report for Denis St. Pierre Water Pollution Control Plant Expansion, Town of Lakeshore**

- Water quality measures shall be considered to ensure no adverse impact on the downstream watercourse. The new preferred outfall sewer will run parallel to the existing outfall sewer that is located along Rourke Line Road, and outletting to the Lake St. Clair. Surface water monitoring program is to be implemented to verify no adverse impact on the downstream watercourse.

- Items listed in Table 6-1 "Environmental Effect and Mitigation Measures" described in this ESR Report

2.0 ESSEX SOURCE WATER PROTECTION PLAN 2015 - CLEAN WATER ACT

We will include a section below in the final ESR on Source Water Protection:

The project site lies within the Event Based Area (vulnerable area) of a municipal drinking water intake protection system. The Essex Region Source Protection Plan, which came into effect October 1, 2015, was developed to provide measures to protect Essex Region's municipal drinking water sources. As a result of these policies, there are activities described in the ESR that may require approval by the Essex Region Risk Management Official (RMO) to ensure that appropriate actions are taken to mitigate any potential drinking water threats. Specifically, the handling and storage of fuel is considered a Significant Drinking Water Threat in all Event Based Area in the Essex Region Source Protection Area and a s.58 Risk Management Plan would be required if the activity meets the specific risk circumstances in the Essex Region Source Protection Plan.

During the final design and construction phases, Essex Region Risk Management Official/Inspector will be contacted to confirm that the handling and storage of fuel proposed for this project will not pose a significant risk to local sources of municipal drinking water.

I trust that you will find the above responses adequately address your comments. Should you have any questions or wish like to clarify anything, please contact the undersigned.

Regards,

Stantec Consulting Ltd.

Jian Li Ph.D., P.Eng., PE
Project Manager
Phone: 519 966 2250
Fax: 519-966-5523
jian.li@stantec.com

c. Nelson Cavacas, Director of Engineering & Infrastructure Services, Town of Lakeshore

planning@erca.org
P.519.776.5209
F.519.776.8688
360 Fairview Avenue West
Suite 311, Essex, ON N8M 1Y6

October 17, 2019

Dr. Jian Li, P.Eng, Project Manager
Stantec Consulting Ltd.
140 Ouellette Place Suite 100
Windsor, ON, N8X 1L9
Email: jian.li@stantec.com

Dear Mr. Li:

RE: EA - Draft ESR Report - Denis St Pierre Water Treatment Plant Expansion Municipal Class EA Review of Environmental Report

This letter is in response to our receipt and review of the Draft Environmental Study Report - Denis St. Pierre Water Treatment Plant Expansion. It is our understanding that this process is following the Municipal Class EA in accordance with the planning and design process for "Schedule C" projects as outlined in the Municipal Class Environmental Assessment (June 2000, as amended in 2007, 2011 and 2015) under the Ontario Environmental Assessment Act.

We understand that this Environmental Study Report identifies the need for additional capacity and treatment services at the Denis St. Pierre Water Pollution Control Plant (WPCP) due to pressure from residential, commercial and industrial development in the Belle River and Maidstone areas. The proposed expansion will provide additional waste water capacity and treatment to ensure existing development and future growth will be supported for the prescribed planning horizon.

We provide the following information based on our role as a regulatory authority, a watershed based resource management agency and a local public commenting body.

REGULATORY APPROVAL UNDER SECTION 28 OF THE CONSERVATION AUTHORITIES ACT

It is our understanding that the proposed expansion of the Denis St. Pierre WPCP will include: 1. installation of new electrical, storage, and dewatering buildings, 2. new aeration, digester and settling tanks, and 3. the installation of a new outfall sewer pipe for effluent dispersal into Lake St. Clair. We note that the entire study area of this project falls within the ERCA regulated area, therefore the construction of the proposed works will require a permit approval under Section 28 of the Conservation Authorities Act. As the project site falls within an area susceptible to flooding, a component of our approval will be that all structures satisfy the required flood proofing elevation. This prescribed elevation is a minimum requirement only, due to the purpose and location of these public services, and length of the planning horizon intended, we would encourage the Town of Lakeshore and the project consultants to consider and incorporate a more stringent standard in the final design.

October 17, 2019

We acknowledge that the ESR states that all works will comply with the Ministry of the Environment Conservation and Parks ECA process, and will incorporate standards in the (MECP) storm water management design manual (2003). We recommend that this assessment also reflect requirements of the Windsor-Essex Region Stormwater Management Standards Manual, https://essexregionconservation.ca/wp-content/uploads/2018/12/WE-Region-SWM-Standards-Manual.pdf . A component of our permit review will be that all works conform to this manual.

ERCA supports the mitigation measures for best management practices noted in the ESR with regard to erosion and sediment control during construction of the new outfall sewer and the expansion plans at the plant. These measures will ensure no adverse impacts will result in the downstream watercourses. We are optimistic that our regulatory requirements can be addressed through our ERCA permit review process and we will provide additional comments at the point that detailed design drawings and plans can be reviewed from our office.

We recognise that this plant expansion will improve existing and future capacity servicing issues and improve the quality of the effluent released from this wastewater system; however we wish to advise of the threat of record high lake levels, and significant extreme rainfall events that have been experienced over the last decade in this region. There is a need to consider the impacts of a changing climate and the increased frequency of flooding in this area. High lake levels, intense rain events, and the effects of downstream tailwater conditions, will result in a significant increase to wet weather infiltration into this waste water system. We are concerned as to how these issues will be addressed for this project. We would encourage the Town of Lakeshore and the project consultants to consider these issues in the final overall design of this proposed plant expansion.

NATURAL HERITAGE - PUBLIC AGENCY REVIEW

We have reviewed the proposed location of the new outfall sewer pipe identified as Alternative 1 and Alternative 2 and understand that the proposed works will be conducted parallel to the existing outfall pipe which is located within the road right of way of Rourke Line. We therefore acknowledge the statement in the ESR that states "the preferred work will not have a significant effect on the natural environment". We support the presented mitigating measures listed in "Table 6.1 - Environmental Effects and Mitigating Measures" (p. 72), to ensure that no negative impacts will result on any natural heritage features in the area due to these proposed works.

