Oxford County

Norwich Wastewater Treatment Plant Capacity Expansion
Environmental Study Report

May 1, 2025

PROUDLY 100% CANADIAN

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RVA 215673

May 1, 2025

Oxford County
21 Reeve Street
P.O. Box 1614
Woodstock, ON 4S 7Y3

Attention: Harry Goossens, P.Eng., Project Engineer

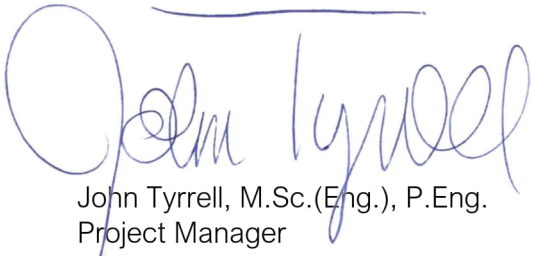
Dear Sir:

Re: Norwich Wastewater Treatment Plant (WWTP) Capacity Expansion Municipal Class EA Environmental Study Report

Please find attached the final Environmental Study Report dated May 1, 2025, for the Norwich Wastewater Treatment Plant Capacity Expansion Municipal Class Environmental Assessment. This report summarizes the rationale, planning, design, and consultation process of the project through Phases 1-3 and the selection of a preferred alternative for the expansion of the WWTP to 2600 m^3/day to allow it to treat the anticipated future sewage flows in the community. The ESR reflects the current status of the project including Council endorsement on April 9, 2025, as well as public and agency comments that have been received to date. This report is intended for the County to publish allow for the review of the public and agencies following the issuance of a Notice of Completion for this project.

Yours very truly,

R.V. ANDERSON ASSOCIATES LIMITED



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NORWICH WASTEWATER TREATMENT PLANT CAPACITY EXPANSION MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

ENVIRONMENTAL STUDY REPORT

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1.0 Introduction and Background

1.1 Introduction

Oxford County owns and operates the Norwich Wastewater Treatment Plant (WWTP), which provides tertiary treatment for wastewater generated in the Township of Norwich. The WWTP services the Norwich settlement area and consists of two facultative lagoon cells and four intermittent sand filters that polish the WWTP effluent prior to discharge to Otter Creek.

Recent daily WWTP flows (average over last 5 years) are approximately 70% of the rated plant capacity; however, wastewater capacity commitments for approved future developments trigger the need to commence a Municipal Class Environmental Assessment (MCEA),Municipal Engineers Association, 2023 at this time. The principal components of this project include:

- Compile and review available background information related to the Norwich WWTP and confirm/establish scope for the MCEA study.
- Complete/finalize an Assimilative Capacity Analysis of Otter Creek at Norwich and obtain associated regulatory approvals.
- Complete a MCEA study in accordance with Oxford County Public Works' Consultation and Communication Plan for Municipal Class EA Studies and the most current version of the Municipal Engineers Association – Municipal Class Environmental Assessment document, to meet the needs of the community within the 25-year planning horizon to 2046. Study objectives include:
    - To identify and evaluate wastewater treatment alternative solutions;
    - To select a preferred solution for wastewater treatment;
    - To evaluate and recommend a preferred design for wastewater treatment;
    - To complete and document the study as an Environmental Study Report (ESR); and
    - Collaborate planning and effective communication/consultation with stakeholders and the public throughout the study.

1.2 Background

The community of Norwich is the largest urban community in the Township of Norwich and is the only settlement with wastewater servicing. The community of Norwich has a current population of approximately 4,400 residents and per County planning policies, all of the population and employment growth for the Township of Norwich is to be targeted to this community. Figure 1.1 shows the Norwich Settlement Area and Norwich WWTP Study Area.

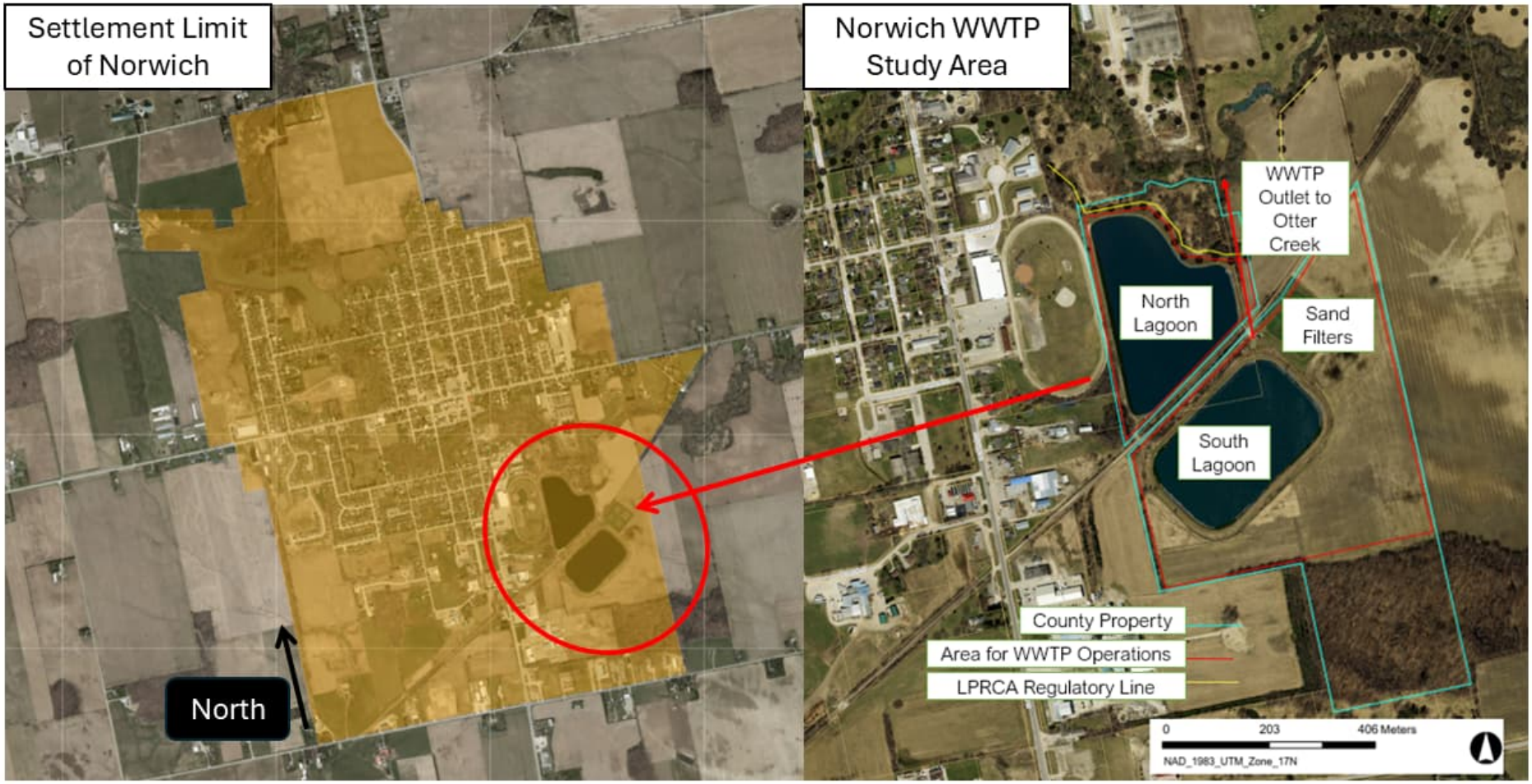


Figure 1.1 Norwich Settlement Area and Norwich WWTP Study Area

1.3 Projected Sewage Flows

Population and sewage flow projections are based on the findings of the 2023 Oxford County Water and Wastewater Master Plan (Oxford W/WW MP). For planning purposes, the County has requested that population be assumed to be based on the high growth scenario. This is shown in Table 1.1.

Table 1.1 Community of Norwich Population Projections

Population Type	2021	2026	2031	2036	2041	2046	2021-2046 Additional Population
Residential	4,330	5,092	5,854	6,616	7,378	8,140	3,810
Non-Residential	1,123	1,408	1,693	1,978	2,263	2,548	480

The Oxford W/WW MP found the following per capita average daily flow (ADF) values for Norwich:

- Residential 175 L/s.
- Non-Residential 300 L/s.

Based on the high growth scenario, the 2046 ADF for Norwich is anticipated to be:

Residential - 1,425 m^3/day + Non-Residential- 766 m^3/day = 2,191 m^3/day

To provide a margin of safety at the design horizon of 2046 to allow for continued approval of planned development in Norwich, the WWTP capacity should be 85% of the total capacity of the WWTP. Therefore, the target ADF capacity of the upgrade is 2,577 m^3/day which is rounded up to 2,600 m^3/day.

1.4 Class Environmental Assessment Process

Refer to **Appendix 1 MCEA Consultation** documents the public and agency consultation that was undertaken as part of this project.

The MCEA is an approved planning and design process under the Ontario Environmental Assessment Act (EAA). The process provides the framework for planning of municipal infrastructure projects to fulfill the requirements of Ontario Environmental Assessment Act for a class or category of infrastructure projects. Projects are divided into schedules based on the type of projects and activities. Schedules are categorized as Exempt, B and C with reference to the magnitude of their anticipated environmental impact. These are described briefly in the following paragraphs. Appendix 1: Project Tables, Table B: Municipal Water and Wastewater Projects of the current MCEA document provides guidance in the project schedules for typical water and wastewater municipal projects.

Exempt projects include various municipal maintenance, operational activities, rehabilitation works, minor reconstruction or replacement of existing facilities, and new facilities that are

limited in scale and have minimal adverse effects on the environment. These projects are exempt from the requirements of the *Environmental Assessment Act*. Most Exempt projects were formerly classified as Schedule A and A+ projects.

Schedule B projects are those which have a potential for adverse environmental effects. A screening process must be undertaken which includes consultation with directly affected public and relevant review agencies. Projects generally include improvements and minor expansions to existing facilities. The project process must be filed, and all documentation prepared for public and agency review.

Schedule C projects have the potential for significant environmental effects and must follow the full planning and documentation procedures specified in the MCEA process. An Environmental Study Report (ESR) must be prepared and filed for review by public and review agencies. Projects generally include the construction of new facilities and major expansions to existing facilities.

Depending on the siting, construction method and environment sensitivity, similar projects may have a different schedule requirement or be exempt. At the outset of a project, the County should confirm which schedule applies. There are five key elements in the MCEA planning process. These include:

1. Phase 1 – Identification of problem (deficiency) or opportunity.
2. Phase 2 – Identification of alternative solutions to address the problem or opportunity. Public and review agency contact is mandatory during this phase and input received along with information on the existing environment is used to establish the preferred solution. It is at this point that the appropriate Schedule (B or C) is chosen for the undertaking. If Schedule B is chosen, the process and decisions are then documented in a Project File. Schedule C projects proceed through the following Phases.
3. Phase 3 – Examination of alternative methods of implementing the preferred solution established in Phase 2. This decision is based on the existing environment, public and review agency input, anticipated environmental effects and methods of minimizing negative effects and maximizing positive effects.
4. Phase 4 – Preparation of an Environmental Study Report summarizing the rationale, planning, design, and consultation process of the project through Phases 1-3. The ESR is then to be made available to agencies and the public for review.
5. Phase 5 – Completion of contract drawings and documents. Construction and operation to proceed. Construction to be monitored for adherence to environmental provisions and commitments. Monitoring during operation may be necessary if there are special conditions.

The overall process is shown in Figure 1.2.

1.5 Section 16 Order Under the Environmental Assessment Act

There is an opportunity to request a higher level of study for Schedule B and C projects through a Section 16 order request to the Minister of Environment, Conservation and Parks on the grounds that the order may prevent, mitigate or remedy adverse impacts on the existing Aboriginal and treaty rights of the Aboriginal peoples of Canada as recognized and affirmed in section 35 of the Constitution Act, 1982. A request for this type of order may be made to the Minister to impose conditions in addition to those in the Class EA or to require an individual EA on the grounds that the order may prevent, mitigate or remedy adverse impacts on constitutionally protected Aboriginal and treaty rights. Requests on other grounds will not be considered. Requests should include the requester contact information and full name. Requests should specify what conditions, if any, the requestor is seeking or that an individual EA is being sought, how the requested order may prevent, mitigate or remedy potential adverse impacts on Aboriginal and treaty rights, and any other information in support of the request.

1.6 Problem/Opportunity Statement

Per Phase 1 requirements of the MCEA process for a schedule 'C' project, a "Problem and Opportunity Statement" was prepared to identify in detail the various problems and opportunities to be addressed by the study. In essence, the Problem Statement outlines the need and justification for the overall project and establishes the general parameters, or scope, of the study.

The Problem Statement will be confirmed following the assessment of the existing conditions within the study area, along with having discussions with County staff regarding municipal servicing and infrastructure needs; and through consultation with the public and technical agencies undertaken throughout the study.

At this time, the Study Problem & Opportunity Statement developed for the project is:

> "To determine the most cost effective, environmentally sound, and sustainable approach to provide wastewater treatment that will accommodate future growth within the 25-year planning horizon in the Township Norwich."

The 25-year period is defined as the period from 2021 to 2046.

1.7 Project Background

Refer to **Appendix 2 – Background Information and Planning Level Solutions** for additional details.

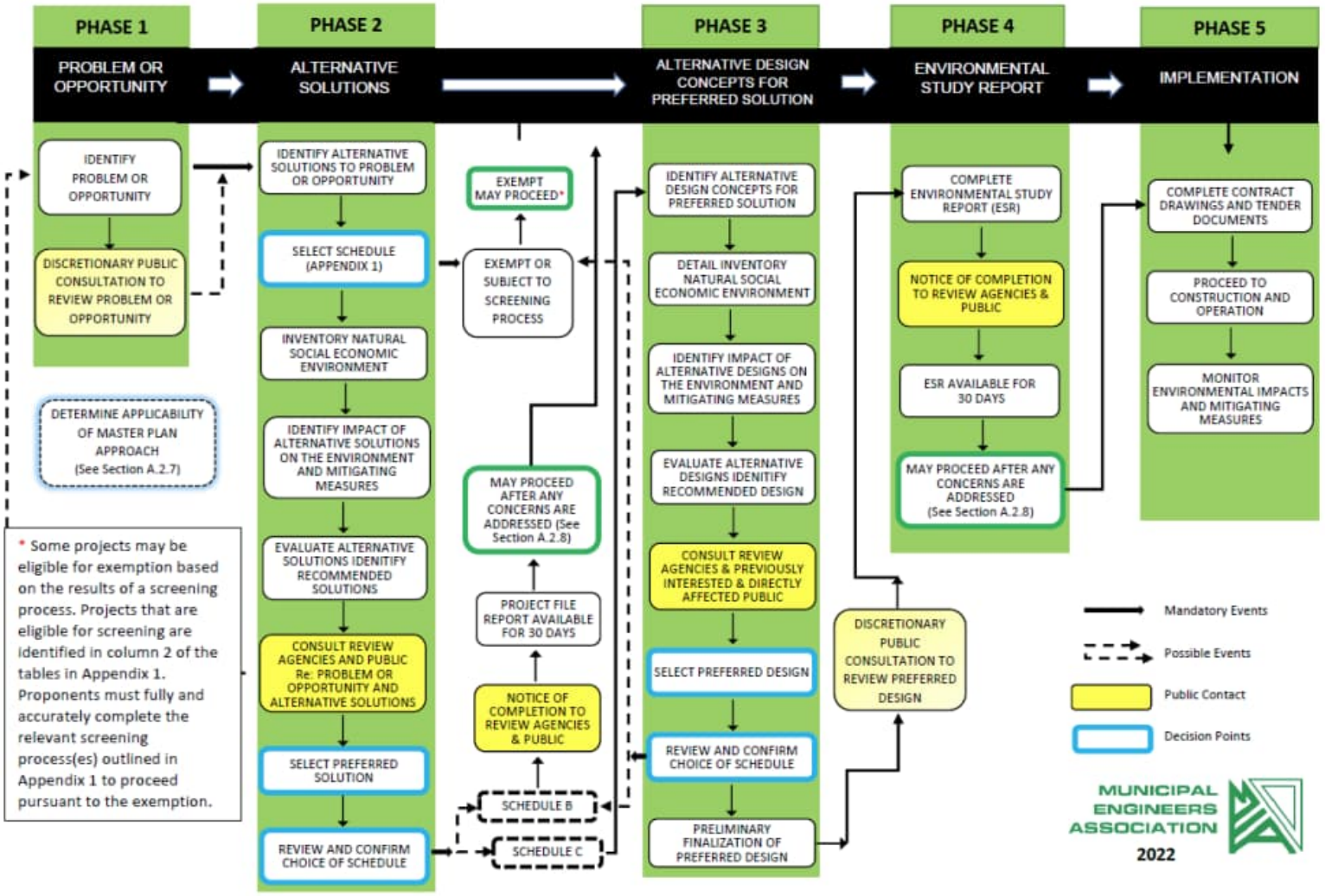


Figure 1.2 MCEA Planning and Design Process

1.7.1 Existing Wastewater Treatment System

The Norwich Wastewater Treatment Plant WWTP is owned by Oxford County and is operated by the County under the Ministry of the Environment, Conservation, and Parks (MECP) Amended Certificate of Approval (C of A now referred to as an Environmental Compliance Approval or ECA) No. 1680-6F6QR5 issued August 31, 2005. The Norwich WWTP has an ECA rated average daily flow (ADF) capacity of 1,530 m^3/d and C of A rated peak flow (PF) of 5,160 m^3/d. The Norwich WWTP provides treatment for wastewater generated in the village of Norwich, which is located approximately 20 kilometres south of Woodstock, Ontario.