ESSEX SOURCE WATER PROTECTION PLAN 2015 - CLEAN WATER ACT

The project site lies within the Event Based Area (vulnerable area) of a municipal drinking water intake protection system. The Essex Region Source Protection Plan, which came into effect October 1, October 17, 2019

2015, was developed to provide measures to protect Essex Region's municipal drinking water sources. As a result of these policies, there are activities described in the ESR that may require approval by the Essex Region Risk Management Official (RMO) to ensure that appropriate actions are taken to mitigate any potential drinking water threats. Specifically, the handling and storage of fuel is considered a Significant Drinking Water Threat in all Event Based Area in the Essex Region Source Protection Area and a s.58 Risk Management Plan would be required if the activity meets the specific risk circumstances in the Essex Region Source Protection Plan.

We would advise that the project coordinator/manager' contact Laura Monforton, Essex Region Risk Management Official/Inspector to confirm that the handling and storage of fuel proposed for this project will not pose a significant risk to local sources of municipal drinking water. Ms. Monforton can be reached by email at: riskmanagement@erca.org or 519-776-5209 ext. 214.

If you require further information or need clarification on the above information please contact the undersigned. We thank you for the opportunity to review and comment on this Environmental Study Report.

Sincerely,

Corinne Chiasson
Resource Planner
/cor

CC Mr. Kevin Girard, P.Eng, Manager of Environmental Services, Town of Lakeshore
Katie Stammler, Source Water Protection Project Manager

Hydro One Networks Inc
483 Bay St
Toronto, ON

October 08, 2019

Re: Denis St. Pierre Water Pollution Control Plant Expansion

Attention:
Kevin Girard, P.Eng
Manager of Environmental Services

Following our preliminary assessment, we confirm there are no existing Hydro One Transmission assets in the subject area. Please be advised that this is only a preliminary assessment based on current information. we confirm there are no existing Hydro One Transmission assets in the subject area. to the current information.

However, if plans for the undertaking change or the study area expands beyond that shown, please contact Hydro One to assess impacts of existing or future planned electricity infrastructure.

Any future communications are sent to Secondarylanduse@hydroone.com.

Sent on behalf of,

Secondary Land Use
Asset Optimization
Strategy & Integrated Planning
Hydro One Networks Inc.

From:	Li, Jian
To:	"josette@jseltd.ca"
Cc:	jg44inc@gmail.com; ncavacas@lakeshore.ca
Subject:	RE: PIC - Denis St Pierre Water Pollution Control Plant Expansion
Date:	Sunday, March 8, 2020 7:01:00 PM
Attachments:	Comment Sheet Oct 18 2019.pdf image001.png image002.png 20173_FIGURE_1.2.pdf

Hi Josette,

We have carefully reviewed your comments on the Denis St Pierre Water Pollution Control Plant Expansion, which was received on October 18, 2019. Here are our responses to your comments:

1. Service Area

   The wastewater service area is not accurate in the draft ESR report. Figure 1.2 (proposed service area) of the draft EA has been revised to match the Town's official plan Schedule. Please refer to the second attachment for the revised Figure 1.2 (proposed service area), which is to be included in the final ESR.

2. Sanitary Treatment Plant at the corner of County Road 22 and Patillo Road

   Please be advised that the plant is no longer in operation for a long time. It is not considered to be a preferred solution to upgrade and expand the existing plant or build a new package plant for future development for the specific area in the Belle River and Maidstone communities..

We hope the above responses will address your comments. The ESA for the subject EA is being finalized and notice of completion will be issued shortly.

Please contact the undersigned should you have any questions/comments.

Thanks,
Jian

Jian Li, Ph.D., P.Eng., PE
Project Manager

Direct: 519 966-2250
Mobile: 519 562-7541

Stantec
100-140 Ouellette Place
Windsor ON N8X 1L9 CA

From: josette@jseltd.ca <josette@jseltd.ca>
Sent: Thursday, October 17, 2019 2:46 PM
To: Li, Jian <jian.li@stantec.com>
Cc: jg44inc@gmail.com; 'Kevin Girard' <kgirard@lakeshore.ca>
Subject: RE: PIC - Denis St Pierre Water Pollution Control Plant Expansion

Thank you Jian for your response.
I've attached the comment Sheet for this study for further consideration.

Regards,
Josette Eugeni

From: Li, Jian <jian.li@stantec.com>
Sent: September 27, 2019 12:13 PM
To: josette@jseltd.ca
Cc: jg44inc@gmail.com; 'Kevin Girard' <kgirard@lakeshore.ca>
Subject: RE: PIC - Denis St Pierre Water Pollution Control Plant Expansion

Hi Josette,

Thanks for your comments on the draft EA. Here are the responses to your questions:

1. Service Area

   The wastewater service area is not accurate in the draft ESR report. Figure 1.2 (proposed service area) of the draft EA is to be revised to match the Town's official plan Schedule (refer to the second attachment).

2. Sanitary Treatment Plant at the corner of County Road 22 and Patillo Road

   Please be advised that the plant is no longer in operation for a long time. It is not considered to be a preferred solution to upgrade and expand the existing plant or build a new package plant for future development for the specific area in the Belle River and Maidstone communities..

Please contact the undersigned should you have any additional comments.

Best regards,

Jian Li, Ph.D., P.Eng., PE
Project Manager

Direct: 519 966-2250
Mobile: 519 562-7541

Stantec
100-140 Ouellette Place
Windsor ON N8X 1L9 CA

From: josette@jseltd.ca <josette@jseltd.ca>
Sent: Thursday, September 26, 2019 4:37 PM
To: 'Kevin Girard' <kgirard@lakeshore.ca>; Li, Jian <jian.li@stantec.com>
Cc: jg44inc@gmail.com
Subject: RE: PIC - Denis St Pierre Water Pollution Control Plant Expansion

Hi Jian
As per our conversation today, you requested that I email my questions so that you can follow-up.
Please find the attached map.

1. The first question relates to the **Service Area** for the Denis St. Pierre Water Pollution Control Plant. The south limit of the service area generally flows CP Rail. There is a "cut-out" section between Patillo Road and County Road 21. Can you please advise where the service for the lands within the "cut-out" is allocated? I've highlighted in yellow the property of interest & marked the address – 361 Little Baseline Road.