The Norwich WWTP consists of two facultative lagoon cells followed by four intermittent sand filter cells. The system was originally constructed in 1972. The sanitary sewer system was expanded, and a second lagoon cell was added in 1977. Intermittent sand filters were added in 1996 along with other upgrades to the sewage treatment system and pumping station. The height of the berms in the South lagoon was increased in 1998 (currently 92,880 m^3) and the North lagoon (89,160 m^3) in 2009 providing additional storage capacity in the lagoons. Sewage collection in the Village of Norwich is provided by a combination of gravity sewers and four sewage pumping stations (SPS): Sutton Street SPS, Dufferin Street SPS, Lossing Drive SPS, and Herb Street SPS.

Flows delivered to the distribution chamber are directed to either the North or South lagoon cell. The South cell has a surface area of 60,705 m^2 and the North cell has a surface area of 58,276 m^2. There is flexibility in the design to operate the lagoon cells in parallel or in series. The effluent from the lagoon cells is pumped to a filter inlet valve chamber which directs flow to the intermittent sand filter (ISF). The ISF consist of four cells, each with a surface area of 1,600 m^2 for a total filter surface area of 6,400 m^2. Each filter contains 760 mm of sand (0.13 mm effective size), 75 mm of crushed stone (5 mm), 75 mm crushed stone (13.2 mm), and 77 mm crushed stone (19 mm). The filter cell underdrains consist of 100 mm perforated PVC pipe. Effluent from the ISF is discharged to a wetland area which then flow to Otter Creek. The ECA allows for discharge during all times of year; however, discharge is limited to 236 days per year; however, operation of the filter is limited during the cold winter months due to freezing. Alum addition for phosphorus removal is provided at the Sutton Street SPS.

1.7.2 Effluent Compliance Limits and Objectives

The Norwich WWTP operates under ECA 1680-6F6QR5 which specifies the effluent compliance limits and the design objectives for the existing works. The ECA allows for discharge during all times of year; however, discharge is limited to 236 days per year. Table 1.2 indicates the ECA effluent compliance limits and objectives of Norwich WWTP.

Table 1.2 Norwich WWTP Effluent ECA Compliance Limits and Objectives

Effluent Parameters	Compliance Limits		Objectives	
	Monthly Average Concentration (mg/L)	Average Loading (kg/d)	Monthly Average Concentration (mg/L)	Average Loading (kg/d)
$CBOD_5$	10.0	23.7	5.0	11.8
total Suspended Solids TSS	10.0	23.7	5.0	11.8
pH	6.0 - 9.5	n/a	n/a	n/a
Total Phosphorus				
Non-Freezing Period	0.5	1.2	0.3	0.7
Freezing Period	1.0	2.4	0.8	1.9
Total Ammonia Nitrogen				
Non-Freezing Period	3.0 (5.0)	11.8	2.0	7.1
Freezing Period	5.0 (8.0)	18.9	4.0	11.8
Total Chlorine Residual	0.002 (0.01)	0.005	0.000	0.000
Dissolved Oxygen	> 4	N/A	> 5	N/A
E. Coli	200 organisms/100 mL	N/A	150 organisms/100 mL	N/A

Notes:
1. Values in brackets indicate daily concentration limits.
2. In addition to the (Ammonia + Ammonium) Nitrogen concentrations noted above, the un-ionized ammonia concentration in the effluent shall not exceed 0.1 mg/L for monthly average values and 0.2 mg/L for any individual sample.
3. The loading are based on an average daily flow of 2,366 m^3/d over a 236-day discharge period

1.7.3 Raw Sewage Flows and Characteristics

Norwich WWTP historical influent data of 2018-2020 were analyzed to determine the average influent flow and characteristics. Tables 1.3 and 1.4 summarize the influent flows and characterises.

Table 1.3 Norwich WWTP Influent and Effluent Flowrates

Year	Influent Average Day Flow, ADF m^3/d	Total Annual Influent Volume, m^3	Total Annual Effluent Discharge, m^3	Utilized Plant Capacity	Stored Capacity After Discharge %
2018	1,165	423,440	402,574	76%	5%
2019	1,218	443,887	410,574	79%	8%
2020	1,139	417,444	390,705	75%	6%
Average	1,174	428,257	401,284	77%	6%

Table 1.3 illustrates the influent average daily flow, the total annual influent volume, the total annual effluent discharged volume, the annual utilized plant capacity, and the annually stored volume after effluent discharge. Table 1.4 illustrates influent characteristics.

Table 1.4 Norwich Raw Sewage Characteristics

Year	Unit	Biochemical Oxygen Demand, BOD	Total Suspended Solids, TSS	Total Kjeldahl Nitrogen, TKN	Total Phosphorus, TP
2018	mg/L	170	162	36.2	3.8
2019	mg/L	140	154	32.1	3.4
2020	mg/L	153	157	36.7	3.9
Average	mg/L	155	157	35.0	3.7

1.7.4 Effluent Characteristics

Norwich WWTP historical effluent data of 2018-2020 were analyzed to determine the average effluent characteristics. Tables 1.5 summarizes the effluent characteristics and Table 1.6 summarizes the minimum and maximum values versus the limits and objectives.

1.8 Previous MECA Study

In 2011, Oxford County initiated a MCEA study to upgrade and/or expand the facility in anticipation of projected development and associated WWTP flows. However, between 2011 and 2015, growth in the community was not at the level anticipated, and the County experienced a reduction in water usage (and subsequently wastewater flows). As a result, in June 2016, County Council approved that the MCEA study be put on hold until which time increased development rates and associated WWTP flow rates are observed.

In response to approved future growth in the Township of Norwich, and associated projected increases in WWTP flow rates, Oxford County has re-initiated the MCEA study for capacity expansion of the Norwich WWTP. The MCEA study will determine the most cost-effective, environmentally sound, and sustainable approach to servicing the Norwich WWTP to meet the wastewater servicing needs of the community within the 25-year planning horizon. The project is being completed as a Schedule “C” project in accordance with the MCEA (2023), which is approved under the Ontario Environmental Assessment Act.

In 2020, Oxford County conducted an effluent quality and optimization study for the Norwich WWTP to review historical operation of the plant as currently configured. Study findings can be used to address existing lagoon operational challenges and optimize existing operations. The study also provides technical information on applicable and possible technologies (e.g. post lagoon treatment systems) which could be employed to expand the capacity of the system.

Recent daily WWTP flows (average over last 5 years) are approximately 70% of the rated plant capacity; however, wastewater capacity commitments for approved future developments trigger the need to commence the MCEA Study at this time.

Table 1.5 Norwich WWTP Effluent Data 2018-2020

Year	Climate	BOD_5 (mg/L)	Total Suspended Solids, TSS (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	pH	Temperature (degrees C)	Dissolved oxygen (mg/L)	NH3+NH4 (mg/L)	Un-Ionized Ammonia (mg/L)
Average 2018	Non-Freezing	7.0	5.1	1.23	0.20	8.2	14	7.7	0.66	0.007
	Freezing			4.86	0.24	7.5	5	8.9	4.51	0.009
Average 2019	Non-Freezing	4.0	5.17	0.22	0.15	7.6	15	8.3	0.24	0.008
	Freezing			1.65	0.16	7.4	6	8.8	1.58	0.003
Average 2020	Non-Freezing	4.0	4.2	0.31	0.26	7.5	13	7.6	0.29	0.002
	Freezing			2.01	0.28	7.4	6	8.6	2.16	0.014
Total Average	Non-Freezing	5.0	4.8	0.59	0.20	7.8	14	7.9	0.40	0.006
	Freezing			2.84	0.23	7.4	6	8.8	2.75	0.008

Table 1.6 Summary of Effluent Minimum and Maximum vs Limits and Objectives

Year	BOD_5 Min-Max (mg/L)	TSS Min-Max (mg/L)	Total Phosphorus Min-Max (mg/L)		Total Ammonia Nitrogen Min-Max (mg/L)		E. Coli Min-Max (cfu/100m/L)
			Non-Freezing Period	Freezing Period	Non-Freezing Period	Freezing Period	
Objective	5.0	5.0	0.3	0.8	2.0	4.0	150
Limit	10.0	10.0	0.5	1.0	3.0	5.0	200
2018	3.0 - 11.0	2.0 - 4.0	0.20 - 0.20	0.15 - 0.26	0.5 - 0.9	1.3 - 4.5	46 - 321
2019	2.0 - 5.3	2.0 - 9.8	0.11 - 0.19	0.16 - 0.17	0.1 - 0.2	0.4 - 2.9	12 - 886
2020	2.0 - 6.0	2.0 - 5.5	0.13 - 0.33	0.21 - 0.46	0.1 - 0.8	0.7 - 4.5	23 - 680

1.9 Existing Conditions of Study Area

1.9.1 Socio-Economic Environment

The community of Norwich has a current population of approximately 4,400 residents and as per Figure 1.3. is centered on the intersection of County Roads 59 (north-south) and 18 (east-west). There is a small village central business district at this intersection ad to the west, service commercial areas to the south along County Road 59, ND low density residential development in all quadrants from the 59/18 intersection with some pockets of medium density residential development. The community's industrial zoned lands are primarily located south of the 59/18 intersection on both sides of County Road 59. There is open space lands running along the Otter Creek Valley which bisects Norwich from northwest to southeast. The Norwich Arena and sports fields are located south of the 59/18 intersection on the eastern side of County Road 59 within the service commercial corridor.

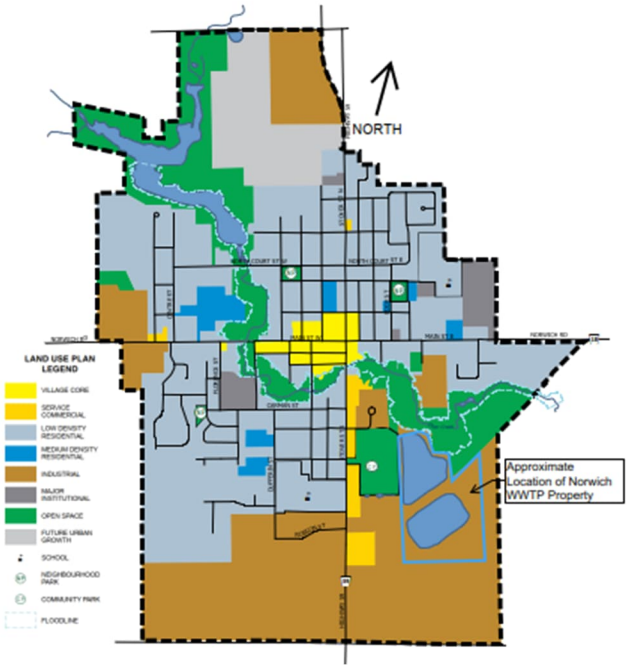


Figure 1.3 Norwich Socio-Economic Environment

The Norwich WWTP is bounded by the Otter Creek Open Space lands to the North, the Norwich Area and sports fields to the east and the industrial lands to the south.

1.9.2 Natural Environment Existing Conditions Report

A Natural Environment Existing Conditions Report was prepared and this is included as Appendix 2-1. This report included a review of existing background information concerning the natural environment within and surrounding the Study Area, including Species at Risk (SAR). A terrestrial field investigation was conducted during the 2021 growing season and included a vegetation inventory and community delineation, survey for floral SAR, as well as incidental wildlife observations. No at-risk species or habitats for at-risk species protected under the ESA were positively identified during field work.

The Study Area is situated in an area with a long history of active cultivation and removal of native vegetation communities. As a result, wildlife expected to utilize the Study Area are those that are tolerant of modified landscapes or that utilize the area occasionally, such as birds, especially waterfowl, during migration. Current design concepts are for upgrades to be constructed within the agricultural (soybean) field to the east and/or south of the existing facility with no disturbance within unmaintained areas within the facility itself. As a result,

impacts to terrestrial habitats within the Study Area will be generally limited to edge habitat or areas that undergo regular seasonal disturbance/maintenance.

The proposed improvements to the Norwich WWTP are not expected to require additional permitting or approvals regarding impacts to areas regulated by LPRCA, wildlife species (including SAR) or fish and their habitats. It was concluded that the project will have a very limited impact on terrestrial natural environment components within the Study Area and the overall function of the system is not expected to be significantly altered by the proposed project.

1.9.3 Cultural Heritage Environment

A review of the Oxford County Official Plan, Appendix Heritage Resources Inventory (https://www.oxfordcounty.ca/en/services-for-you/resources/Community-Planning/OP/appendix4.pdf) indicates that there are no known cultural resources within the property limits of the Norwich WWTP. Given the construction of the WWTP in 1972 and the industrial zoning in its vicinity, it is highly unlikely that any unreported cultural resources are present in this area that have not been documented in the current County document.

1.9.4 Archaeological Potential

As part of undertaking the MCEA process, an Ontario Form 0478e Criteria for Evaluating Archaeological Potential A Checklist for the Non-Specialist. Based upon the review of this form, it is indicated that the undisturbed portions of the property do have archaeological potential as it is within 300 m of Otter Creek. This is included in Appendix 1-4.

1.9.5 Source Water Protection

The project area is within the Long Point Region Source Protection Area. The Long Point Region watershed takes in the area drained by 14 major waterways that empty into Lake Erie including Big Otter Creek, Big Creek, Lynn River-Black Creek, Nanticoke Creek and Sandusk Creek. Based on a review of available information (long-point-region-source-protection-area), the Study Area is not within any highly vulnerable aquifers or within the Well Head Protection Areas of any municipal drinking water sources. This is shown in Figure 1.4.

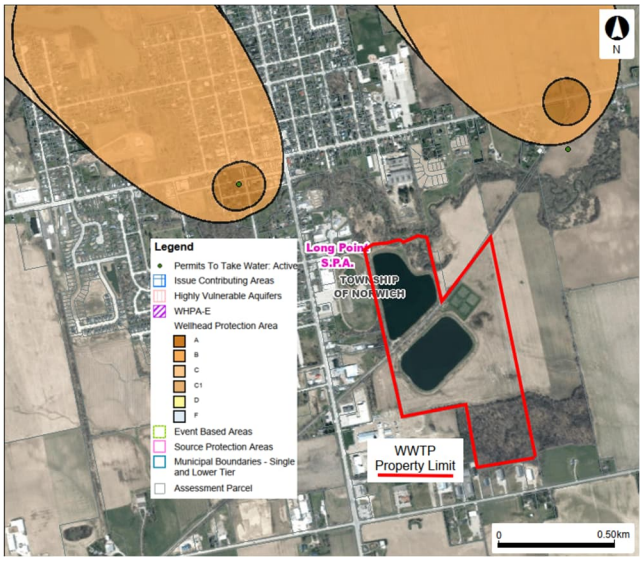


Figure 1.4 Source Water Protection in Study Area

2.0 Public Consultation

Appendix 1 MCEA Consultation documents the public and agency consultation that was undertaken as part of this project.

2.1 Introduction

The consultation process is an integral component of the MCEA process for the Norwich WWTP Capacity Expansion. At the outset of the MCEA study, a Public Consultation and Communication Plan was developed with the primary goal to carry out meaningful consultation, solicit community and regulatory input, and provide the general public, Council, municipalities, higher level elected officials, review agencies, Indigenous Communities and other interested stakeholders with regular opportunities to participate in the Study process. A stakeholder database was created at the beginning of the project and updated during the project.

All Notices associated related to this MCEA study, including the Notice of Commencement and Notices of Public Consultation Centres were shared identified stakeholders. The notices were also published by print in newspaper ads and shared publicly on the 'Speak Up, Oxford' project page at the following address www.speakup.oxfordcounty.ca/norwich-wwtp.

The Notice of Commencement and Notice of Public Consultation Centers were sent out to identified agencies and interested parties by mail, email and via local newspapers informing them that the Norwich WWTP Capacity Expansion Study was being undertaken. Copies of the notices are included in Appendix 1-1. Registrants that signed up for project notifications received emails related to upcoming Public Consultation presentations and project milestones.

2.2 Stakeholder Consultation

The MCEA process requires stakeholder consultation to incorporate input from interested or impacted groups. Stakeholders included but were not limited to:

- Public – This includes individual members of the public including property owners who may be affected by the project, individual citizens who may have a general interest in the project, special interest groups, community representatives, and developers.
- Review agencies – This includes government agencies who represent the policy positions of their respective departments, ministries, authorities, or agencies.
- Oxford County Internal staff (Public Works, Corporate Services, Community Planning, and Office of Strategic Initiatives) and Council departments.
- Municipal Council and staff.
- Railways, Transit Agencies, Utilities, etc.

The Stakeholder list is included in Appendix 1-1.

2.3 Indigenous Consultation

Based on discussions and recommendations provided by the MECP regional office, RVA on behalf of Oxford County confirmed Indigenous communities and in addition contacted Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) and the Ministry of Indigenous Affairs (MIA) separately from the general notifications sent to review agencies. The purpose of the contact was to request which, if any, Indigenous communities may be potentially affected by the Master Plan. The Information provides the basis for appropriate communication with Indigenous Communities through inclusion in the contact lists for the duration of the Norwich WWTP Capacity Expansion Study. Contact was made with the following Indigenous groups:

- Oneida Nation of the Thames.
- Mississaugas of the Credit First Nation.
- Six Nations of the Grand River.
- Metis Nation of Ontario.
- Haudenosaunee Confederacy Chiefs Council.

The Indigenous agency contact letters and any responses that were received and reviewed and are documented in the Indigenous Communities Consultation Record shown in Appendix 1-2.

2.4 Public Consultation Centre (PCC)s

As part of the fulfillment of MCEA consultation requirements, the County undertook two mandatory contact points to inform, engage and consult with all study participants noted above. This section details the consultation process followed during the Norwich WWTP Capacity Expansion Study.

A Public Consultation Centre (PCC) is a method to communicate with the public, interested parties and review agencies. For this project, two PCCs were held to present the Problem and Opportunity Statement, background information collected, a review of the servicing strategies being evaluated, present the evaluation criteria, the preliminary preferred solution, and the project timeline. Information on the PCCs are presented in Appendix 1-3.

PCC 1 was held as a virtual (online) event from 5:00 PM – 7:00 PM on Thursday, June 23, 2022, at which a presentation was made and representatives from the County and its consultants were present to answer questions and discuss the next steps in the study. The PCC 1 presentation was available following the meeting at and is to remain available until the completion of the study (http://www.oxfordcounty.ca/NorwichWWTP-ClassEA the website at the time and now on the current website www.speakup.oxfordcounty.ca/norwich-wwtp).

PCC 2 was held as a virtual (online) event from 6:00 PM – 8:00 PM on Thursday December 12, 2024, at which a presentation was made and representatives from the County and its consultants were present to answer questions and discuss the next steps in the study. The

PCC 2 presentation was available following the meeting at and is to remain available until the completion of the study (www.speakup.oxfordcounty.ca/norwich-wwtp).

2.5 Oxford County Project Webpage

All Notices, PCC presentation material and other information on the Norwich WWTP Capacity Expansion Study has been published on the "Speak Up, Oxford" (https://speakup.oxfordcounty.ca/) project page at the following address: www.speakup.oxfordcounty.ca/norwich-wwtp.

2.6 Incorporating Consultation Input

Input and information gathered from consultation with the public, stakeholders, review agencies and Indigenous Communities or acquired during the PCCs, meetings, and from other means of correspondence was reviewed by the project team and considered in the development of the Norwich WWTP Capacity Expansion Study. Responses were received and reviewed as documented in Appendix 1-4.

2.7 Council Endorsement

At the April 9, 2025, Oxford County Council meeting, the following resolution was passed endorsing the findings and recommendations of this Environmental Study Report in the following resolution:

> "Resolved that the recommendations contained in Report PW 2025-26 titled "Norwich Wastewater Treatment Plant Capacity Expansion Municipal Class Environmental Assessment Study", be adopted."

This Endorsement is documented in Appendix 1-6.

2.8 Notice of Completion

The Notice of Completion is to be published by the County following Council review and endorsement of the Class EA on April 9, 2025, and notices will be sent out to agencies and interested parties by email. Copies of the notices will be attached in the final version of Appendix 1-5 following the 30-day Review period.

2.9 Level of Cost Opinions in this MCEA Study

ASTM E 2516 (Standard Classification for Cost Estimate Classification System) provides a five-level classification system based on several characteristics, with the primary characteristic being the level of project definition (i.e., percentage of design completion). The ASTM standard, shown in Table 3.1, illustrates the typical accuracy ranges that may be associated with the general building industries.

Table 2.1 ASTM E2516 Accuracy Range of Cost Opinions for General Building Industries

Cost Estimate Class	Expressed as % of Design Completion	Anticipated Accuracy Range as % of Actual Cost
5	0-2	-30 to +50
4	1-15	-20 to +30
3	10-40	-15 to +20
2	30-70	-10 to +15
1	50-100	-5 to +10

The cost estimates developed in this report would be best described as a Class 5 Cost Estimate which is typically used for high level study project.

In some cases, project cost estimates were supplied with greater levels of accuracy based on MCEA Study conceptual design, detailed designs, etc.

3.0 Effluent Criteria for Norwich WWTP Expansion

3.1 Assimilative Capacity Study

To determine the basis for the effluent criteria for greater flows resulting from the expansion of the Norwich WWTP, an Assimilative Capacity Study (ACS). The objective of the ACS was to establish the level of treatment required to comply with Provincial discharge requirements and to minimize any impacts to the Little Otter Creek as well as downstream reaches and receiving waters that is acceptable to the MECP. An ACS was completed in 2012 by XCG as part of the 2011 MCEA. Following commencement of the current MCEA study in 2021, the County met with the MECP to determine if the 2011 ACS could be used as the basis for determining discharge criteria. The MECP requested that the County update the ACS was to reflect the current condition of the receiving stream. The County proposed a terms of reference for the updated ACS which included additional sampling of Otter Creek, analysis of water quality data from this sampling as well as historical data and an analysis of flow data. In early 2022, the County and MECP agreed to a Terms of Reference for the ACS.

To characterize the typical water conditions in Otter Creek, RVA staff undertook sampling of water at locations upstream and downstream of the WWTP outlet from March through September 2022. This data was analysed by RVA's subconsultant, Greenland International Consulting Ltd. Greenland reviewed the stream water quality from the 2022 sampling as well as historical data. Greenland reviewed the stream flows both in Otter Creek and in Big Otter Creek which ultimately receives the WWTP flows. Based on their analysis of downstream flows and design low flow scenarios, discharge strategies for the expanded WWTP were developed. Appendix 2-2 contains the report titled "Otter/Big Otter Creek Assimilative Capacity Study" prepared by Greenland which is the basis for the proposed effluent limits for the WWTP expansion.

Following this analysis the County met with the MECP in 2023 to review the results. Based on these discussions, the County reviewed and considered its options for discharging flow to Otter Creek. Following review, the County reconvened with MECP in 2024 to review and confirm its request for the effluent criteria for the WWTP expansion.

Appendix 2-3 contains information on the negotiations between the County and MECP to establish the effluent criteria for the WWTP expansion.

3.2 Effluent Criteria

The effluent criteria for the WWTP expansion is based on the monthly discharge limits noted in Table 3.1.

Table 3.1 Monthly Discharge Limits for WWTP Expansion

Month		Jan	Feb [1]	Mar	Apr	May	Jun
Discharge (m^3)	Daily	3,793	3,688	4,204	6,892	3,245	1,845
	Monthly	117,584	103,261	130,319	206,753	100,603	55,337
Month		Jul	Aug	Sept	Oct	Nov	Dec
Discharge (m^3)	Daily	209	637	1,131	1,245	1,785	2,721
	Monthly	6,481	19,755	33,920	38,583	53,536	84,364

Note 1 – assumes 28-day month, leap year volume will be 106,953 m^3

Table 3.2 presents the effluent parameters of the existing WWTP and the effluent limits and objectives for the WWTP expansion. In WWTP ECAs, the Effluent Limit is the minimum level of performance that the WWTP must achieve while the Effluent Objective is the operational performance objective that the MECP would like to be achieved on a sustainable basis.

Table 3.2 Effluent Parameters for WWTP Expansion

Parameter		Existing Operating Averages	Existing Operating Effluent Limit/ Objective	Effluent Limit for WWTP Expansion	Effluent Objective for WWTP Expansion
Total Phosphorus	Non-Freezing (Apr-Nov)	0.24 mg/L	0.50/0.30 mg/L	0.20 mg/L	0.10 mg/L
	Freezing (Dec-Mar)	0.23 mg/L	1.00/0.80 mg/L		
Total Ammonia as N	Non-Freezing (Apr-Nov)	0.61 mg/L	3.00/2.00 mg/L	1.50 mg/L	1.00 mg/L
	Freezing (Dec-Mar)	1.95 mg/L	5.00/4.00 mg/L	4.00 mg/L	2.00 mg/L
Fecal Coliforms as E. Coli		114 CFU/100 mg/L	200/150 CFU/100 mg/L	100 CFU/100 mg/L	50 CFU/100 mg/L
Total Suspended Solids		3.00 mg/L	10.00/5.00 mg/L	10.00 mg/L	5.00 mg/L
Dissolved Oxygen		7.80 mg/L	>4.00/ >5.00 mg/L	>6.00 mg/L	>6.00 mg/L
$cBOD_5$		3.30 mg/L	10.00/5.00 mg/L	10.00 mg/L	5.00 mg/L

4.0 Phase 2 Alternative Solutions

4.1 Evaluation Methodology and Factors Reviewed

The MCEA Phase 2 evaluation process for requires the proponent to develop alternative solutions to address the problem/opportunity for the project and to confirm the preferred alternative. Each option to be developed was reviewed based upon the following qualitative factors which were reviewed by the County and RVA project team and confirmed by the County. The following were the factors that were reviewed.

4.1.1 Social

This criterion focuses on the potential impacts that a particular design concept may have on the local human environment. When considering social impacts, it is of uttermost importance to select a design concept that has an overall positive effect on the community's functioning while minimizing any negative impacts to the socio-cultural fabric. Some factors considered under this criterion include:

- The ability of the design concept to satisfy current needs while allowing to accommodate for future growth.
- Sensory impacts, including noise, dust, etc., both during and after construction.
- Effects on neighbouring properties.
- Effects on the municipality, local businesses, etc.
- Land requirements.

4.1.2 Technical

The technical aspects of a design concept relate to the engineering considerations, design, functionality and feasibility of the proposed design concept. In other words, the technical evaluation assesses how well the design concept approaches and solves the project goal. Some factors considered under this criterion include:

- Compatibility with existing systems.
- Ease of implementation.
- Constructability.
- Treatment complexity.
- Effects on operations and maintenance.
- Compliance with regulatory and approvals requirements.
- Ability to meet existing and future servicing needs.

4.1.3 Financial

This criterion quantifies the capital cost of the infrastructure itself, and the operation and maintenance costs associated with it. Although all design concepts will have a certain cost

associated with them, the financial evaluation will determine each option's cost-benefit relationship. Carefully evaluating this aspect of all design concepts will allow identifying the most cost-effective solution. Some factors considered under this criterion include:

- Life cycle costs (capital costs and operations and maintenance).
- Financial sustainability and affordability.
- Possibility of implementing a phased approach to defer costs to the future.
- Funding opportunities.
- Likelihood of financing partnerships.

4.1.4 Archaeological & Cultural Heritage

This criterion evaluates the potential impacts of the proposed design concepts on known archaeological and cultural heritage sites or structures. An ideal design concept should have no adverse effects on archaeological and cultural heritage sites. However, in some cases, when it is impossible to avoid all negative impacts on any of these sites, the preferred solution would be the one that entails the least possible disturbances. Some factors considered under this criterion include:

- Effects on First Nation and Indigenous communities.
- Effects on archaeological sites or structures.
- Effects on cultural heritage sites or structures.

4.1.5 Environmental

Natural environmental criteria evaluate the impacts to sensitive areas that are critical to human or ecological functions and are most likely to be disturbed. The preferred design concept would have the least possible impact on the natural environment. Some factors considered under this criterion include:

- Effects on wildlife and vegetation.
- Likelihood of impacting species at risk.
- Effects on water, soil, and air quality.
- Effects on climate change, and resilience and adaptability of the proposed infrastructure to the effects of climate.

4.1.6 Criteria Measurement

The proposed servicing concepts were rated for their fulfillment in each in the four categories based on the evaluation criteria. Table 4.1 illustrates the rating scale used. The visual rating provides a measure of the level of performance of each alternative and allows to select one that achieves the highest impact.

Table 4.1 Alternative Solutions Rating Scale

Legend		
Highest Impact (Most Negative Solution)		Lowest Impact (Most Positive Solution)

4.2 Solution Alternatives.

The following wastewater treatment design concepts were considered:

- Alternative 1 – 'Do Nothing'.
- Alternative 2 – Construct a new Mechanical Wastewater Treatment facility (WWTF) and convert existing Lagoons to Stormwater Ponds.
- Alternative 3 – Upgrade the existing Lagoons system.

These alternative wastewater treatment design concepts are described in the following sections.

Alternative 1 Do Nothing - This alternative would maintain the existing condition which would not address the future flows and existing poor condition of the treatment process.

Alternative 2 Construct a new Mechanical Wastewater Treatment Facility (WWTF) - This design concept considers building a new mechanical wastewater treatment facility and converts the existing lagoons into storage ponds. The basis of deign for the new facility will be conventional activated sludge process followed by tertiary treatment.

Alternative 3 Upgrade the Existing Lagoons with Additional Treatment - This design concept considers upgrading the existing lagoons with new aeration system and new sludge treatment system.

4.3 Evaluation of Shortlisted Alternatives – Wastewater Treatment

- Alternative 1 – 'Do Nothing'

  This alternative would result in no measures for improving the performance of Lagoons aside from regular maintenance and operation.

  Social: 'Do Nothing" does not support the future growth of the community for full planning horizon up to 2046.

  Financial: No capital cost.

  Technical: MECP approval will limit the growth of the community up to the current rated capacity of the WWTP.

  Archeological and Cultural Heritage: No assessment required due to no change in location of infrastructure.

  Environmental: Adverse effect on water, soil and air quality.

Therefore, this alternative is not an option but is considered as a baseline to other alternatives for comparison in terms of all evaluation criteria.

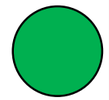
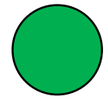
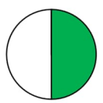
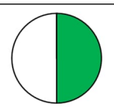
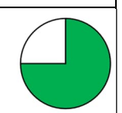
- Alternative 2 – Construct a new Mechanical Wastewater Treatment Facility (WWTF) and convert existing Lagoons to Stormwater Ponds.
- Alternative 3 – Upgrade the existing Lagoons System.

The following section provides an evaluation of the shortlisted alternatives for wastewater treatment, with the evaluation shown in Table 4.2.

4.4 Preferred Alternative

Alternative 3 "Upgrade the existing lagoon-based system to treat projected future flows" has been deemed most cost effective, environmentally sound, and sustainable approach to servicing the Norwich WWTP and meeting the wastewater servicing needs of the community to 2046.

Table 4.2 Phase 2 Alternative Solutions Evaluation

Evaluation Criteria	Alternative 2 – Construct a New Mechanical WWTP	Rating	Alternative 3 – Upgrade the Existing Lagoon System	Rating
Financial	• Capital cost opinion for a new mechanical WWTP at Lagoon site is anticipated to be $31.0 M (-30%/+50%) *Note these figures were developed in 2022 at time of PIC# 1* • Higher operation and maintenance (O&M) cost due to increased operational effort, equipment maintenance, and monitoring/control requirements		• Capital cost opinion for upgrade of existing Lagoon facility is anticipated to be $15.4M (-30%/+50%) *Note these figures were developed in 2022 at time of PIC# 1 are updated as part of Phase 3 of Class EA process* • Lower operation and maintenance cost compared for the new WWTF compared to a mechanical WWTF (Alternative 2) due to due lower operational effort, fewer equipment to operate and maintain, and fewer processes to monitor and operate	
Technical	• Capable of meeting the projected wastewater servicing needs by proving the required level of treatment and meeting the effluent quality requirements • Can be designed with required redundancy and modularity for additional capacity in future • Relatively low compatibility with the existing lagoon system and allows only a moderately efficient use of the existing lagoon system • Higher operational complexity needing higher O&M and control effort than a lagoon system.		• Capable of meeting the projected wastewater servicing needs by proving the required level of treatment and meeting the effluent quality requirements • Can be designed with required redundancy and modularity for additional capacity in future • High compatibility with the existing lagoon system facilitating an efficient use of the existing lagoon system for future wastewater treatment • Low operational complexity with significantly lower O&M and control effort compared to a mechanical plant.	
Environmental	• This alternative has a relatively higher carbon footprint for both construction and operation • The proposed solution would be resilient to climate change with the use of existing lagoon cells as equalization and/or sludge storage ponds. • This alternative is likely to have a moderate impact on wildlife and vegetation due to higher amount of excavation and construction compared to a lagoon upgrade		• This alternative has a low carbon footprint for construction as well as operation • The proposed solution would be resilient to climate change with the retention of existing lagoon cells as a key treatment process facilitating attenuation of peak wet weather flows • This alternative is likely to have a low impact on wildlife and vegetation due to lower amount of excavation and construction activity compared to a mechanical plant	
Social, Cultural and Archeological	• Alternative can support existing developed areas and future growth • Moderate visual, noise, and potential archaeological impacts due to high degree of construction • Longer construction duration compared to Alternative 3		• Alternative can accommodate for future growth and support existing developed areas • Low visual, noise, and archaeological impacts due to low degree of construction • Shorter construction duration compared to Alternative 2	
Overall Conclusion				

5.0 Phase 3 Alternative Design Concept Review

Upgrading the existing lagoon system was selected in Phase 2 of the MCEA Process as the preferred design solution. The next step of the MCEA process is to review alternative design concepts and review and select the preferred design concept.

Three design concepts for the upgrade of the existing lagoon system were prepared to select a preferred design, or designs, to recommend for detailed design and construction as a Part of Phase 5 of the Class EA process.

Appendix 3 Alternative Technology Review outlines the development and evaluation of the conceptual design alternatives.

5.1 Influent Design Value Development

Design values for the upgraded WWTP, which were used to size each alternative were developed (refer to **Appendix 3**) and were prepared using a mixture of historical data as well as future projections. Design values are summarized in Table 5.1 and Table 5.2 below.

Table 5.1 Design Flow Summary

Parameter	Unit	Value	Peaking Factor
Average Daily Flow (ADF)	m^3/d	2,600	-
Maximum Daily Flow (MDF)	m^3/d	10,660	4.1
Maximum Monthly Flow (MMF)	m^3/d	4,680	1.8
Peak Instantaneous Flow (PIF)	m^3/d	13,780	5.3

Table 5.2 Design Influent ADF and MMF Loadings.

Influent Characteristics	Design Average		Design Max Month	
	Characteristics based on Loading	Loading	Characteristics based on Loading	Loading
	mg/L	kg/d	mg/L	kg/d
Flow, m^3/d	2,600		4,680	
$cBOD_5$	171.0	444.7	218.7	1023.5
TSS	183.4	476.9	237.1	1109.6
TKN	33.7	87.6	29.7	138.8
TP	3.8	9.8	3.1	14.5

5.2 Conceptual Process Outline

To achieve the new effluent criteria, and accommodate the increased influent flows, the WWTP will need to be upgraded in the following manner:

- Increased organic loadings will require the addition of aeration in the South Lagoon.
- The existing ISFs have historically produced good quality effluent however they cannot operate during the freezing period. A TAN removal system, capable of

nitrifying during the freezing period will be required to ensure the WWTP can consistently meet the effluent criteria and is able to discharge to the receiver when allowable discharge flows are the greatest.