2. There is a **Sanitary Treatment Plant at the corner of County Road 22 and Patillo Road** (also highlighted in yellow). I don't see where it has been identified in the EA Study that the capacity from this plant is contributing to / reducing the needed capacity within the Denis St. Pierre WPCP Service Area.
   In our discussions you indicated that the current study was specific to the capacity enhancements at the Denis St. Pierre WPCP and had referenced the Town of Lakeshore Water & Wastewater Master Plan Update report as the basis for this recommendation. At a cursory glance – I don't find reference to this facility within that Master Plan study (chapter 2.2 Existing Wastewater Systems). Please advise where the capacity of this facility is considered.

As discussed this information will help with completing the comment sheet by the Oct 18 deadline.

Thank you for your assistance.
Regards,
Josette

From: Kevin Girard <kgirard@lakeshore.ca>
Sent: September 17, 2019 9:36 AM
To: josette@jseltd.ca; jian.li@stantec.com
Subject: RE: PIC - Denis St Pierre Water Pollution Control Plant Expansion

Jian,

Are you able to assist?

From: josette@jseltd.ca [mailto:josette@jseltd.ca]

Sent: September-12-19 4:03 PM
To: Kevin Girard <kgirard@lakeshore.ca>; jian.li@stantec.com
Subject: RE: PIC - Denis St Pierre Water Pollution Control Plant Expansion

Hi Kevin
The ftp site indicates that I do not have permission to download or open the draft study. Just the open house boards...
Maybe there is a different setting?

Josette

From: Kevin Girard <kgirard@lakeshore.ca>
Sent: September 12, 2019 2:24 PM
To: josette@jseltd.ca; jian.li@stantec.com
Subject: RE: PIC - Denis St Pierre Water Pollution Control Plant Expansion

Josette,

Please see the map attached for the area that this plant services. The full draft EA report can be found at the following link.

Login Information

Browser link: https://projsftp.stantec.com
Login name:
165620173DENISSTPIERREWATERPOLLUTIONCONTROLPLANTEXPANSIONEASTUDY1044
Password: 4779676

If you have any other questions, please let me or Jian know.

Thanks,

Kevin Girard, P.Eng.
Manager of Environmental Services

Town of Lakeshore
T 519-728-1975 x239
kgirard@lakeshore.ca

and .

From: josette@jseltd.ca [mailto:josette@jseltd.ca]
Sent: September-11-19 11:32 AM

To: Kevin Girard <kgirard@lakeshore.ca>; jian.li@stantec.com
Subject: PIC - Denis St Pierre Water Pollution Control Plant Expansion

Hi Kevin
Do you have a map illustrating the area serviced by this plant? Or a link to the PIC materials?

Thanks,
Josette

Josette Eugeni
James Sylvestre Developments Ltd
1865 Manning Road
Tecumseh, Ontario N8N 2L9
josette@jseltd.ca
519 735-6606 ext.110
519 982-1500 mobile

DENIS ST. PIERRE WATER POLLUTION CONTROL PLANT EXPANSION
CLASS ENVIORNMENTAL ASSESSMENT
PUBLIC INFORMATION CENTRE

You are invited to provide comments about the proposed alternative designs for the expansion of the Denis St. Pierre WPCP.

Copies of the Public Information Centre material are available on the FTP site below:

Login Information

Browser link: https://projsftp.stantec.com
Login name: 165620173DENISSTPIERREWATERPOLLUTIONCONTROLPLANTEXPANSIONEASTUDY1044
Password: 4779676

Hard copies of the report can be made available for review on request and is available at the Town of Lakeshore Town Hall at 419 Notre Dame St, Belle River. Input from this Public Information Centre and from review agencies will be included in the evaluation process to select the preferred design alternative and finalize the study report. Thereafter the Environmental Study Report will be placed on the public record for a 30 day review period and notice of completion will be issued to review agencies, the public and the Ministry of the Environment, Conservation, and Parks Environmental Approvals Branch.

Please return your completed questionnaire on or before October 18, 2019 to:

Stantec Consulting Ltd.
140 Ouellette Place, Suite 100
Windsor ON N8X 1L9
Attention: Dr. Jian Li, P. Eng.

COMMENTS OR CONCERNS:

See attached

(Attach additional sheets if needed)

NAME James & Jeannette Sylvestre, James Sylvestre Developments Ltd.

ADDRESS 1865 Manning Road, Tecumseh ON N8N 2L9

TELEPHONE NO. (519) 735 6606

FAX NO. (IF ANY) (519) 735 1603

AFFILIATION OR GROUP (IF ANY)

DATE Oct 18/2019 SIGNATURE [signature]

Stantec

P. 1 of 2

COMMENT SHEET:

1. The service area for the Denis StPierre Water Pollution Control Plant Expansion will be revised to include the full Patillo/Advance Special Planning Area as illustrated on Schedule A – Community Structure of the Official Plan.

   It is our understanding therefore that there is sufficient sanitary capacity in the planned expansion of the Denis St.Pierre WPCP for the property located at **361 Little Baseline Road** which is zoned Urban Reserve, and that this parcel can be developed within the 20yr study horizon.

   Please confirm this understanding and provide a copy of the revised Service Area once it is available.

2. Study contacts have confirmed that the Sanitary Treatment Plant at the corner of Patillo Road and County Road 22 is not in use and that it is not considered to be a preferred solution.

   The Executive Summary from the 2018 Water & Wastewater Master Plan Update identifies the following project in the list of wastewater projects:

   > *Conduct a study of the Patillo Road Package Plant to evaluate*
   > *(1) the ability of the plant to relieve wet weather flows*
   > *(2) ability of the plant to increase available capacity at the Denis St. Pierre WPCP and*
   > *(3) assess the capital cost and feasibility of bringing this plant back online from standby.*
   > *Estimated Cost: $50,000*
   > *Timeline: 2017*
   > *EA Schedule: N/A*

   Please provide a copy of the study or analysis confirming the recommendation noted herein.

   It is further requested that a commitment be provided to investigate opportunities for an interim solution that includes the use of the Patillo Road Package Plant to facilitate more immediate temporary capacity for servicing the property at 361 Little Baseline Road.