- To meet the more stringent TP criteria, tertiary filtration will be required as well as a second alum addition point.
- To meet the more stringent E. Coli criteria, a disinfection process (ultraviolet disinfection) will be required.
- To store treated effluent during the summer/fall months when allowable discharge rates are lower, the North Lagoon and a new lagoon will be required to meet the volume requirements. A new pumping station serving the storage lagoons will be required to allow stored effluent to be returned to the various points in the treatment process for re-treatment and discharge.

Treatment is proposed to occur as such:

1. Influent will be routed to the South lagoon. Aeration will remove the majority of the BOD and solids will settle out. Alum will continue to be added upstream of the WWTP at the Sutton St. SPS.
2. Wastewater will then pass through the TAN removal process. This process may be located inside the South Lagoon or may be located within a dedicated tank.
3. Aerated and Nitrified wastewater will enter the existing wet well and be pumped to the tertiary filtration process. Alum will be added upstream of the tertiary filters to remove any remaining TP.
4. Filtered effluent will then pass through the UV disinfection process and out to the receiver.
    a. During months when the influent flows are greater than the permitted effluent discharge rate (likely to occur in the summer and fall), excess effluent will be routed to one of the storage lagoons.
    b. During months when the influent flows are less than the permitted effluent discharge rate (likely to occur in the winter and spring), stored effluent will be pumped from the storage cells to make up the deficit. Pipe routings will be available so that re-treatment of the stored effluent can occur if needed.

A process flow diagram of the above is presented in Figure 5.1.

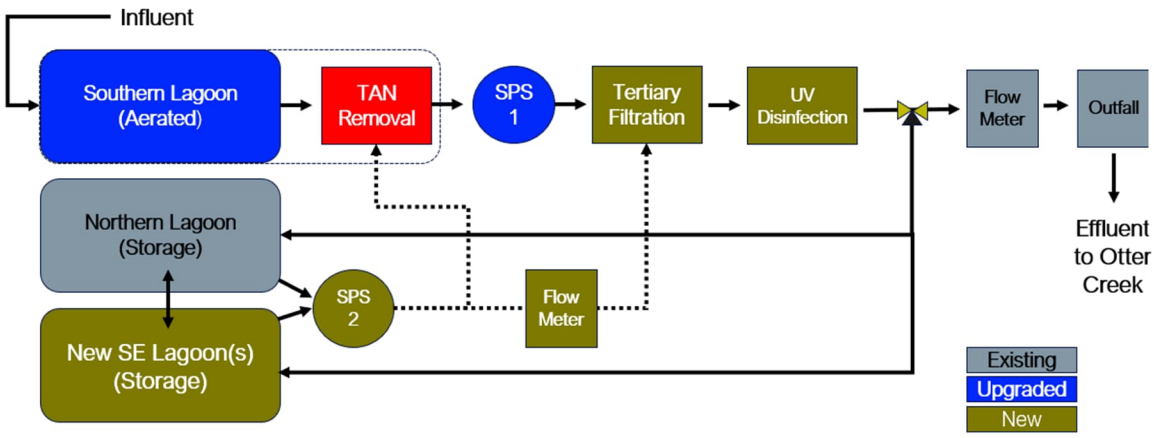


Figure 5.1 Conceptual Process Flow Diagram

5.3 Effluent Storage and Related Impacts

Due to the imposed effluent discharge schedule (presented in Table 3.1), the influent and effluent flows are disconnected from each other and effluent will need to be stored at some point in the treatment process.

When influent flows reach the WWTP's rated capacity of 2,600 m^3/d it is estimated that a total of 271,637 m^3 of storage would be required as is presented in Table 5.3. It is anticipated that storage of a portion of flows would occur between June and November (inclusively) while discharge of stored effluent, along with treated incoming effluent, would occur from December through May.

Table 5.3 Effluent Storage Requirements

Month	Discharge Limit	Days	Total	Storage
-	m^3/d	-	m^3	m^3
Jan	3,802	31	117,850	-
Feb	3,715	28	104,026	-
Mar	4,234	31	131,242	-
Apr	6,912	30	207,360	-
May	3,283	31	101,779	-
Jun	1,814	30	54,432	23,568
Jul	173	31	5,357	75,243
Aug	605	31	18,749	61,851
Sep	1,123	30	33,696	44,304
Oct	1,210	31	37,498	43,102
Nov	1,814	30	54,432	23,568
Dec	2,678	31	83,030	-
		Sum (m^3/d):	949,450	271,637
		Average Daily Flow (m^3/d):	2,601	

5.3.1 Storage Available

Based on the technology alternatives presented below for upgrading the WWTP, the majority of the southern lagoon will be required for treatment and therefore will have limited ability for storage. Any storage volume that is available should be used to buffer downstream processes and limit the peak instantaneous and peak daily flows these unit processes are subjected to. Furthermore, providing sufficient head in the lagoon to drive effluent by gravity to further processes limits the level the lagoon can be drawn down to. For these reasons, storage in the South Lagoon was not considered in the required total.

The northern lagoon is determined to have an approximate storage volume of 117,700 m^3 available when the minimum drawdown depth, as well as an allowance for freeboard is considered. As a result, approximately 155,000 m^3 of additional storage will be required to store treated effluent at the WWTP.

5.3.2 Storage Staging

Required effluent storage volume rises linearly along with average flows to the WWTP. The influent flow projections prepared as a part of the Oxford County 2024 Water and Wastewater Master Plan were used to model the increase in ADF to the WWTP between 2026 and 2058 when the flows are projected to reach the proposed rated capacity of the WWTP (2,600 m^3/d) (RVA, 2024).

As flow projections, particular those that reach to the planning horizon are dependant on many factors, the County may choose to consider a staged approach to providing the require storage. Storage could be provided to accommodate projected growth to 2046 and plans could be prepared for the remaining storage volume required to accommodate the WWTPs rated capacity. Under this structure, the County would have upfront capital saving during the upgrade project and further operational saving due to the smaller volume of storage requiring maintenance.

5.3.3 Effluent Recirculation

Storage of effluent can lead to a degradation of quality, particularly with regards to total ammonia nitrogen (TAN) as well as total suspended solids (TSS). This degradation can be caused by factors such as algae or plant growth as well as settled sludges. It was confirmed by the MECP that the released mixture of treated and stored effluent must meet the effluent criteria, regardless of the quality of the effluent when it was originally stored. For this reason, the WWTP upgrades have been designed to recirculate stored effluent through the various treatment phases to ensure the TAN, TSS and TP limits are met.

It was determined that an April max month scenario, in which the stored effluent did not meet the discharge requirements for TAN, represented the highest loading conditions that would be experienced by the nitrification system.

As the allowable effluent discharge for the month of April (6,912 m^3/d) is above the design max monthly flow (4,680 m^3/d), the WWTP would discharge stored effluent at a rate of approximately 2,200 m^3/d to make use of the available discharge capacity and draw down

the lagoons ensuring that storage capacity is available in the summer. During an average daily flow scenario, the higher volume of recirculated effluent would serve to dilute incoming sewage even further.

To limit degradation of stored effluent, the storage lagoon will be cleaned before use to remove any existing sludge and only treated, filtered effluent will be stored thereby effectively reducing the quantity of solids entering the lagoon.

5.4 Technology Alternatives

It was determined that the available technology alternatives primarily differ on the basis of BOD and TAN treatment. Subsequent unit processes, such as filtration or UV disinfection, would be likely consistent and therefore were maintained consistent for each alternative. Where particular technologies offered benefits to other unit process this is noted.

The following BOD and TAN treatment alternatives were identified and evaluated:

1. Alternative 1: Fixed Film Attached Growth.
2. Alternative 2 - Moving Bed Bioreactor (MBBR).
    a) Alternative 2a – Nitrox Moving Bed Bioreactor (NMBBR.)
3. Alternative 2 – Submerged Attached Growth Reactor (SAGR).

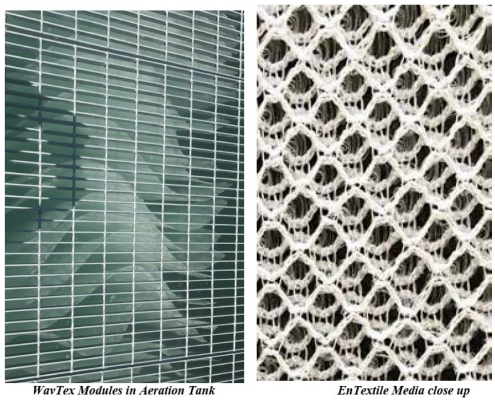
A high-level description of each technology is provided in the following sections and is detailed in Appendix 3.

5.4.1 Alternative 1 - Fixed Film Attached Growth

A fixed film attached growth process (FFAG) provides a fixed media onto which biomass attaches itself preventing washout and greatly increasing the surface area on which treatment can occur. Increased biomass quantity allows nitrification can occur even when slowed by reduced water temperatures. Various suppliers of this technology are available, each with a proprietary media. Media can be attached to floats or mounted to the lagoon bottom. Example medias and a floating system are presented in Figure 5.2.

The system would be staged to achieve BOD and TAN removal in a staged manner. BOD is removed in the first portion of the lagoon. Nitrification can then take place once BOD concentrations has been lowered and conditions are favourable for this, slower, process to occur. It is expected that a baffle would be installed across the lagoon reduce the possibility for short circuiting (refer to Figure 5.3).

Aeration via diffusors would be provided in the South Lagoon to achieve BOD treatment. Aeration would also be provided locally at the fixed film modules to supply the biomass growing on the media directly with oxygen and encourage excess biomass to be sloughed from the media.



Bottom Mounted Fixed Film System Viewed From Above (left) and Media Close-Up (right) (Entex, 2024)

Floating Fixed Film System. Media hangs below the water surface (Ecofixe, 2024)

Figure 5.2 Fixed Film Treatment Examples

Some fixed film system can be installed while the lagoon is in operation (full) however the lagoon should be cleaned prior to installation. Due to the height of the FFAG modules, the ability of the lagoon to change its water level greatly is reduced.

Following the fixed film process, wastewater would travel to the tertiary filters for removal of any remaining TSS and TP and then onto the disinfection process before being released to the receiver or stored.

Following installation of the FFAG modules, maintenance will be limited to periodic increases in airflow rate to scour excess biomass from the media as well as maintenance of the associated blowers and aeration system. It is not anticipated that the modules would require removal from the lagoon, except if required during de-sludging the lagoon. During de-sludging of the lagoon, floating FFAG modules can be floated out of the way if needed.

5.4.2 Alternative 2 - Moving Bed Bioreactor (MBBR)

As with Alternative #1, aeration would be provided in the South Lagoon to achieve BOD treatment. To achieve reliable nitrification, MBBR system are similar to FFAG systems in that both provide surface area for nitrifying bacteria to proliferate while protected from washout in a favourable environment.

Following removal of the majority of the BOD in the south lagoon, effluent would flow into the MBBR tank for nitrification.

The MBBR tank (shown in Figure 5.3) is filled with plastic media which provides significant surface area for the growth of biomass. Aeration is provided to the tank to supply the biomass with oxygen as well as provide mixing to keep the media suspended and encourage excess biomass to be sloughed from the media. Stainless sieves retain the media in the tanks and allow wastewater to pass through for further treatment. A cover, floating or fixed, is typically included to conserve heat.

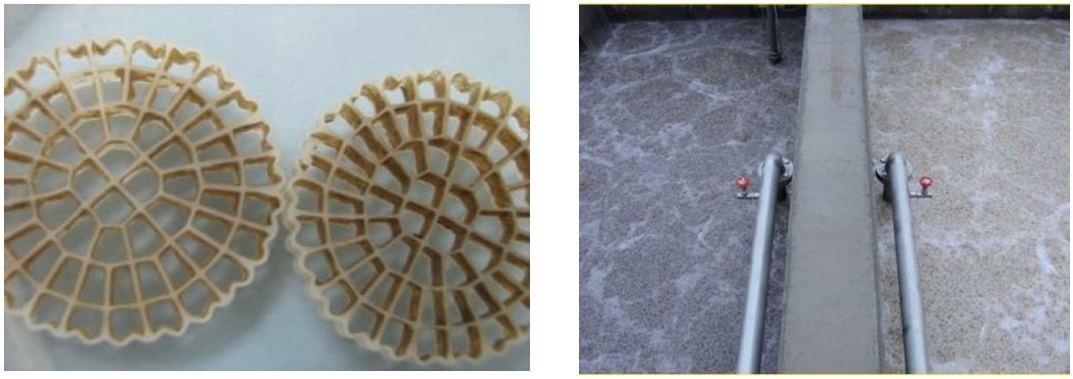


Figure 5.3 MBBR Media (left) and Reactor (right)

Following the MBBR process, wastewater would travel to the tertiary filters for removal of any remaining TSS and TP and then onto the disinfection process before being released to the receiver or stored.

Maintenance will be limited to the associated blowers and aeration system. Media is maintained in the MBBR tank and is designed last for the lifespan of treatment plant. Unlike the FFAG system, the MBBR system will not need to be moved during lagoon desludging.

5.4.3 Alternative 2a – Nitrox Moving Bed Bioreactor (NMBBR)

Nitrox, a proprietary system developed by TriplePoint Environmental, uses a MBBR system, as described in Section 5.4.2 above, for the treatment of TAN. The system is equipped with a backup thermal regulation heat exchanger to ensure the temperature of wastewater entering the Nitrox reactor can be increased to a minimum of 4 – 5ºC if needed. This provides contingency during extreme weather events and under exceptional conditions where nitrification is impaired. As nitrification is highly dependant on temperature, a small amount of heating can have a large impact on the performance of the system. A Nitrox installation in Desoto Iowa, is shown in Figure 5.4.

As with Alternative 2, BOD removal would occur in the southern lagoon via aeration with wastewater passing to a smaller NMBBR tank for the removal of TAN.

Following the NMBBR process, wastewater would travel to the tertiary filters for removal of any remaining TSS and TP and then onto the disinfection process before being released to the receiver or stored.

As with the MBBR system, maintenance will include the associated blowers and aeration system. It is anticipated that some additional maintenance of the heat exchange system would be required however the system is an electric emersion unit and is therefore a simple system as compared to a natural gas/boiler style system. Media is maintained in the NMBBR tank and is designed last for the lifespan of treatment plant. Unlike the FFAG system, the NMBBR system will not need to be moved during lagoon desludging.

Additional electrical costs associated with heating of effluent are challenging to predict and would be expected infrequently during the period of December through March as indicated by a review of historical effluent temperature data.

Nitrox Tanks in DeSoto Iowa (TriplePoint Environmental)

Figure 5.4 Nitrox System Installation

5.4.4 Alternative 3 - Submerged Attached Growth Reactor (SAGR)

The SAGR system is a proprietary design developed by Nexom which uses clear stone media to host biomass. This reactor is located below grade and is covered with a layer of insulating mulch to conserve heat. Aeration is delivered the media bed via diffusors. Example beds from an installation located in Brights Grove Ontario and a cross section is provided in Figure 5.5.

In this way, a large quantity of biomass can be maintained on the media ensuring that nitrification can be completed even when reaction rates are reduced due to cold wastewater temperatures. As with the MBBR/Nitrox systems, BOD removal would occur in the southern lagoon via aeration with wastewater passing into the SAGR system for the removal of TAN.

Following the SAGR process, wastewater would travel to the tertiary filters for removal of any remaining TSS and TP and then onto the disinfection process before being released to the receiver or stored.

Maintenance of the SAGR system is limited as the system is designed not to be accessed once constructed. As with previous alternative maintenance will be limited to the associated blowers and aeration system. Unlike the FFAG system, the SAGR system will not need to be moved during lagoon desludging.

Figure 5.5 SAGR System Installation in Brights Grove Ontario

5.5 Additional Treatment Processes

The remaining treatment processes, following the TAN/BOD treatment, and common to the above evaluated technologies are presented below:

5.5.1 New Tertiary Treatment Building

A new building will be constructed to house the tertiary filters, UV system, aeration blowers, alum doing system and tank and all associated controls and electrical panels. All wastewater will be pumped to the facility and therefore the building is assumed to be a single storey and constructed on grade.

For the purpose of this investigation a 19 m X 25 m building was assumed which would include separate tertiary filtration/UV disinfection, blower and electrical rooms. An unclassified space has been assumed.

5.5.1.1 Tertiary Filtration

Several tertiary treatment technologies are available on the market and are capable of meeting the effluent TSS and TP effluent criteria as well as integrating with any of the proposed BOD/TAN removal technologies.

The suppliers consulted for this investigation have indicated that the effluent TP effluent objective of 0.1 mg/L is achievable with a cloth media filtration unit. Achieving concentrations below this level would likely require upgrading to media filtration which would require a larger footprint and come at a higher cost.

For the purpose of this investigation a cloth media tertiary filter, complete with duty and standby units, was selected for sizing and costing purposes. During detailed design it is anticipated a review of available technologies would be completed to determine the best technology for the application.

5.5.1.2 Disinfection

For the purpose of this investigation a UV disinfection system, complete with a duty and standby UV banks and automatic cleaning system was selected for sizing and costing purposes.

5.5.2 Existing Control Building and Wet Well Upgrades

The existing control building is equipped with two (1 duty / 1 standby) self priming Gorman-Rupp effluent pumps which supply the ISFs and recirculate between the lagoons.

The pumps are rated for 119 L/s at 8.6 m of total dynamic head which is close to the design MDF of 10,660 m^3/d (123 L/s). It is possible that by attenuating peak flows via the lagoon system, modifying the pump impeller, or reducing the required head the existing pumps could be reused for the WWTP upgrade. It is not known what condition the pumps are in and if replacement is warranted. For this investigation it was been assumed that the pumps will be replaced with two new self priming Gorman-Rupp effluent pumps capable of pumping the MDF.

It is assumed that the existing wet well, used for recirculating effluent from the ISFs back to the lagoons will be used to collected effluent from the TAN treatment process (SAGR, MBBR system, etc.) for pumping to the new tertiary filtration building. The existing recirculation line will be maintained for commissioning and for future process upsets.

Existing suction and discharge piping will be assessed for re-use and forcemain piping to the ISFs will be demolished and replaced with piping to the filter building. The filtration building will then be connected to the existing effluent flow meter to allow discharge to the receiver.

5.5.3 Effluent Storage and Pumping

For costing purposes, the excavation of the depth was adjusted such that the fill removed for the lagoon can be used in the berms thereby eliminating the majority of excess soils created. To maintain the effluent in the lagoon, a geomembrane liner has been considered. In detailed design a clay liner could also be considered depending on local availability.

To return stored effluent to the treatment process, a new effluent pumping station will be installed near the new storage lagoons. It has been assumed that the new pumping station will consist of a pre-cast manhole structure which will house a duty and standby submersible pumps. Pump controls and starters will be located nearby in the tertiary filter building.
Piping and valving will be available to route effluent to TAN Treatment, tertiary filtration and UV disinfection as required by the quality of the stored effluent.

5.6 Cost Opinion

For each of the presented alternatives a cost opinion was developed and is presented in Table 5.4 below. This cost estimate is considered to be a Class 5 estimate as described in Section 2.8.

Table 5.4 Alterative Cost Opinions

Parameter	Unit	ALTERNATIVES			
		1 IFAS (ECOFIXE)	2 MBBR	2a MBBR - Nitrox	3 SAGR
Process Equipment	CAD	$8,570,000	$8,910,000	$9,100,000	$11,330,000
New Filter Building	CAD	$2,100,000	$2,100,000	$2,100,000	$2,100,000
New Lagoon Construction	CAD	$4,000,000	$4,000,000	$4,000,000	$4,000,000
Overhead (10%)	CAD	$1,467,000	$1,501,000	$1,520,000	$1,837,000
Total Construction	CAD	$16,137,000	$16,511,000	$16,720,000	$20,207,000
Engineering (9-11%)	CAD	$1,750,000	$1,750,000	$1,750,000	$1,750,000
Total	**CAD**	**$17,890,000**	**$18,270,000**	**$18,480,000**	**$20,930,000**
Total – High (+50%)	CAD	$26,840,000	$27,410,000	$27,720,000	$31,400,000
Total – Low (-30%)	CAD	$12,530,000	$12,790,000	$12,940,000	$14,660,000

5.7 Technology Evaluation

The County Public Works and RVA team reviewed and evaluated the three design alternatives detailed previously (IFAS, MBBR/MBBR – Nitrox, and SAGR). Input as to the considerations and their weighting were developed based on the County's experience in the planning, construction, and operation of wastewater treatment facilities. The Design Alternatives were reviewed based upon the following criteria:

1. Operational Considerations
    a. Reliability and Resilience - System's ability to maintain performance under varying conditions and loads.
    b. Ease of Maintenance - Frequency and complexity of required maintenance.
    c. Generator Requirements.
    d. Operator Training and Skill Requirements - Training and qualifications needed for operation.
    e. Scalability and Flexibility - Ease of future expansion or adaptation to increased demand.
    f. Lagoon Cleanout considerations.
2. Economic Considerations
    a. Capital Costs - Initial investment required for installation and construction.
    b. Operational and Maintained (O&M) Cost - ongoing costs for energy, staffing, repairs, and chemical use.
    c. Funding Eligibility - Potential for grants, subsidies, or incentives that could
3. Environmental Considerations
    a. Energy Efficiency - Energy use/requirements of treatment technology. Ability to assist County with meeting energy use targets.
    b. Footprint and Land Use - Land requirements and impact on surrounding areas.
    c. Greenhouse Gas(GHG) Emissions - Estimated emissions associated with construction and operation.
    d. Effluent Quality and Compliance - Ability to meet or exceed regulatory limits for effluent quality.
    e. Sludge Generation - Volume and characteristics of sludge produced.
    f. Will the technology protect Oxford's water?
4. Social & Cultural Considerations
    a. Social

i. Community acceptance - Anticipated community support or concerns.
ii. Noise and Odor Control - Potential impacts on nearby residents.
iii. Health and Safety - Impact on the health and safety of plant workers and the public.

b. Cultural
i. Alignment with Community Values - Degree to which the technology aligns with the community's environmental and cultural goals.
ii. Indigenous Considerations - Potential impacts on Indigenous lands, rights, and cultural sites
iii. Cultural Heritage and Aesthetic Impact - Visual impact and potential effects on local historical and cultural sites
iv. What level of direct & indirect new employment will derive from the scenario?

The criteria was weighted for a perfect scope being 100 points. Table 5.5 summarizes the review and ranking of the Design Alternatives. Appendix 3-2 provides the detailed review and ranking of alternatives that was developed.

Table 5.5 Design Alterative Ranking

Parameter	Maximum Score	1 Fixed Film Attached Growth	2 MBBR	3 SAGR
Operational Considerations	33.3	24.2	26.1	28.2
Economic Considerations	15.2	13.2	13.4	11.1
Environmental Considerations	27.3	18.2	20.6	20.9
Social & Cultural Considerations	24.2	12.4	14.2	17.3
TOTAL	100	68.1	74.4	77.4
RANKING		3rd	2nd	1st

5.8 Preferred Design Alternative

Alternative 3 Submerged Attached Growth Reactor (SAGR) is the preferred design alternative to use for ammonia treatment as it has been determined to be the highest scoring option and is recommended to be utilized for the expansion of the Norwich WWTP to meet the wastewater servicing needs of the community to 2046.

6.0 Key Treatment Processes

The remaining treatment processes, following the TAN/BOD treatment are presented in this section.

6.1 New Tertiary Treatment Building

A new building will be constructed to house the tertiary filters, UV system, aeration blowers, alum doing system and tank and all associated controls and electrical panels. All wastewater will be pumped to the facility and therefore the building is assumed to be a single storey and constructed on grade. A 19 m X 25 m building was assumed which would include separate tertiary filtration/UV disinfection, blower, and electrical rooms. An unclassified space has been assumed.

6.1.1 Tertiary Filtration

Several tertiary treatment technologies are available on the market and are capable of meeting the effluent TSS and TP effluent criteria as well as integrating with any of the proposed BOD/TAN removal technologies. The suppliers consulted for this investigation have indicated that the effluent TP effluent objective of 0.1 mg/L is achievable with a cloth media filtration unit. Achieving concentrations below this level would require upgrading to media filtration which would require a larger footprint and come at a higher cost. For the purpose of this investigation a cloth media tertiary filter, complete with duty and standby units, was selected for sizing and costing purposes. During detailed design it is anticipated a review of available technologies would be completed to determine the best technology for the application.

6.1.2 Disinfection

For the purpose of this investigation a UV disinfection system, complete with a duty and standby UV banks and automatic cleaning system was selected for sizing and costing purposes.

6.2 Existing Control Building and Wet Well Upgrades

The existing control building is equipped with two (1 duty / 1 standby) self priming Gorman-Rupp effluent pumps which supply the ISFs and recirculate between the lagoons. The pumps are rated for 119 L/s at 8.6 m of total dynamic head which is close to the design MDF of 10,660 m^3/d (123 L/s). It is possible that by attenuating peak flows via the lagoon system, modifying the pump impeller, or reducing the required head the existing pumps could be reused for the WWTP upgrade. It is not known what condition the pumps are in and if replacement is warranted. In our costing, we assumed that the pumps will be replaced with two new self priming Gorman-Rupp effluent pumps capable of pumping the MDF. A connection to the existing 300 mm South lagoon outlet will be made to divert flow by gravity to the TAN treatment process. The existing recirculation line will be maintained for commissioning and for future process upsets. During the design of the upgrade, the existing suction and discharge piping will be assessed for re-use and forcemain piping to the ISFs

will be demolished and replaced with piping to the filter building. The filtration building will then be connected to the existing effluent flow meter to allow discharge to the receiver.

6.3 Effluent Storage and Pumping

The extent of the excavation (based on the depth and geometry) for additional storage required to maintain the approved discharge limits will be reviewed and confirmed as part of the detailed design process. To maintain the effluent in the lagoon, a geomembrane liner has to be considered. In detailed design a clay liner could also be considered depending on local availability. To return stored effluent to the treatment process, a new effluent pumping station will be installed near the new storage lagoon area. Piping and valving will be available to route effluent to TAN Treatment, tertiary filtration and UV disinfection as required by the quality of the stored effluent. The preferred alternative can be integrated into the space available at the exiting treatment plant site as is shown in Figure 6.1.

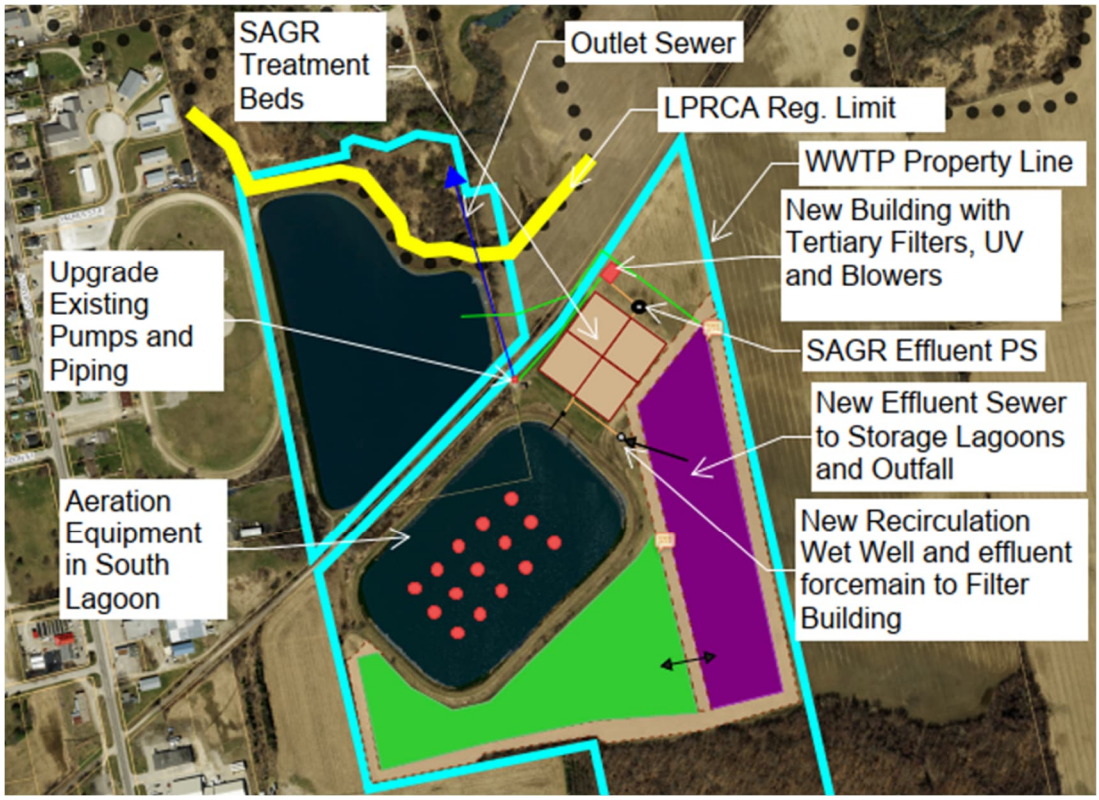


Figure 6.1 Conceptual Site Layout

6.4 Implementation Phasing

To keep the existing treatment plant online while the upgrade is occurring, the following preliminary construction sequencing has been developed:

1. Draw down wastewater in North and South lagoons as far as possible via discharge to ISF and to receiver.
2. Begin construction of new blower/filter/UV building

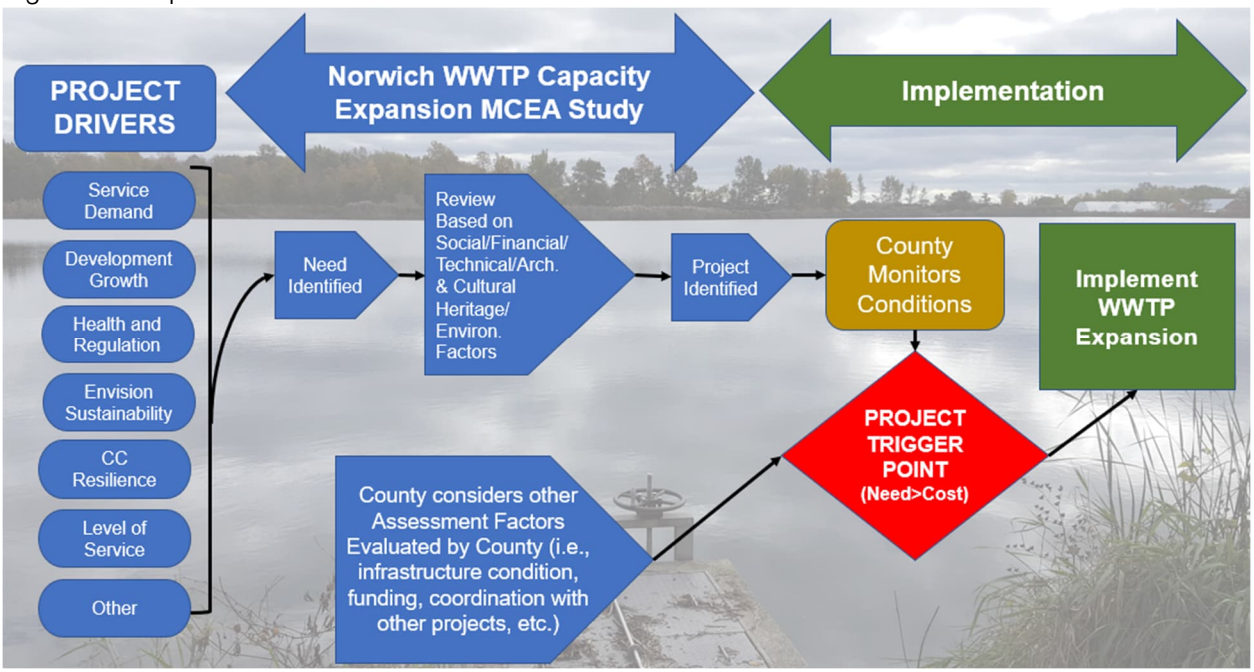
3. Begin construction of new effluent storage cell and new effluent pumping wet well.
4. De-sludge South Cell (if required) and add new connection and isolation valve to outlet line.
5. Install aeration system in South Cell and new outlet structure and begin allowing wastewater to enter south lagoon again.
6. Upgrade existing filter pumps to higher capacity units and connect effluent forcemain to new filter building.
7. Begin routing filtered effluent to new storage cell. Nitrification may be sufficient in summer months to permit release to receiver.
8. Demolish ISFs. May be accomplished in a sequential nature to continue to allow discharge of effluent to the receiver.
9. Construct TAN removal technology in place of ISFs (or near ISFs). Depending on chosen technology, TAN technology to be constructed at a separate location and can be completed while ISFs are still in operation. Connect to South Lagoon outlet. Connect TAN treatment outlet to existing wet well.
10. Begin normal operation, recycling any stored effluent as necessary.
11. Pump stored wastewater in North Lagoon into South Lagoon and de-sludge. Install new outlet, connect to new effluent pumping wet well and return to service.

7.0 Next Steps

7.1 Implementation of Preferred Solution

Once the ESR is finalized following the 30-day review period and there are no orders issued by the MECP under Section 16 of the EAA, then the MCEA Process is considered finalized. Implementation of the project will be based on a decision by the County. Typically, the expansion of a WWTP will be undertaken when the need for the expansion and the benefits this bring outweighs the cost of implementation. The current MCEA process allows for a 10-year window between the finalization of the Environmental Study Report and the commencement of construction of the improvement. If work cannot be started within the 10-year period, the proponent must file a Notice of Addendum to be placed on the public record with the Environmental Study Report as detailed in the current MCEA guidance document. Figure 7.1 summarizes the general steps for project implementation.

Figure 7.1 Implementation of Preferred Solution



7.2 Mitigation Measures

This section summarizes the key impacts associated with the implementation of the recommended solution(s) and general mitigation required. In addition to the mitigation measures identified in the report, additional work will be required to be completed following the MCEA study, prior to construction. During detailed design, findings from the MCEA study will be confirmed through additional investigations, planning and consultation with the public and technical agencies.

7.2.1 Transportation Environment

With the implementation of the recommended alternatives, minor disruption to the transportation environment will be caused during construction. This will be at the

intersection of the Stover Street South and the Access Road to the WWTP. During the design a Traffic Management Plan will be developed to ensure safe access to construction and operations vehicles to and from the WWTP and to minimize disruption to traffic along Stover Street South. Figure 7.2 shows the location of the access to the WWTP for undertaking the WWTP expansion activities.

Figure 7.2 WWTP Access for Construction of Upgrades

7.2.2 Socio-Economic Environment

Other than traffic control as required above, there are no anticipated impacts to the Socio-Economic Environment. A construction staging plan will have to be prepared and implemented to ensure that there are no restrictions to sewage flows from users during construction and commissioning of the WWTP upgrades.

7.2.3 Property Requirements

It is anticipated that the WWTP Upgrades will be able to be undertaken within the property boundaries of the Norwich WWTP. This property is owned by Oxford County and is not broken by any other properties, utilities or natural features.