APPENDIX F-3

First Nations Consultation

- **Aboriginal Consultation Log_Feb28_2020**
- **Email Delivery Receipts**
- **Email Read Receipts**

Contact Information	Date/Method of Communication	Correspondence Received and/or Project Information Distributed	Consultant Response
Ministry of Aboriginal Affairs Leslie Brewer-Palhazi (leslie.brewer-palhazi@ontario.ca) Corwin Troje (corwin.troje@ontario.ca) Ashley Johnson (Ashley.Johnson@ontario.ca) Ministry Partnerships Unit, Aboriginal Relations and Ministry Partnerships Branch	**Notice of Commencement** Date: April 3, 2019 Method: Newspaper and Canada Post	The Notice of Commencement was sent to Leslie Brewer-Palhazi, Corwin Troje and Ashley Johnson on April 3, 2019 via Canada Post. The Notice was published in the April 11, 2019 edition of the Lakeshore News and Tilbury Times, and the April 12, 2019 edition of the Shoreline News.	N/A
	Phase 3 Open House and Draft ESR Date: September 11, 2019 Method: Newspaper and Canada Post	The Notice of Phase 3 Open House was in the August 24, 2019 edition of the Windsor Star, August 27, 2019 edition of Tilbury Times, August 29, 2019 edition of the Lakeshore News, and August 30, 2019 edition of the Shoreline News. The print copy of handout materials was mailed to Leslie Brewer-Palhazi, Corwin Troje and Ashley Johnson to solicit comments and inputs on September 10, 2019. A follow up email was sent February 26, 2020 in regard to the receipt of the Open House Materials.	N/A
	Notice of Completion		
Ministry of Aboriginal Affairs and Northern Development Canada Allison Berman (allison.berman@canada.ca) Consultation and Accommodation Unit	**Notice of Commencement** Date: April 3, 2019 Method: Newspaper and Canada Post	The Notice of Commencement was sent to Allison Berman on April 3, 2019 via Canada Post. The Notice was published in the April 11, 2019 edition of the Lakeshore News and Tilbury Times, and the April 12, 2019 edition of the Shoreline News.	N/A
	Phase 3 Open House and Draft ESR Date: September 11, 2019 Method: Newspaper and Canada Post	The Notice of Phase 3 Open House was in the August 24, 2019 edition of the Windsor Star, August 27, 2019 edition of Tilbury Times, August 29, 2019 edition of the Lakeshore News, and August 30, 2019 edition of the Shoreline News. The print copy of handout materials was mailed to Allison Berman to solicit comments and inputs on September 10, 2019. A follow up email was sent February 26, 2020 in regard to the receipt of the Open House Materials.	N/A
	Notice of Completion		
Indigenous & Northern Affairs Canada Leea Litzgus (leea.litzgus@canada.ca) Ontario Region	**Notice of Commencement** Date: April 3, 2019 Method: Newspaper and Canada Post	The Notice of Commencement was sent to Leea Litzgus on April 3, 2019 via Canada Post. The Notice was published in the April 11, 2019 edition of the Lakeshore News and Tilbury Times, and the April 12, 2019 edition of the Shoreline News.	requested in a letter dated May 6, 2019 that ISC be kept informed of progress of this project. ISC has no comments concerning the project at this time
	Phase 3 Open House and Draft ESR Date: September 11, 2019 Method: Newspaper and Canada Post	The Notice of Phase 3 Open House was in the August 24, 2019 edition of the Windsor Star, August 27, 2019 edition of Tilbury Times, August 29, 2019 edition of the Lakeshore News, and August 30, 2019 edition of the Shoreline News. The print copy of handout materials was mailed to Leea Litzgus to solicit comments and inputs on September 10, 2019. A follow up email was sent February 26, 2020 in regard to the receipt of the Open House Materials.	N/A
	Notice of Completion		
Southern First Nations Secretariat Jennifer Whiteye (jenwhiteye@sfns.on.ca) Consultation and Accommodation Unit	**Notice of Commencement** Date: April 3, 2019 Method: Newspaper and Canada Post	The Notice of Commencement was sent to Jennifer Whiteye on April 3, 2019 via Canada Post. The Notice was published in the April 11, 2019 edition of the Lakeshore News and Tilbury Times, and the April 12, 2019 edition of the Shoreline News.	N/A
	Phase 3 Open House and Draft ESR Date: September 11, 2019	The Notice of Phase 3 Open House was in the August 24, 2019 edition of the Windsor Star, August 27, 2019 edition of Tilbury Times, August 29,	N/A