7.2.4 Noise and Air Quality Impacts During Construction

Although no long-term air quality impacts from the proposed works are anticipated, dust and/or emissions during construction have the potential to degrade air quality in the short term. Measures to minimize these impacts should include dust/debris control measures such as the application of water or non-chloride-based compounds; covering of soil and other material storage piles to prevent wind erosion; and, covering of fine particulate materials during transportation to and from site. The Contractor should use new or well-

maintained equipment and machinery, preferably ones fitted with fully functional emission control systems, mufflers, exhaust system baffles and/or engine covers.

Construction may also result in temporary noise impacts. Measures to minimize noise-related impacts during construction include:

- Limit construction to the time periods allowed by local noise control by-laws. If construction activities are required outside of these hours, the applicable permits/exemptions must be obtained through the municipality in advance;
- Maintain construction equipment in an operating condition that prevents unnecessary noise (muffling systems, secured components, lubrication of moving parts);
- Restrict idling equipment to the minimum necessary to perform the specified work; and
- Investigate all noise complaints from the public to verify that the required noise control measures are in effect. Persistent complaints will require a contractor to comply with MECP; and NPC-115 (Guidelines for noise effects from construction equipment). Subject to the results of a field investigation, alternative noise control measures may be required.

7.2.5 Natural Environment

The following sections describe the impacts and mitigation measures developed to avoid or minimize the potential impacts to the natural environment associated with the proposed improvements. These measures should be considered and elaborated on, as required, during detailed design.

7.2.5.1 Soil Disturbance and Potential for Erosion

The portion of the Norwich WWTP to the south and west of the south lagoon cell is used for agricultural purposes. A portion of this area may be required to provide for additional treatment or storage of treated wastewater. Impacts resulting from any excavating or cut and fill operations will be temporary in nature. Erosion and sedimentation mitigation measures will be implemented prior to and during the construction phase. A Sediment and Erosion Control Plan will be prepared during detail design. These control measures will include:

- Limiting the geographical extent and duration that soils are exposed to the elements;
- Implementing standard erosion and sedimentation control measures per Ontario Provincial Standard Specification (OPSS) 805 Construction Specification for Temporary Erosion and Sediment Control Measures. These standard measures include silt fence placed along the margins of areas of soil disturbance; applying conventional seed and mulch and/or erosion control blanket in areas of soil disturbance to provide adequate slope protection and long-term slope stabilization; and

- Managing surface water outside of work areas to prevent water from coming in contact with exposed soils.

Monitoring of these erosion and sedimentation control measures during and after construction will be implemented to ensure their effectiveness. These environmental measures will greatly reduce/minimize adverse environmental impacts.

7.2.5.2 Aquatic Habitats and Communities

The ACS addresses impacts to aquatic habitats and communities due to the proposed increase in WWTP flow. Significant impacts to watercourses are not expected as part of the construction of the proposed improvements. However, there is the potential for effects associated with sediment laden run off from construction intruding into downstream aquatic environments. Therefore, an erosion and sediment control plan should be developed during detailed design to limit the impacts of sediment export as described above.

7.2.5.3 Groundwater and Surface Water Resources

There are no anticipated impacts to municipal water supplies per our earlier review of Source Water Protection aspects of this project. The movement of water between groundwater and surface-water systems can lead to the mixing of their water qualities. High quantities of nutrients or other dissolved chemicals in surface water could be transferred to the connected groundwater system.

As part of detailed design, a review of the dewatering requirements for the placement of structures will review potential impacts and detail appropriate mitigation strategies in accordance with the provincial *Environmental Protection Act*.

Figure 7.3 shows the proximate private water wells adjacent to the study area from the MECP Well Site (https://www.ontario.ca/page/map-well-records). As such, it is recommended that a water well survey to obtain background information to any private wells within a 500-meter area is completed prior to construction to assist the County in case of any well complaint during construction, and that a monitoring and contingency plan is implemented for any well complaint during construction.

Should proactive dewatering be required during construction, a permit to take water (PTTW) will be obtained, and all required monitoring of groundwater impacts will be undertaken at that time.

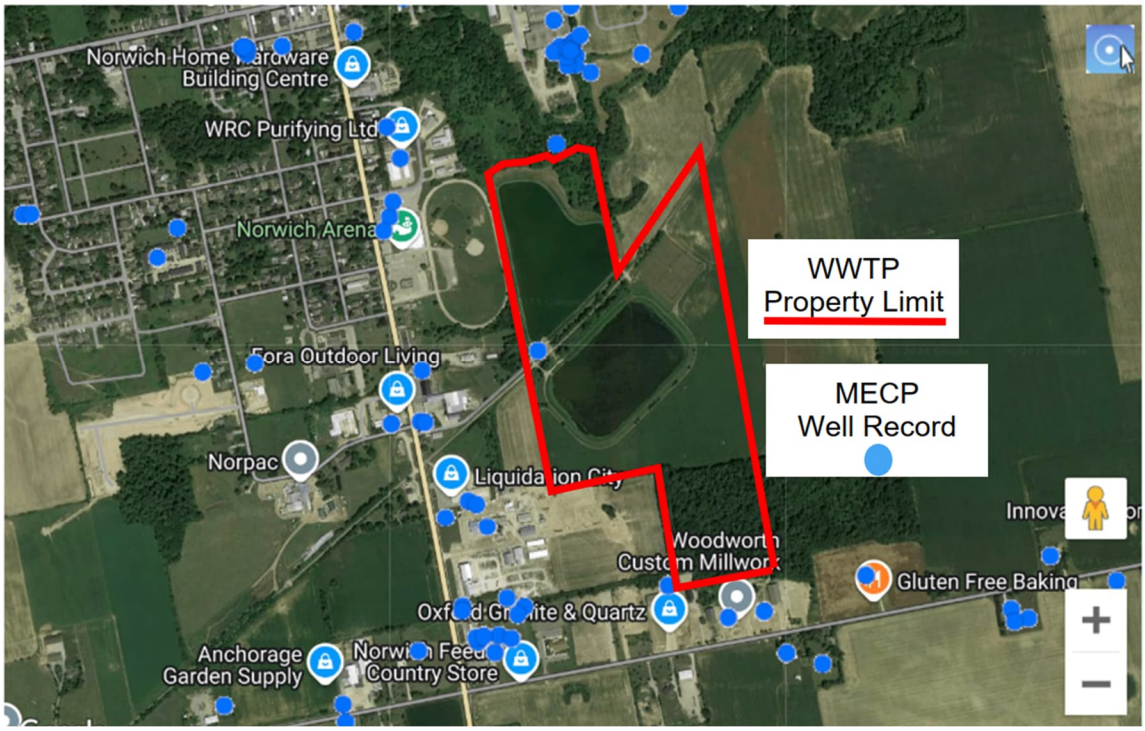


Figure 7.3 Wells in Vicinity of Study Area

7.2.5.4 Vegetation and Tree Impacts

The Natural Environment Assessment undertaken by RVA as part of this project identified invasive European Phragmites reed (*Phragmites australis* subsp. *australis*) along the access road and along the berms of the lagoon cells. As part of the construction contract, invasive species such as Phragmites should be removed from the site.

Figure 7.4 shows the location of the wooded portion of the WWTP Site. Under Oxford County By-lay No 6606-2024, County Forests and County Lands, Part 2 – Uses Declared, the Norfolk WWTP site is declared to be County Lands. Under this definition:

> "The Council of the County of Oxford hereby declares the use of the lands known as the County Lands to be for "forestry purposes and agricultural purposes" that is to include the production of wood and wood products, production of agricultural products including food and fodder, provision of proper environmental conditions for wildlife, protection against flood and erosion, recreation and protection and production of water supplies."

This is interpreted as meaning that works within the wooded area at the southern boundary of the WWTP property should be avoided.

Figure 7.4 Wooded Area on WWTP Property

7.2.5.5 Wildlife and Wildlife Habitat

Potential impacts to wildlife and their habitats during construction can occur through direct injury and habitat loss as well as indirect impacts such as avoidance of areas of active construction and resulting modification to established daily movement patterns.

The following measures are recommended to reduce these impacts.

To prevent incidental impacts to nesting birds and bat maternity colonies, woody vegetation clearing should be restricted to outside of the bat maternity and migratory bird nesting seasons, generally April 1 through October 31. If vegetation clearing must occur within this window, a qualified ecological professional should be retained to ensure no birds or bats are incidentally harmed by vegetation removals.

Grading activities should be limited to the active season for wildlife, typically May 1 through September 30 to prevent entombment within burrows, tunnels, or other subterranean features.

Limiting construction activities to daylight hours will reduce the impacts to behaviour changes (avoidance) of local wildlife in response to the project.

7.2.6 Climate Change

Project impacts and resiliency to climate change were taken into consideration during the study. Considering how a project contributes to climate change, through its greenhouse gas emissions or its effects on the natural environment, is important to the planning process as it

allows proponents to consider climate mitigation measures to avoid, minimize, or offset such effects. As well, considering how climate change may affect a project, such as through increased flooding or drought, is also critical to the planning process through enabling proponents to make informed decisions around how to design a project to withstand such environmental conditions.

- Approaches for considering and addressing climate change in project planning are through:
- Reducing a project's effect on climate change; and
- Increasing the project's resilience to climate change.

With regards to the project's resilience to climate change, the WWTP property which may be used as part of the expansion south and west of the south lagoon is outside of the current Regulated Area. In the *Oxford County Water and Wastewater Master Plan* (2024), project 950413-NOR Sanitary Trunk Sewer Infiltration and Inflow Reduction was identified. This project is intended to help the County reduce infiltration and inflow into the sanitary sewer which discharge to the Norwich WWTP. During the design of the WWTP expansion it is recommended that the design review and confirm the impact of climate change and the results of the Sanitary Trunk Sewer Infiltration and Inflow Reduction project on how the upgraded WWTP will address infiltration and inflow.

During the design of the WWTP expansion, it is recommended that the County consider sustainable materials and practices in accordance with the overall wastewater system operation and the County's 2023-2026 Strategic Plan.

7.2.7 Cultural Heritage and Archaeological Resources

As previously noted, there are no known significant cultural heritage resources within the Study Area. As part of undertaking the MCEA process, an Ontario Form 0478e Criteria for Evaluating Archaeological Potential A Checklist for the Non-Specialist. Based upon the review of this form, it is indicated that the undisturbed portions of the property do have archaeological potential as it is within 300 m of Otter Creek. As part of the MCEA process and as reflected in the ESR document, the County has committed itself to undertake a Phase 1/2 Archaeological Assessment (and any required subsequent assessments) of the previously undisturbed areas of its property which will be disturbed by the expansion of lagoon storage prior to construction impacting these areas.

7.2.8 Municipal Infrastructure and Utilities

Detailed design will attempt to minimize impacts to existing utilities. During the early phase of detailed design, the intention is to confirm the location, depths, and relocation/protection requirements of existing utilities through direct consultation with the affected utility companies.

7.2.9 Excess Soils

It is anticipated that construction works associated with this project will generate excess soil. As with any requirement that is governed under a current regulation or statute, the

County will mandate through its contract with the contractor that the management of excess soil will be conducted in accordance with O.Reg. 406/19. The Contractor will be responsible for retaining a Qualified Person (QP) for the duration of the project, to oversee all work associated with the excavation, storage, movement, transport, re-use, and disposal of excess soil in accordance with O.Reg. 406/19.

The portion of the Norwich WWTP to the south and west of the south lagoon cell is used for agricultural purposes and it is assumed that a portion of this area may be required to provide for additional treatment or storage of treated wastewater. The top 0.15 to 0.3 m of topsoil in agricultural fields typically has a high organic content and it is responsible for providing the bulk of nutrients to plants. Therefore, this layer should be considered a valuable resource. Subject to O.Reg. 416/19 testing, it is recommended that areas of the property that are going to used for the expansion of the WWTP where agriculture is undertaken be reviewed by a Professional Agronomist and a soils management plan be undertaken to reuse or export the excess organic topsoil.

7.2.10 Monitoring During Construction

The mitigation measures identified in this report shall be written into the contract specifications. During construction, the Contract Administrator will ensure that monitoring/inspection of the project works is undertaken to ensure that all environmental commitments identified in the ESR are adhered to by the contract team. Following completion of construction (i.e. post construction), an inspection should be undertaken to ensure the effectiveness of the identified mitigation measures.

7.3 Design and Construction Stage Approval/Permit Requirements

The following summarizes some of the anticipated approvals, permits, and other requirements that will be required for this project during design. The specific list of approvals, permits, and other requirements will be confirmed during detailed design for the project. The following are the anticipated approvals:

- Stage 1/2 Archaeological Assessment for areas potentially of field to the south of the South Lagoon impacted by the WWTP expansion. Reports are to be prepared by a licensed archaeologist who is responsible for report submission to the Heritage Branch of the Ministry of Citizenship and Multiculturalism.
- Township of Norwich Site Plan Approval.
- Township of Norwich Building Permit.
- MECP Environmental Compliance Approval for Sewage Works.
- MECP Environmental Compliance Approval for Air and Noise.
- MECP Permit to Take Water if required or Environmental Activity and Sector Registry (EASR) for construction dewatering, depending on the calculated dewatering requirements during construction.

- Excess Soils Management Planning Documents, including Assessment of Past Use, Soil Sampling Analysis Plan, Soil Characterization Report, and Fill Management Plan.

The timing of some of these approvals will depend on when the project is undertaken. Additional approvals may be required as the project progresses with further investigations, detailed design, and construction.

Oxford County

Norwich Wastewater Treatment Plant Capacity Expansion

Appendix 1 – Public Consultation Record

May 1, 2025

R.V. Anderson Associates Limited
557 Southdale Road East, Suite 200
London, ON N6E 1A2

APPENDIX 1-1

Master Contact List

Norwich Wastewater Treatment Plant Capacity Expansion
Municipal Class Environmental Assessment Study
Technical Agency Stakeholder Contact List