Contact Information	Date/Method of Communication	Correspondence Received and/or Project Information Distributed	Consultant Response
	Method: Newspaper and Canada Post	2019 edition of the Lakeshore News, and August 30, 2019 edition of the Shoreline News. The print copy of handout materials was mailed to Jennifer Whiteye to solicit comments and inputs on September 10, 2019. A follow up email was sent February 26, 2020 in regard to the receipt of the Open House Materials.	
	Notice of Completion		
Delaware Nation (Moravian of the Thames) Denise Stonefish (519) 692-3936 14760 School House Line Thamesville ON N0P 2K0	**Notice of Commencement** Date: April 3, 2019 Method: Newspaper and Canada Post	The Notice of Commencement was sent to Denise Stonefish on April 3, 2019 via Canada Post. The Notice was published in the April 11, 2019 edition of the Lakeshore News and Tilbury Times, and the April 12, 2019 edition of the Shoreline News.	N/A
	Phase 3 Open House and Draft ESR Date: September 11, 2019 Method: Newspaper and Canada Post	The Notice of Phase 3 Open House was in the August 24, 2019 edition of the Windsor Star, August 27, 2019 edition of Tilbury Times, August 29, 2019 edition of the Lakeshore News, and August 30, 2019 edition of the Shoreline News. The print copy of handout materials was mailed to Denise Stonefish to solicit comments and inputs on September 10, 2019. A follow phone call was made February 27, 2020 (left a voicemail with Chief Denise Stonefish)	N/A
	Notice of Completion		
Aamjiwnaang First Nation Chris Plain (chief@aamjiwnaang.ca) Joanne Rogers (jrogers@aamjiwnaang.ca) Sharilyn Johnston (sjohnston@aamjiwnaang.ca) Christine Rogers (crogers@aamjiwnaang.ca) 978 Tashmoo Avenue Sarnia ON N7T 7H5	**Notice of Commencement** Date: April 3, 2019 Method: Newspaper and Canada Post	The Notice of Commencement was sent to Joanne Rogers, Sharilyn Johnston and Christine Rogers on April 3, 2019 via Canada Post. The Notice was published in the April 11, 2019 edition of the Lakeshore News and Tilbury Times, and the April 12, 2019 edition of the Shoreline News.	N/A
	Phase 3 Open House and Draft ESR Date: September 11, 2019 Method: Newspaper and Canada Post	The Notice of Phase 3 Open House was in the August 24, 2019 edition of the Windsor Star, August 27, 2019 edition of Tilbury Times, August 29, 2019 edition of the Lakeshore News, and August 30, 2019 edition of the Shoreline News. The print copy of handout materials was mailed to Chris Plain, Sharilyn Johnston and Christine Rogers to solicit comments and inputs on September 10, 2019. A follow up email was sent February 26, 2020 in regard to the receipt of the Open House Materials.	N/A
	Notice of Completion		
Caldwell First Nation Mary Duckworth Nikki Orosz (nikki@caldwellfirstnation.ca) PO Box 388 Leamington ON N8H 3W3 (519) 322-1766	**Notice of Commencement** Date: April 3, 2019 Method: Newspaper and Canada Post	The Notice of Commencement was sent to Mary Duckworth and Nikki Orosz on April 3, 2019 via Canada Post. The Notice was published in the April 11, 2019 edition of the Lakeshore News and Tilbury Times, and the April 12, 2019 edition of the Shoreline News.	N/A
	Phase 3 Open House and Draft ESR Date: September 11, 2019 Method: Newspaper and Canada Post	The Notice of Phase 3 Open House was in the August 24, 2019 edition of the Windsor Star, August 27, 2019 edition of Tilbury Times, August 29, 2019 edition of the Lakeshore News, and August 30, 2019 edition of the Shoreline News. The print copy of handout materials was mailed to Mary Duckworth and Nikki Orosz to solicit comments and inputs on September 10, 2019. A follow up email was sent February 26, 2020 in regard to the receipt of the Open House Materials.	N/A
	Notice of Completion		

Aboriginal Consultation Log
Municipal Class Environmental Assessment
Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion

Contact Information	Date/Method of Communication	Correspondence Received and/or Project Information Distributed	Consultant Response
Bkejwanong Territory (Walpole Island) First Nation Dan Miskokomon (drskoke@wifn.org) Dean Jacobs (dean.jacobs@wifn.org) Janet Macbeth (janet.macbeth@wifn.org) 117 Tahgahoning Road, RR#3 Wallaceburg ON N8A 4K95	**Notice of Commencement** Date: April 3, 2019 Method: Newspaper and Canada Post	The Notice of Commencement was sent to Dan Miskokomon, Dean Jacobs and Janet Macbeth on April 3, 2019 via Canada Post The Notice was published in the April 11, 2019 edition of the Lakeshore News and Tilbury Times, and the April 12, 2019 edition of the Shoreline News.	N/A
	Phase 3 Open House and Draft ESR Date: September 11, 2019 Method: Newspaper and Canada Post	The Notice of Phase 3 Open House was in the August 24, 2019 edition of the Windsor Star, August 27, 2019 edition of Tilbury Times, August 29, 2019 edition of the Lakeshore News, and August 30, 2019 edition of the Shoreline News. The print copy of handout materials was mailed to Dan Miskokomon, Dean Jacobs and Janet Macbeth to solicit comments and inputs on September 10, 2019. A follow up email was sent February 26, 2020 in regard to the receipt of the Open House Materials.	N/A
	Notice of Completion		
Metis Nation of Ontario consultation@metisnation.org Margaret Froh, President (margaretF@metisnation.org) 500 Old St. Patrick Street, Unit 3 Ottawa ON K1N 9G4 75 Sherbourne Street, Unit 311 Toronto ON M5A 2P9	**Notice of Commencement** Date: April 3, 2019 Method: Newspaper and Canada Post	The Notice of Commencement was sent to Aly Alibhai on April 3, 2019 via Canada Post. The Notice was published in the April 11, 2019 edition of the Lakeshore News and Tilbury Times, and the April 12, 2019 edition of the Shoreline News.	N/A
	Phase 3 Open House and Draft ESR Date: September 11, 2019 Method: Newspaper and Canada Post	The Notice of Phase 3 Open House was in the August 24, 2019 edition of the Windsor Star, August 27, 2019 edition of Tilbury Times, August 29, 2019 edition of the Lakeshore News, and August 30, 2019 edition of the Shoreline News. The print copy of handout materials was mailed to Aly Alibhai to solicit comments and inputs on September 10, 2019. A follow up email was sent February 28, 2020 in regard to the receipt of the Open House Materials.	N/A
	Notice of Completion		
Chippewas of Kettle and Stony Point First Nation Jason Henry (Jason.henry@kettlepoint.org) Tom Bressette (Thomas.bressette@kettlepoint.org) Valerie George (Valerie.george@kettlepoint.org) 6247 Indian Lane, R.R. #2 Forest, ON N0N 1J1	**Notice of Commencement** Date: April 3, 2019 Method: Newspaper and Canada Post	The Notice of Commencement was sent to Tom Bressette and Valerie George on April 3, 2019 via Canada Post. The Notice was published in the April 11, 2019 edition of the Lakeshore News and Tilbury Times, and the April 12, 2019 edition of the Shoreline News.	N/A
	Phase 3 Open House and Draft ESR Date: September 11, 2019 Method: Newspaper and Canada Post	The Notice of Phase 3 Open House was in the August 24, 2019 edition of the Windsor Star, August 27, 2019 edition of Tilbury Times, August 29, 2019 edition of the Lakeshore News, and August 30, 2019 edition of the Shoreline News. The print copy of handout materials was mailed to Jason Henry and Valerie George to solicit comments and inputs on September 10, 2019. A follow up email was sent February 26, 2020 in regard to the receipt of the Open House Materials.	N/A
	Notice of Completion		

Aboriginal Consultation Log
Municipal Class Environmental Assessment
Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion

Contact Information	Date/Method of Communication	Correspondence Received and/or Project Information Distributed	Consultant Response
Chippewas of the Thames First Nation Jacqueline French (jfrench@cottfn.com) Kelly Riley (kriley@cottfn.com) Fallon Burch Rochelle Smith (rsmith@cottfn.com) 320 Chippewa Road Muncey ON N0L 1Y0	**Notice of Commencement** Date: April 3, 2019 Method: Newspaper and Canada Post	The Notice of Commencement was sent to Henry Myeengun, Kelly Riley and Rochelle Smith on April 3, 2019 via Canada Post. The Notice was published in the April 11, 2019 edition of the Lakeshore News and Tilbury Times, and the April 12, 2019 edition of the Shoreline News.	Chippewas of the Thames First Nation (COTTFN) advised in a letter dated May 8, 2019 that the proposed project is located within the Mckee Treaty area (1790) to which COTTFN is a signatory, as well as the Big Bear Creek Addition to Reserve (ATR) land selection area, and COTTFN's Traditional Territory. COTTFN has minimal concerns with the proposed project. It is requested that COTTFN be kept informed of progress of this project including distribution of a digital copy of the study report.
	Phase 3 Open House and Draft ESR Date: September 11, 2019 Method: Newspaper and Canada Post	The Notice of Phase 3 Open House was in the August 24, 2019 edition of the Windsor Star, August 27, 2019 edition of Tilbury Times, August 29, 2019 edition of the Lakeshore News, and August 30, 2019 edition of the Shoreline News. The print copy of handout materials was mailed to Henry Myeengun, Kelly Riley and Rochelle Smith to solicit comments and inputs on September 10, 2019. A follow up email was sent February 26, 2020 in regard to the receipt of the Open House Materials.	N/A
	Notice of Completion		
Oneida Nation of the Thames ONYOTA'A:KA Jessica Hill (Jessica.hill@oneida.on.ca) Brandon Doxtator (environment@oneida.on.ca) Randall Phillips Catherine Cornellus 2212 Elm Avenue Southwold, ON N0L 2G0	**Notice of Commencement** Date: April 3, 2019 Method: Newspaper and Canada Post	The Notice of Commencement was sent to Randall Phillips and Catherine Cornellus on April 3, 2019 via Canada Post. The Notice was published in the April 11, 2019 edition of the Lakeshore News and Tilbury Times, and the April 12, 2019 edition of the Shoreline News.	N/A
	Phase 3 Open House and Draft ESR Date: September 11, 2019 Method: Newspaper and Canada Post	The Notice of Phase 3 Open House was in the August 24, 2019 edition of the Windsor Star, August 27, 2019 edition of Tilbury Times, August 29, 2019 edition of the Lakeshore News, and August 30, 2019 edition of the Shoreline News. The print copy of handout materials was mailed to Jessica Hill and Brandon Doxtator to solicit comments and inputs on September 10, 2019. A follow up email was sent February 26, 2020 in regard to the receipt of the Open House Materials.	
	Notice of Completion		

From: Nikki van Oirschot
To: Bryans, Brittany
Subject: Read: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion
Date: Thursday, February 27, 2020 12:51:03 PM

From: Jacqueline French
To: Bryans, Brittany
Subject: Read: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion
Date: Wednesday, February 26, 2020 12:05:23 PM

Your message
To:
Subject: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion
Sent: Wednesday, February 26, 2020 5:05:22 PM (UTC+00:00) Monrovia, Reykjavik
was read on Wednesday, February 26, 2020 5:05:11 PM (UTC+00:00) Monrovia, Reykjavik.

From: Rochelle Smith
To: Bryans, Brittany
Subject: Read: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion
Date: Friday, March 06, 2020 8:49:28 AM

Your message
To:
Subject: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion
Sent: Friday, March 6, 2020 1:49:27 PM (UTC+00:00) Monrovia, Reykjavik
was read on Friday, March 6, 2020 1:49:15 PM (UTC+00:00) Monrovia, Reykjavik.

From:	Rochelle Smith
To:	Bryans, Brittany
Cc:	Fallon Burch; Consultation; Kelly Riley
Subject:	RE: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion
Date:	Friday, March 06, 2020 9:02:40 AM
Attachments:	image001.png image002.png

Good morning Brittany,

I have cc'd our consultation coordinator, Fallon Burch. For future notices, please send them to consultation@cottfn.com to ensure they make it to the right people here at Chippewa. As well, if you would like to update your contacts, Myeengun Henry is no long the Chief. Our elected Chief is Jacqueline French. Should you ever wonder who the elected officials are, you can check our website at https://www.cottfn.com/chief-council/

Fallon will be in contact with you in the next few weeks regarding your project.

Kind regards,
Rochelle Smith

Rochelle Smith
Events & Promotions Coordinator, TLE Dept. Chippewas of the Thames First Nation
320 Chippewa Rd Muncey, ON N0L 1Y0 | 519-289-5555 |
www.cottfn.com/consultation

From: Bryans, Brittany <Brittany.Bryans@stantec.com>
Sent: February 26, 2020 11:24 AM
To: Myeengun Henry <myeengun@cottfn.com>
Cc: Kelly Riley <kriley@cottfn.com>; Rochelle Smith <rsmith@cottfn.com>
Subject: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion

Hello Henry Myeengun,

This is a follow up email regarding the documents sent on September 10th, 2019 with respect to the Municipal Class Environmental Assessment for the Expansion of the Town of Lakeshore Denis St. Pierre Water Pollution Control Plant. An Open House was held on September 11th, 2019 to present background information on the study, alternatives for plant expansion, and preliminary recommendations for public review.

On behalf of the Town of Lakeshore, please find attached the Notice of Public Information Centre and the Open House Material for your review. Should you have any comments and/or concerns regarding information mention in the attached or regarding the project in general, we are open to discussing these with you.

Best regards,

Brittany Bryans, P. Eng.
Environmental Engineer

Direct: 519 675-6646
Fax: 519 645-6675
Brittany.Bryans@stantec.com

Stantec
600-171 Queens Avenue
London ON N6A 5J7

From: Margaret Froh
To: Bryans, Brittany
Subject: Read: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion
Date: Friday, February 28, 2020 11:41:19 AM

Your message
To:
Subject: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion
Sent: Friday, February 28, 2020 4:41:18 PM (UTC+00:00) Monrovia, Reykjavik
was read on Friday, February 28, 2020 4:39:17 PM (UTC+00:00) Monrovia, Reykjavik.

From: Chief Jessica Hill
To: Bryans, Brittany
Subject: Read: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion
Date: Thursday, February 27, 2020 10:57:52 AM

Your message

To:

Subject: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion

Sent: Thursday, February 27, 2020 3:57:52 PM (UTC+00:00) Monrovia, Reykjavik

was read on Thursday, February 27, 2020 3:57:39 PM (UTC+00:00) Monrovia, Reykjavik.

From:	Dan Miskokomon
To:	Bryans, Brittany
Subject:	Read: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion
Date:	Wednesday, February 26, 2020 9:22:05 PM

Your message

To:

Subject: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion

Sent: Thursday, February 27, 2020 2:22:04 AM (UTC+00:00) Monrovia, Reykjavik

was read on Thursday, February 27, 2020 2:21:43 AM (UTC+00:00) Monrovia, Reykjavik.

From:	postmaster@aamjiwnaang.ca
To:	chief@aamjiwnaang.ca
Subject:	Delivered: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion
Date:	Wednesday, February 26, 2020 10:43:51 AM
Attachments:	Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion .msg

Your message has been delivered to the following recipients:
chief@aamjiwnaang.ca (chief@aamjiwnaang.ca) <mailto:chief@aamjiwnaang.ca>
Subject: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion

From:	Microsoft Outlook
To:	nikki@caldwellfirstnation.ca
Subject:	Relayed: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion
Date:	Wednesday, February 26, 2020 10:45:51 AM
Attachments:	Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion .msg

Delivery to these recipients or groups is complete, but no delivery notification was sent by the destination server:
nikki@caldwellfirstnation.ca (nikki@caldwellfirstnation.ca) <mailto:nikki@caldwellfirstnation.ca>
Subject: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion

From:	postmaster@cottfn.com
To:	myeengun@cottfn.com
Subject:	Delivered: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion
Date:	Wednesday, February 26, 2020 11:24:26 AM
Attachments:	Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion .msg

Your message has been delivered to the following recipients:
myeengun@cottfn.com (myeengun@cottfn.com) <mailto:myeengun@cottfn.com>
Subject: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion

From:	postmaster@cottfn.com
To:	rsmith@cottfn.com
Subject:	Delivered: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion
Date:	Wednesday, February 26, 2020 11:24:28 AM
Attachments:	Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion .msg

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Your message has been delivered to the following recipients:
rsmith@cottfn.com (rsmith@cottfn.com) <mailto:rsmith@cottfn.com>
Subject: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion

From:	postmaster@cottfn.com
To:	kriley@cottfn.com
Subject:	Delivered: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion
Date:	Wednesday, February 26, 2020 11:24:28 AM
Attachments:	Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion .msg

Your message has been delivered to the following recipients:
kriley@cottfn.com (kriley@cottfn.com) <mailto:kriley@cottfn.com>
Subject: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion

From:	postmaster@cottfn.com
To:	jfrench@cottfn.com
Subject:	Delivered: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion
Date:	Wednesday, February 26, 2020 12:02:00 PM
Attachments:	Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion .msg

Your message has been delivered to the following recipients:
jfrench@cottfn.com (jfrench@cottfn.com) <mailto:jfrench@cottfn.com>
Subject: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion

From:	postmaster@kettlepoint.org
To:	Jason.henry@kettlepoint.org; Thomas.bressette@kettlepoint.org; Valerie.george@kettlepoint.org
Subject:	Delivered: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion
Date:	Wednesday, February 26, 2020 11:23:11 AM
Attachments:	Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion .msg

Your message has been delivered to the following recipients:
Jason.henry@kettlepoint.org (Jason.henry@kettlepoint.org) <mailto:Jason.henry@kettlepoint.org>
Thomas.bressette@kettlepoint.org (Thomas.bressette@kettlepoint.org) <mailto:Thomas.bressette@kettlepoint.org>
Valerie.george@kettlepoint.org (Valerie.george@kettlepoint.org) <mailto:Valerie.george@kettlepoint.org>
Subject: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion

From:	postmaster@metisnation.org
To:	margaretf@metisnation.org
Subject:	Delivered: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion
Date:	Friday, February 28, 2020 11:17:26 AM
Attachments:	Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion .msg

Your message has been delivered to the following recipients:
margaretf@metisnation.org (margaretf@metisnation.org) <mailto:margaretf@metisnation.org>
Subject: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion

From:	postmaster@oneida.on.ca
To:	Jessica.hill@oneida.on.ca
Subject:	Delivered: FW: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion
Date:	Wednesday, February 26, 2020 11:31:59 AM
Attachments:	FW Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion .msg

Your message has been delivered to the following recipients:
Jessica.hill@oneida.on.ca (Jessica.hill@oneida.on.ca) <mailto:Jessica.hill@oneida.on.ca>
Subject: FW: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion

From:	postmaster@oneida.on.ca
To:	environment@oneida.on.ca
Subject:	Delivered: FW: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion
Date:	Wednesday, February 26, 2020 11:32:19 AM
Attachments:	FW Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion .msg

Your message has been delivered to the following recipients:
environment@oneida.on.ca (environment@oneida.on.ca) <mailto:environment@oneida.on.ca>
Subject: FW: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion

From:	Microsoft Outlook
To:	jenwhiteye@sfns.on.ca
Subject:	Relayed: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion
Date:	Wednesday, February 26, 2020 10:40:01 AM
Attachments:	Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion .msg

Delivery to these recipients or groups is complete, but no delivery notification was sent by the destination server:
jenwhiteye@sfns.on.ca (jenwhiteye@sfns.on.ca) <mailto:jenwhiteye@sfns.on.ca>
Subject: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion

From:	postmaster@wifn.org
To:	dean.jacobs@wifn.org
Subject:	Delivered: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion
Date:	Wednesday, February 26, 2020 11:16:25 AM
Attachments:	Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion .msg