Updated: 2025-01-08

Agency	Contact	Title	Email	Address	Phone	*Notes*	Date Added to List	Removed from List	Notice of Study (date sent)	Notice of PCC#1	Notice of PIC2 (date sent)
Provincial Ministries, Agencies and Departments											
Ministry of the Environment, Conservation and Parks (MECP)	Southwest Region		eanotification.swregion@ontario.ca	733 Exeter Road, London, ON N6E 1L3	1-800-265-7672	*Complete the **project information form** and send copy of notice + form by email **ALL NOTICES TO THIS EMAIL FROM MECP ONLY***			12-May-21	2022-June-8	2024-Nov-25
~~Ministry of the Environment, Conservation and Parks (MECP)~~	~~General (Notices)~~		~~MEA.Notices.EAAB@ontario.ca~~			~~***DO NOT SEND NOTICES***~~		18-May-21	2021-05-18		
~~Ministry of the Environment, Conservation and Parks (MECP)~~	~~Trevor Bell~~	~~Environmental Resource Planner / EA Coordinator~~	~~trevor.bell@ontario.ca~~	~~5775 Yonge Street, 8th Floor Toronto, ON~~	~~416-326-3469~~	~~***DO NOT SEND NOTICES***~~		18-May-21	2021-05-18		
~~Ministry of Natural Resources and Forestry (MNRF)~~	~~Karina Cerniavskaja~~	~~District Planner - Aylmer~~	~~karina.cerniavskaja@ontario.ca~~	~~615 John Street N., Aylmer, ON N5H 2S8~~	~~519-773-4757~~	~~***DO NOT SEND NOTICES***~~		18-May-21	2021-05-18		
~~Ministry of the Environment, Conservation and Parks (MECP)~~	~~Angela Stroyberg~~	~~Water Inspector, Water Compliance~~	~~angela.stroyberg@ontario.ca~~	~~733 Exeter Road, London, ON N6E 1L3~~	~~519-317-8084~~	~~***DO NOT SEND NOTICES***~~		18-May-21	2021-05-18		
~~Ministry of the Environment, Conservation and Parks (MECP)~~	~~Mark Badali~~	~~Environmental Resource Planner / EA Coordinator~~	~~Mark.Badali1@ontario.ca~~	~~5775 Yonge Street, 8th Floor Toronto, ON~~	~~416-457-2155~~	~~***DO NOT SEND NOTICES***~~		18-May-21	2021-05-18		
~~Ministry of the Environment, Conservation and Parks (MECP)~~	~~Kathryn Markham~~	~~Management Biologist~~	~~kathryn.markham@ontario.ca~~	~~615 John St. N, Aylmer, ON N5H 2S8~~	~~519-773-4711~~	~~***DO NOT SEND NOTICES***~~		18-May-21	2021-05-18		
~~Ministry of the Environment, Conservation and Parks (MECP)~~	~~Mark Smith~~	~~Supervisor, Water Compliance~~	~~mark.smith@ontario.ca~~	~~733 Exeter Road, London, ON N6E 1L3~~	~~519-317-8116~~	~~***DO NOT SEND NOTICES***~~		18-May-21	2021-05-18		
~~Ministry of the Environment, Conservation and Parks (MECP)~~	~~Rob Wrigley~~	~~Manager, London Disrict Office~~	~~rob.wrigley@ontario.ca~~	~~733 Exeter Road, London, ON N6E 1L3~~	~~519-280-3077~~	~~***DO NOT SEND NOTICES***~~		18-May-21	2021-05-18		
~~MECP~~	~~Mark Badali~~	~~Regional Environmental Planner (REP)~~	~~Mark.Badali1@ontario.ca~~							2022-June-9	2024-Nov-25
MECP	Monika Macki	Environmental Resource Planner/Environmental Assessment Coordinator	Monika.MacKi@ontario.ca								2024-Nov-25
MECP	Meghan Morgan	Water Inspector, Water Compliance	Meghan.Morgan@ontario.ca;							2022-June-9	2024-Nov-25
MECP	Andrew Wrinkler	Water Inspector, Water Compliance	Andrew.Winkler@ontario.ca;							2022-June-9	2024-Nov-25
MECP	Jim Miller	Water Inspector, Water Compliance	Jim.W.Miller@ontario.ca							2022-June-9	2024-Nov-25
MECP	Kathryn Markham	Management Biologist	kathryn.markham@ontario.ca							2022-June-9	2024-Nov-25
MECP	Nilima Gandhi	Surface Water Specialist	Nilima.Gandhi@ontario.ca							2022-June-9	2024-Nov-25
MECP	Mark Smith	Supervisor, Water Compliance	mark.smith@ontario.ca							2022-June-9	2024-Nov-25
MECP	Rob Wrigley	Manager, London District Office	rob.wrigley@ontario.ca							2022-June-9	2024-Nov-25
MECP- Permissions Section, Species at Risk Branch Ministry of the Environment, Conservation and Parks	Catherine Stewart	Management Biologist	SAROntario@ontario.ca								2024-Nov-25
Ministry of Municipal Affairs and Housing (EA Policy)	Erick Boyd	Manager (Acting)	erick.boyd@ontario.ca	659 Exeter Road, 2nd Floor, London, ON N6E 1L3	519-873-4031				2021-05-18	2022-June-9	2024-Nov-25
Ministry of Agriculture, Food and Rural Affairs	David Marriott	Rural Planner, Western Ontario	david.marriott@ontario.ca	1 Stone Road W, 3rd Floor, Guelph, ON N1G 4Y2	519-766-5990				2021-05-18	2022-June-9	2024-Nov-25
Ministry of Heritage, Sport, Tourism, Culture Industries (MHSTCI)	Karla Barboza	Team Lead(A), Heritage Heritage Planning Unit Programs and Services Branch	karla.barboza@ontario.ca	Ministry of Tourism, Culture and Sport 401 Bay Street, Suite 1700 Toronto ON M7A 0A7	416-314 7120				2021-05-18	2022-June-9	2024-Nov-25
Ministry of Heritage, Sport, Tourism, Culture Industries (MHSTCI)	Dan Minkin	Heritage Planner (Culture Services Unit)	Dan.Minkin@ontario.ca	Suite 1700, 401 Bay Street, Toronto, ON M7A 0A7	416-314-7147				2021-05-18	2022-June-9	2024-Nov-25
Ministry of Natural Resources and Forestry (MNRF)	Steven Strong	District Planner - Aurora District	steven.strong@ontario.ca	50 Bloomington Road Aurora, ON	905-713-7366				2021-05-18	2022-June-9	2024-Nov-25
Ministry of Heritage, Sport, Tourism, Culture Industries (MHSTCI)	Rosi Zirger	Heritage Planner (Culture Services Unit)	rosi.zirger@ontario.ca	Suite 1700, 401 Bay Street, Toronto, ON M7A 0A7	416-314-7159				2021-05-18	2022-June-9	2024-Nov-25
Ministry of Indigenous Affairs	Lise Chabot	Manager, Ministry Partnerships Unit	lise.Chabot@ontario.ca	Suite 400, 160 Bloor St. E, Toronto, ON M7A 2E6	647-532-0761				2021-05-18	2022-June-9	2024-Nov-25
~~Environmental Assessment and Permissions Branch~~		~~Director~~	~~enviropermissions@ontario.ca~~	~~135 St. Clair Avenue West, 1st Floor, Toronto ON M4V 1P5~~		~~***DO NOT SEND NOTICES***~~		18-May-21	2021-05-18	2022-June-9	2024-Nov-25
Federal Ministries, Agencies and Departments											
~~Fisheries and Oceans Canada~~	~~Dan Thompson~~	~~Team Leader - Triage and Planning~~	~~dan.thompson@dfo-mpo.gc.ca~~	~~867 Lakeshore Road, PO Box 5050, Burlinton, ON L7R 4A6~~	~~519-688-3897~~	~~***Undeliverable***~~		18-May-21	2021-05-18		2024-Nov-25
Crown-Indigenous Relations and Northern Affairs Canada	General Contact		aadnc.infopubs.aandc@canada.ca						2021-05-18	2022-June-9	2024-Nov-25
~~Environment Canada~~	~~Rob Dobos~~	~~Manager, Environmental Assessment Section~~	~~rob.dobos@canada.ca~~	~~PO Box 5050, 867 Lakeshore Road, Burlington, ON L7S 1A1~~	~~905-336-4953~~	~~***Undeliverable***~~			2021-05-18		2024-Nov-25
County of Oxford											
County of Oxford	Ben Addley	Chief Administrative Officer	baddley@oxfordcounty.ca	21 Reeve Street, Woodstock, Ontario	519-539-9800 3000				2021-05-18	2022-June-9	2024-Nov-25
County of Oxford	Lindsey Mansbridge	Clerk	lmansbridge@oxfordcounty.ca	21 Reeve Street, Woodstock, Ontario	519-539-9800 3001				2021-05-18	2022-June-9	2024-Nov-25
County of Oxford	Paul Michiels	Director of Community Planning	pmichiels@oxfordcounty.ca	21 Reeve Street, Woodstock, Ontario	519-539-9800 3207				2021-05-18	2022-June-9	2024-Nov-25
InTAC/ExTAC											
County of Oxford	Don Ford	Manager of Water and Wastewater Services	dford@oxfordcounty.ca	21 Reeve Street, Woodstock, Ontario	519-539-9800 3191				2021-05-18	2022-June-9	2024-Nov-25
County of Oxford	Jason Kreitzer	Supervisor, Wastewater Operations	jkreitzer@oxfordcounty.ca	21 Reeve Street, Woodstock, Ontario						2022-June-9	2024-Nov-25
County of Oxford	Michelle Shearing	Wastewater Foreman	mshearing@oxfordcounty.ca							2022-June-9	2024-Nov-25
County of Oxford	Mackenzie Schultz	Supervisor, Water and Wastewater Technicial Services	mschultz@oxfordcounty.ca							2022-June-9	2024-Nov-25
County of Oxford	Adrienne Augustine	Coordinator, Water and Wastewater Programs	aaugustine@oxfordcounty.ca							2022-June-9	2024-Nov-25
County of Oxford	Melissa Abercrombie	Manager of Engineering Services	mabercrombie@oxfordcounty.ca	21 Reeve Street, Woodstock, Ontario	519-539-9800 3131				2021-05-18	2022-June-9	2024-Nov-25
County of Oxford	Rueben Davis	Supervisor, Engineering Services	rdavis@oxfordcounty.ca							2022-June-9	2024-Nov-25
County of Oxford	Harry Goossens	Project Engineer	hgoossens@oxfordcounty.ca							2022-June-9	2024-Nov-25
County of Oxford	TBD	Director of Public Works		21 Reeve Street, Woodstock, Ontario	519-539-9800 3100				2021-05-18	2022-June-9	2024-Nov-25

Norwich Wastewater Treatment Plant Capacity Expansion
Municipal Class Environmental Assessment Study
Technical Agency Stakeholder Contact List

Updated: 2025-01-08

Agency	Contact	Title	Email	Address	Phone	*Notes*	Date Added to List	Removed from List	Notice of Study (date sent)	Notice of PCC#1	Notice of PIC2 (date sent)
County of Oxford	Jennifer Lavallee	Manager, Capital Planning	jlavallee@oxfordcounty.ca							2022-June-9	2024-Nov-25
County of Oxford	Eric Gilbert	Manager, Policy Planning	egilbert@oxfordcounty.ca							2022-June-9	2024-Nov-25
County of Oxford	Amy Hartley	Development Planner	ahartley@oxfordcounty.ca	21 Reeve Street, Woodstock, Ontario	519-539-9800 3206; (519) 468-				2021-05-18	2022-June-9	2024-Nov-25
Municipal											
Township of Norwich	Ken Farkas	Director of public works	kfarkas@norwich.ca							2022-June-9	2024-Nov-25
Township of Norwich	Lee Robinson	CAO / Clerk	lrobinson@norwich.ca	285767 Airport Road, Norwich, Ont., N0J 1P0	(519) 667-2000 7615				2021-05-18	2022-June-9	2024-Nov-25
Township of Norwich	Kimberly Armstrong	Director of Corporate Services/ Clerk	karmstrong@norwich.ca	285767 Airport Road, Norwich, Ont., N0J 1P0	(519) 468-2410 226				2021-05-18	2022-June-9	2024-Nov-25
Township of Norwich	Denise Rooke	Building & Draiange Services Clerk / Zoning Officer	drooke@norwich.ca	285767 Airport Road, Norwich, Ont., N0J 1P0	(519) 468-2410 229				2021-05-18	2022-June-9	2024-Nov-25
Township of Norwich	Marty Lenaers	Manager of Public Works	mlenaers@norwich.ca	285767 Airport Road, Norwich, Ont., N0J 1P0	(519) 468-2410 228				2021-05-18	2022-June-9	2024-Nov-25
Elected Officials											
Ontario Government	Ernie Hardeman	MPP - Oxford	Hardeman@execulink.com	12 Perry St. Woodstock, ON N4S 3C2	519-537-5222				2021-05-18	2022-June-9	2024-Nov-25
Federal Government	Arpan Khanna	MP - Oxford	dave.mackenzie@parl.gc.ca	208 Huron Street Suite 4 Woodstock, Ontario N4S 7A1	519-421-7214				2021-05-18	2022-June-9	2024-Nov-25
Township of Norwich (& Oxford County)	Jim Palmer	Mayor (Warden)	jpalmer@norwich.ca		(519) 468-6215				2021-05-18	2022-June-9	2024-Nov-25
Township of Norwich	Karl Toews	Ward 1 Councillor	ktoews@norwich.ca		(226) 883-0575				2021-05-18	2022-June-9	2024-Nov-25
Township of Norwich	Lynne DePlancke	Ward 2 Councillor	ldeplancke@norwich.ca	82 Stover Street N Norwich On N0J 1P0	(519) 468-6728				2021-05-18	2022-June-9	2024-Nov-25
Township of Norwich	Shawn Gear	Ward 3 Councillor	sgear@norwich.ca		(519) 983-9854				2021-05-18	2022-June-9	2024-Nov-25
Township of Norwich	Adrian Couwenberg	Ward 4 Councillor	acouwenberg@norwich.ca		(519) 424-2015				2021-05-18	2022-June-9	2024-Nov-25
Local Agencies											
Long Point Region Conservation Authority	David Proracki	Water Resources Analyst	dproracki@lprca.on.ca								2024-Nov-25
Long Point Region Conservation Authority	Leigh-Anne Mauthe	Watershed services Manager	lmauthe@lprca.on.ca		519-842-4242 ext. 231				2021-05-18	2022-June-9	2024-Nov-25
Long Point Region Conservation Authority	Judy Maxwell	General Manager/ Secretary Treasurer	jmaxwell@lprca.on.ca							2022-June-9	2024-Nov-25
Southwestern Public Health Unit	Amy Pavletic	Program Manager, Environmental Health	apavletic@swpublichealth.ca							2022-June-9	2024-Nov-25
Southwestern Public Health Unit	Derek McDonald	Director, Corporate Services & Human Resources	dmcdonald@swpublichealth.ca	1230 Talbot Street, St. Thomas, ON N5P 1G9	519-631-9900 ext. 1250				2021-05-18	2022-June-9	2024-Nov-25
Indigenous Groups											
Oneida Nation of the Thames		Environment and Consultation Coordinator	environment@oneida.on.ca	2212 Elm Avenue Southwold, ON N0L 2G0	519-652-6922				2021-05-18	2022-June-9	2024-Nov-25
Mississaugas of the Credit First Nation	Fawn Sault	Consultation Manager	Fawn.Sault@mncfn.ca	Mississauga of the Credit First Nation 4065 Hwy. 6, Hagersville, ON N0A 1H0	(905)768-1133				2021-05-18	2022-June-9	2024-Nov-25
Mississaugas of the Credit First Nation		Department of Consultation & Accommodation	doca@mncfn.ca						2021-05-18	2022-June-9	2024-Nov-25
Mississaugas of the Credit First Nation	Megan DeVries	Archaeological Operations Supervisor Department of Consultation and Accommodation (DOCA)	Megan.DeVries@mncfn.ca	4065 Highway 6 North, Hagersville, ON N0A 1H0	P: 905-768-4260 | M: 289-527-2763					2022-June-9	2024-Nov-25
Six Nations of the Grand River	Lonny Bomberry	Lands & Resource Director		Six Nations of the Grand River Consultation and Accommodations Team 2498 Chiefswood Rd. P.O. Box 5000 Ohsweken, ON N0A 1M0						2022-June-9	2024-Nov-25
Six Nations of the Grand River	Robbin Vanstone	Land Use Office, Lands and Research	rvanstone@sixnations.ca	Six Nations of the Grand River Consultation and Accommodations Team 2498 Chiefswood Rd. P.O. Box 5000 Ohsweken, ON N0A 1M0					2021-05-18	2022-June-9	2024-Nov-25
Six Nations of the Grand River	Tanya Hill-Mountour	Archaelogy Coordinator	tanyahill-montour@sixnations.ca	Six Nations of the Grand River Consultation and Accommodations Team 2498 Chiefswood Rd. P.O. Box 5000 Ohsweken, ON N0A 1M0					2021-05-18	2022-June-9	2024-Nov-25
Metis Nation of Ontario		Consultation Office	consultations@metisnation.org						2021-05-18	2022-June-9	2024-Nov-25
Haudenosaunee Confederacy Chiefs Council		Consultation Office	hdi2@bellnet.ca	Haudenosaunee Development Institute 16 Sunrise Court – Suite 600 P.O. Box 714 Ohsweken, Ontario N0A 1M0	519-445-4222	***Undeliverable***			2021-05-18	2022-June-9	2024-Nov-25
Utilities											
Bell Canada	Diego Tobias	GT Fiber Services Inc.	PUCC.circulations.GT@bell.ca	5025 Creekbank Road Mississauga, ON L4W 0B6	905-614-6820				2021-05-18	2022-June-9	2024-Nov-25
Hydro One Networks	General Email	Seconary Land Use	secondarylanduse@hydroone.com	483 Bay Street, North Tower, 15th Floor Toronto, ON					2021-05-18	2022-June-9	2024-Nov-25
Rogers Communications		Rogers Municpal Operations Centre	Rogers.MOC@telecon.ca	800 York Street LONDON, ON N5W 2S9					2021-05-18	2022-June-9	2024-Nov-25
Enbridge Gas Distribution Incorporated	Markup Requests		markups@enbridge.com						2021-05-18	2022-June-9	2024-Nov-25
EXECULINK TELECOM	Jeff Soetemans	Operations Supervisor	jeff.soetemans@execulink.com	1127 Ridgeway Rd.P.O. Box 33Woodstock, O	519-456-1094				2021-05-18	2022-June-9	2024-Nov-25
~~Nor-Del Cablevision~~	~~General Inquiry~~		~~nordel@nor-del.com.~~			***Undeliverable***		18-May-21	2021-05-18		2024-Nov-25
TransCanada Pipelines Inc.	Darlene Quilty	Project & Planning Coordinator	dquilty@mhbcplan.com	86 Healey Road, Bolton ON L7E 5A7	705-727-0663 x21				2021-05-18	2022-June-9	2024-Nov-25
Erth Power	Josh Smith	Director of Engineering & Operations	josh.smith@erthpower.com	143 Bell Street, PO Box 157, Ingersoll, ON, N5C 3K5	519-485-1820 ext. 220				2021-05-18	2022-June-9	2024-Nov-25
Canadian National Railway Company (CN)	Michael Vallins	Manager Public Works, Design & Construction	michael.vallins@cn.ca		416-529-0167				2021-05-18	2022-June-9	2024-Nov-25
Relevant Interest Groups / Other											
Norwich Chamber of Commerce			info@norwichchamberofcommerce.ca	Post Office Box #1028 Norwich, ON, Canada		***Undeliverable - Mailbox Full***			2021-05-18	2022-June-9	2024-Nov-25

Norwich Wastewater Treatment Plant Capacity Expansion
Municipal Class Environmental Assessment Study
Technical Agency Stakeholder Contact List

Updated: 2025-01-08

Agency	Contact	Title	Email	Address	Phone	*Notes*	Date Added to List	Removed from List	Notice of Study (date sent)	Notice of PCC#1	Notice of PIC2 (date sent)
Thomasfield Homes	Katherine McLaughlin	Manager, Land Development & Acquisitions	katherinem@thomasfield.com	Thomasfield Homes Ltd. 295 Southgate Drive PO Box 1112 Guelph ON N1H 6N3	P (519) 836-4332 ext. 25		28-May-21			2022-June-9	2024-Nov-25
Thomasfield Homes	Tom Krizsan		info@thomasfield.com	295 Southgate Dr, Guelph, ON N1G 3M5	(519) 836-4332				2021-05-20	2022-June-9	2024-Nov-25
GSP Group	Hugh Handy		hhandy@gspgroup.ca	72 Victoria Street S, Suite 201 Kitchener, ON N2G 4Y9	519.569.8883				2021-05-18	2022-June-9	2024-Nov-25
Activa Group	General Contact Email		info@activa.ca	55 Columbia St East, Suite 1 Waterloo, ON N2J 4N7	519-886-9400		2021-05-28		2021-05-28	2022-June-9	2024-Nov-25
~~Activa Group~~	~~Larry Masseo~~		~~lmasseo@actviagroup.ca~~	~~55 Columbia Street East, Suite 1 Waterloo, ON N2J 4N7~~	~~519.886.9400~~	***Undeliverable***		28-May-21	2021-05-18		2024-Nov-25
BGS Homes	Berardo Mascioli		berardo@bgshomes.com		905-695-1953 ex. 252				2021-05-18	2022-June-9	2024-Nov-25
Norwich BIA (Discover Norwich)	General Contact Email		information@discovernorwich.ca				2021-05-28		2021-05-28	2022-June-9	2024-Nov-25
Norwich BIA	General Contact Email		information@NorwichGuide.ca		519-863-6569	***Undeliverable***	2021-05-28		2021-05-28	2022-June-9	2024-Nov-25
Stubbe's Property Development	Albert Meyer		albertm@stubbes.org		519-424-2183 ex. 275				2021-05-18	2022-June-9	2024-Nov-25

APPENDIX 1-2

Public and Agency Notices

APPENDIX 1-2-1

Notice of Commencement

Notice of Commencement

Oxford County
Growing stronger together

NOTICE OF STUDY COMMENCEMENT

Municipal Class Environmental Assessment Study
Norwich Wastewater Treatment Plant Capacity Expansion

PROJECT BACKGROUND

Oxford County owns and operates the Norwich Wastewater Treatment Plant (WWTP), which provides tertiary treatment for wastewater generated in the Township of Norwich. The WWTP consists of two facultative lagoon cells and four intermittent sand filters that polish the WWTP effluent prior to discharge to Otter Creek.