Your message has been delivered to the following recipients:
dean.jacobs@wifn.org (dean.jacobs@wifn.org) <mailto:dean.jacobs@wifn.org>
Subject: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion

From:	postmaster@wifn.org
To:	janet.macbeth@wifn.org
Subject:	Delivered: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion
Date:	Wednesday, February 26, 2020 11:16:26 AM
Attachments:	Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion .msg

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Your message has been delivered to the following recipients:
janet.macbeth@wifn.org (janet.macbeth@wifn.org) <mailto:janet.macbeth@wifn.org>
Subject: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion

From:	postmaster@wifn.org
To:	drskoke@wifn.org
Subject:	Delivered: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion
Date:	Wednesday, February 26, 2020 11:16:30 AM
Attachments:	Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion .msg

Your message has been delivered to the following recipients:
drskoke@wifn.org (drskoke@wifn.org) <mailto:drskoke@wifn.org>
Subject: Town of Lakeshore Denis St. Pierre Water Pollution Control Plant Expansion

CHIPPEWAS OF THE THAMES FIRST NATION

May 8, 2019

VIA EMAIL

Mr. Kevin Girard, P.Eng
Manager of Environmental Services
419 Notre Dame Street
Belle River, Ontario N0R 1A0

RE: Denis St. Pierre Water Pollution Control Plant Expansion
Class Environmental Assessment, Notice of Study Commencement

Dear Mr. Girard,

We have received the *Notice of Study Commencement* regarding the aforementioned project. The proposed project is located within the Mckee Treaty area (1790) to which Chippewas of the Thames First Nation is a signatory (COTTFN), as well as the Big Bear Creek Additions to Reserve (ATR) land selection area, and COTTFN's Traditional Territory.

We presently have minimal concerns with the proposed project. However, upon completion of any environmental study reports, we request a digital copy be electronically sent to consultation@cottfn.com. If there is an archaeology assessment conducted, we require notification and the opportunity to actively participate by sending an Archaeology Field Liaison on behalf of the First Nation.

We look forward to continuing this open line of communication. To Implement meaningful consultation, COTTFN has developed its own protocol – a document and a process that will guide positive working relationships. We would be happy to meet with you to review COTTFN's Consultation Protocol.

Please do not hesitate to contact me if you need further clarification of this letter.

Sincerely,

Fallon Burch
Consultation Coordinator
Chippewas of the Thames First Nation
(519) 289-5555 Ext. 251
consultation@cottfn.com

c: Dr. Jian Li, P.Eng, Stantec Consulting Ltd.

Indigenous Services Canada | Services aux Autochtones Canada

MAY 0 6 2019

ON7249

Mr. Jian Li, Ph.D., P.Eng., PE
Project Manager
Stantec Consulting Ltd.
100-140 Ouellette Place
WINDSOR ON N8X 1L9

Dear Mr. Li:

This is in follow up to your correspondence of April 3, 2019, in which you included the Introductory Brief regarding the Denis St. Pierre Water Pollution Control Plant Expansion and Class Environmental Assessment.

While the Department has no comments concerning the project at the present time, we would appreciate if you could continue to keep us apprised of the project's progress moving forward.

I wish you success in your project.

Yours sincerely,

Lina Letiecq
Director of Lands and Economic Development
Indigenous Services Canada

655 Bay Street, 3rd Floor
TORONTO ON M5G 2K4

RECEIVED

MAY 0 8 2019

STANTEC CONSULTING LTD.
Consulting Engineers

Canada

APPENDIX F-4

Final ESR and Notice of Completion

DENIS ST. PIERRE WATER POLLUTION CONTROL PLANT EXPANSION
CLASS ENVIRONMENTAL ASSESSMENT

NOTICE OF COMPLETION

The Town of Lakeshore has carried out an Environmental Assessment for identifying the preferred design of the Denis St. Pierre Water Pollution Control Plant Expansion to accommodate the future flows from the Belle River and Maidstone wastewater service area. The nature of the recommended undertaking is such that the project is identified as and being conducted as a **Schedule C** project under the Municipal Class Environmental Assessment process for Municipal Water and Wastewater Projects (Municipal Engineers Association, October 2000, as amended in 2007, 2011 and 2015). The Environment Study Report has been completed and by this Notice is being placed in the public record for review. This Environmental Study Report documents the planning and decision-making process starting with identification of the problem through to selection of the preferred design concept.

The Environment Study Report is available for review on the Town's website, www.lakeshore.ca, or the FTP web site, https://projsftp.stantec.com (**Login ID:** 165620173ESR1027 **Password:** 6226987)

The Environment Study Report is also available for review at the following location:

Lakeshore Municipal Offices
419 Notre Dame Street
Belle River, Ontario, N0R 1A0
(Mon–Fri, 8:30am– 4:30pm)

Further information on this project may be obtained from:

Mr. Nelson Cavacas, CET
Director of Engineering and Infrastructure Services
Town of Lakeshore
419 Notre Dame Street
Belle River, Ontario N0R 1A0
Phone: 519-728-2700 x 287
Fax: 519-728-9530
Email: adionne@lakeshore.ca

Dr. Jian Li, P. Eng., PE
Project Manager
Stantec Consulting Ltd.
140 Ouellette Place Suite 100
Windsor, Ontario N8X 1L9
Phone: 519-966-2250 x 240
Fax: 519-966-5523
Email: jian.li@stantec.com

Interested persons should provide written comments to the Town of Lakeshore at the address above by June 16, 2020. If concerns regarding this project cannot be resolved in discussion with the Town of Lakeshore, a person may request that the Minister of the Environment make an order for the project to comply with Part II of the Environmental Assessment Act (referred to as a Part II Order), which addresses individual environmental assessments. Requests must be received by the Minister at the address below by June 23, 2020. A copy of the request must also be sent to the Town of Lakeshore at the address above. If no request for a Part II Order is received, the project will proceed to design and construction, pending the necessary approvals and allocation of appropriate funding, as outlined in the Environment Study Report.

Ministry of the Environment, Conservation and Parks
135 St. Clair Avenue West, 12th Floor
Toronto, ON M4V 1P5

This Notice issued May 15, 2020.