In 2011, Oxford County initiated a Municipal Class EA Study (Class EA Study) to upgrade and/or expand the facility in anticipation of projected development and associated WWTP flows. However, between 2011 and 2015, growth in the community was not at the level anticipated, and the County experienced a reduction in water usage (and subsequently wastewater flows). As a result, in June 2016, County Council approved that the Class EA Study be put on hold until which time increased development rates and associated WWTP flow rates are observed.

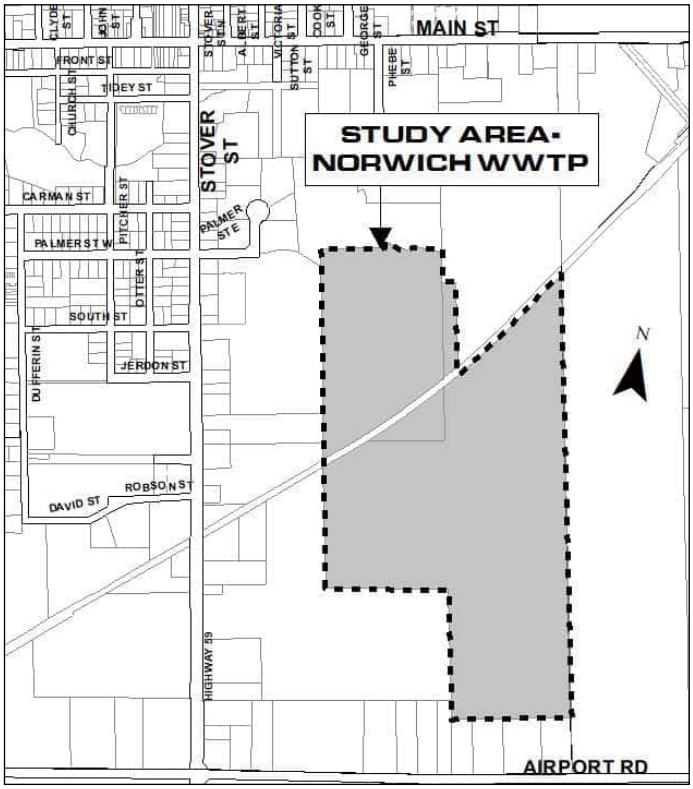
THE STUDY

In response to approved future growth in the Township of Norwich, and associated projected increases in WWTP flow rates, Oxford County has re-initiated the Class EA Study for capacity expansion of the Norwich WWTP. The Class EA Study will determine the most cost-effective, environmentally sound, and sustainable approach to servicing the Norwich WWTP to meet the wastewater servicing needs of the community within the 25-year planning horizon. The project is being completed as a **Schedule "C"** project in accordance with the *Municipal Class Environmental Assessment* (October 2000, amended in 2007, 2011 & 2015), which is approved under the *Ontario Environmental Assessment Act.*

PUBLIC COMMENTS

This notice signals the commencement of the Municipal Class EA Study, a Study which will identify and evaluate alternative solutions to develop a preferred WWTP capacity expansion design concept in consultation with adjacent property owners, regulatory agencies, indigenous communities, members of the local business community and the public.

Public consultation will occur during the course of the study to present and receive comments on the project, alternative solutions, and the preferred alternative for expanding the wastewater treatment capacity of the Norwich WWTP. Details, including time and location, will be announced via a subsequent notice and posted to the County's project webpage: *www.oxfordcounty.ca/Projects-studies*



Upon completion, an Environmental Study Report will be prepared and made available for final public review and comment.

COMMENTS INVITED

If you have any questions or comments regarding the study, or wish to be added to the Study mailing list, please contact either of the following project team members:

Jesse Keith, P.Eng., Project Manager
Oxford County Public Works
1-800-755-0394 ext.3194 | jkeith@oxfordcounty.ca

John Tyrrell, M.Sc. (Eng.), P.Eng., Project Manager
R.V. Anderson Associates Limited
519-681-9916 ext. 5038 | jtyrrell@rvanderson.com

Comments received through the course of the Study will be considered and documented in the Environmental Study Report.

Information collected will be used in accordance with the *Freedom of Information and Protection of Privacy Act*. With the exception of personal information, all comments will become part of the public records.

This Notice first issued on May 10, 2021

Public Notices

OxfordCounty
Growing stronger together

NOTICE OF STUDY COMMENCEMENT

Municipal Class Environmental Assessment Study
Norwich Wastewater Treatment Plant Capacity Expansion

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Jesse Keith, P.Eng., Project Manager
Oxford County Public Works
1-800-755-0394 ext.3194 | jkeith@oxfordcounty.ca

John Tyrrell, M.Sc. (Eng.), P.Eng., Project Manager
R.V. Anderson Associates Limited
519-681-9916 ext. 5038 | jtyrrell@rvanderson.com

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This Notice first issued on May 10, 2021

oxfordcounty.ca

Public Notices

OxfordCounty
Growing stronger together

NOTICE OF RECEIPT OF COMPLETE APPLICATION(S))

pursuant to 17(5) and 34(12) of the Planning Act, R.S.O. 1990, as amended

APPLICATION(S) FOR OFFICIAL PLAN AMENDMENT & ZONE CHANGE

TOWN OF TILLSONBURG

Please be advised that the Community Planning Office has received applications applying to the following lands:

File No.:	OP 21-04-7 & ZN 7-21-04
Applicant:	Town of Tillsonburg
Location of Property:	Lands within the Central Business District
Description of Application:	The purpose of this application is to amend the provisions of the Official Plan contained within Section 8.3.2.3.1- Central Business District, and Section 13.2.2 of the Town's Zoning By-Law to expand the current prohibition on free standing residential development within the Central Business District and Central Commercial Zone. At this time, it is proposed that the current prohibition (encompassing an area from Bidwell St to the west, Bridge St to the north, Oxford Street to the South, and Harvey Street to the east) be expanded to south and east, encompassing an area including London Street to the south, and encompass properties on both sides of Harvey Street.

Please note this is **not** a notice of Public Meeting. Prior to the Public Meeting, you will receive a "Public Notice" informing you of the date, time and location of the public meeting, together with a description of the proposal.

If you have any questions regarding the application(s), please contact this office to arrange an appointment with **Eric Gilbert, Senior Planner.** Written inquiries may also be forwarded to the regular mail or email addresses provided below. Please include the applicant's name and file number on all correspondence.

Eric Gilbert
Senior Planner
Community Planning
County of Oxford
P. O. Box 1614, 21 Reeve Street
Woodstock ON N4S 7Y3
phone: 519-539-0015 x 3216
email: planning@oxfordcounty.ca

CLASSIFIEDS

Public Notices

OxfordCounty
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NOTICE OF STUDY COMMENCEMENT

Municipal Class Environmental Assessment Study
Norwich Wastewater Treatment Plant Capacity Expansion

PROJECT BACKGROUND

Oxford County owns and operates the Norwich Wastewater Treatment Plant (WWTP), which provides tertiary treatment for wastewater generated in the Township of Norwich. The WWTP consists of two facultative lagoon cells and four intermittent sand filters that polish the WWTP effluent prior to discharge to Otter Creek.

In 2011, Oxford County initiated a Municipal Class EA Study (Class EA Study) to upgrade and/or expand the facility in anticipation of projected development and associated WWTP flows. However, between 2011 and 2015, growth in the community was not at the level anticipated, and the County experienced a reduction in water usage (and subsequently wastewater flows). As a result, in June 2016, County Council approved that the Class EA Study be put on hold until which time increased development rates and associated WWTP flow rates are observed.

THE STUDY

In response to approved future growth in the Township of Norwich, and associated projected increases in WWTP flow rates, Oxford County has re-initiated the Class EA Study for capacity expansion of the Norwich WWTP. The Class EA Study will determine the most cost-effective, environmentally sound, and sustainable approach to servicing the Norwich WWTP to meet the wastewater servicing needs of the community within the 25-year planning horizon. The project is being completed as a **Schedule "C"** project in accordance with the *Municipal Class Environmental Assessment* (October 2000, amended in 2007, 2011 & 2015), which is approved under the *Ontario Environmental Assessment Act*.

PUBLIC COMMENTS

This notice signals the commencement of the Municipal Class EA Study, a Study which will identify and evaluate alternative solutions to develop a preferred WWTP capacity expansion design concept in consultation with adjacent property owners, regulatory agencies, indigenous communities, members of the local business community and the public.

Public consultation will occur during the course of the study to present and receive comments on the project, alternative solutions, and the preferred alternative for expanding the wastewater treatment capacity of the Norwich WWTP. Details, including time and location, will be announced via a subsequent notice and posted to the County's project webpage: *www.oxfordcounty.ca/Projects-studies*

Upon completion, an Environmental Study Report will be prepared and made available for final public review and comment.

COMMENTS INVITED

If you have any questions or comments regarding the study, or wish to be added to the Study mailing list, please contact either of the following project team members:

Jesse Keith, P.Eng., Project Manager
Oxford County Public Works
1-800-755-0394 ext.3194 | jkeith@oxfordcounty.ca

John Tyrrell, M.Sc. (Eng.), P.Eng., Project Manager
R.V. Anderson Associates Limited
519-681-9916 ext. 5038 | jtyrrell@rvanderson.com

Comments received through the course of the Study will be considered and documented in the Environmental Study Report.

Information collected will be used in accordance with the *Freedom of Information and Protection of Privacy Act*. With the exception of personal information, all comments will become part of the public records.

This Notice first issued on May 10, 2021

oxfordcounty.ca

Legal & Tender Notices

Brimage LAW GROUP

NOTICE TO CREDITORS AND CLAIMANTS

IN THE ESTATE OF SIMONE ALICE SCHELSTRAETE, late of Norfolk County , in the Province of Ontario, Deceased.

All persons having claims against the estate of the above who died on April 3, 2021, are required to file particulars of same with the undersigned on or before the 2nd day of July, 2021 after which date the assets of the said deceased will be distributed having regard only to the claims of which particulars shall then have been received.

DATED this 19th day of May, 2021.

RICHARD VAN SEVEREN, Estate Trustee(s), by BRIMAGE LAW GROUP, 21 Norfolk Street North, Simcoe, Ontario, Solicitors.

Community - Other

Pets can talk! Meet my owner!
He's a handsome
25 yr old guy, sweet, sincere, fit. NS/ND, very responsible, solid values.
Help me introduce him to that special similar minded, girl seeking a LT relationship.
Email: bilmar7@eastlink.ca

Agriculture

ASPARAGUS WORKERS REQUIRED
519-866-3076
Text or call 5 19-550-7076

Construction & Trades

BLUEWEST EQUIPMENT

Service Technician

BlueWest Equipment is seeking an experienced service technician. We specialize in construction and rental equipment repairs. This opportunity is ideal for someone who communicates well with co-workers as well as customers, and is able to problem solve independently and with others.
519-688-0909 admin@bluewest.ca

Auctions

BID2BUY ON LINE AUCTION SERVICES

Selkirk Antique & Collectible Auction

Excellent Variety Of Rare Antiques & Collectibles to Include Tin Toys, Dinky Toys, Fabulous Brass Port Hole, Antique Leather Bike Seat, Westinghouse Canada Sign, Reid Press Printer Brass Sign, Old Comics, Rare Alice Cooper Poster, Two Outstanding W.E. Cantelon Paintings, Baseball, Hockey, War Bulletin & Comic Trading Cards, Old Post Cards & Photos, Sterling Silver, Gold Rings, Rare Knives, Pokemon Gold Plated Trading Cards, Beatles Memorabilia, Die Cast Cars, Models, Tobacco Cards, Crockery, Iced Tea Stone Ware Dispenser, Decoys, Norfolk & Elgin Atlas, Old Signs, Illuminated Sign, WW11 Memorabilia, Royal Doulton, Cups & Saucers, Fine China, Old Books, Folk Art, Guitar, Hand Crafted Boats, Blanket Boxes, Antique Chest of Drawers, Dry Sink, Antique 8' Country Bench, Milk Cans, Bake Ware, Bronze Sculptures, Milk Bottles, Stamps, Wayne Inkster Walking Sticks, Vintage Lighting, Rare Antique Cigarette Lighters, Marbles, Canada Cycle & Motor Car Sign, License Plates, Turn Tables, Antique Seth Thomas Clock, and Much More...

Auction Closes June 2, 8:00 P.M.

Online Only
www.bid2buy.ca • 289 339 2849

General Help

BAYHAM Opportunity is Yours

PUBLIC WORKS OPERATOR

The Municipality is seeking a candidate, for the unionized, Public Works Operator position. Reporting to the Manager of Public Works, the Public Works Operator operates various municipal vehicles and construction equipment including tandem trucks, bulldozer, backhoe and loader. The position also carries out all types of physical works and repairs to equipment, associated with roads, road maintenance, parks and parks maintenance.

Experience operating construction equipment, crawler dozers and backhoes is an asset.

A full position description and listing of qualifications and responsibilities for the Public Works Operator position is available on the municipal website.

Candidates are invited to submit a complete resume and cover letter outlining how the applicant satisfies the provisions of the job posting and job description to the undersigned no later than **1:00 PM Monday June 21, 2021**

Steve Adams
Manager of Public Works
Municipality of Bayham
56169 Heritage Line
Straffordville, ON
N0J 1Y0
E-mail address: sadams@bayham.on.ca

The Municipality of Bayham is an Equal Opportunity Employer.

If you require accommodation at any time throughout the employment activities process, please contact us at: 519-866-5521, accessibility@bayham.on.ca or by visiting www.bayham.on.ca and we will make every effort to provide appropriate assistance pursuant to the Municipality of Bayham Employment Activities Accommodation Policy.

Personal information collected in response to this notice will be managed in accordance with the requirements of the Municipal Freedom of Information and Protection of Privacy Act, and will be used only to determine eligibility for employment.

Newspaper Carriers
wanted for the delivery of the Norfolk and Tillsonburg News.
Routes available in all towns.
No money collection. Thursday delivery.
Call Barb at 519-688-4400 Extension 530224
or email bwinter@postmedia.com
NORFOLK & TILLSONBURG NEWS

CLEANING COMPANY
NOW HIRING
(Full Time and Part Time)
Join our team.
Cleaning company is looking for energetic individuals who love cleaning, are dependable, thorough and friendly.
All year-round work.
No nights or weekends required.
For more information, please contact Linda at
(519) 688-8601

Antiques, Art & Collectibles

WANTED TO BUY: Fruit Jars & Bottles. Tins, toys, advertising signs, pre 1930 postcards, photos, Canadian & US coins. Duck decoys, Military items, old comics, crock & China. Full or Partial Estates. Collections large or small.
Call John 226-206-0627

Buy & Sell - Wanted

Wanted Cups and saucers, dishes, coin collections, jewelry and gold, any estates, and antiques. Call 519-759-4227

Building & Reno Supplies

CARPET
I have several thousand yards of new StainMaster and 100% nylon carpet.
I'll carpet your living room and hall for $489.
Price includes carpet, pad, installation, (25 sq yds)
No interest, No payment for 3 months, oac
call Steve at 519-751-4335
CARPETDEALS.CA.

VINYL FLOORING
I have over 100,000 sq.ft. of new vinyl flooring.
Lot's of styles and colours from 1.00 sq.ft. Installation available. Call 877-871-3644
CLEARANCEFLOORING.CA

HARDWOOD FLOORING
I have over 100,000 sq.ft. of new hardwood flooring.
Lot's of styles and colours from 3.00 sq.ft. Installation available. Call 877-871-3644
CLEARANCEFLOORING.CA

Social Care

Community Living Tillsonburg has openings for:
- Permanent Part-time Support Workers 48-64 hours biweekly, shifts and Weekends
- Casual Support Workers- call in hours, shifts and weekends.
- Summer Student-Contract Positions- shifts and weekends

If you have a combination of related post-secondary education and experience, current First Aid and CPR, CPI, are able to work a flexible schedule that includes shifts and weekends, have a valid drivers licence and a reliable car;

Email resume and cover letter to resume@communitylivingtillsonburg.ca
Fax: 5198427628

Home Renovations

STEEL ROOFING & SIDING
Accessories, agricultural, commercial, residential, cut to length, prompt service, delivery avail
Call Oscar 1-888-763-7779 or 519-586-2285

Celebrating

Add your message to the Celebrations guestbook at **classifieds.tillsonburgnews.com** and share with Facebook and Twitter!

Birthdays

Happy 90th Birthday

Happy 90th Birthday Mary Marosevich
June 1, 2021
For all the love you have gifted us over the years, we are returnung it ten thousand times today!!
Lots of Love to our #1 Grammy From Don, Wendy, DJ & James xoxox

Birthdays

Happy Birthday

Jack & June Manary
We are so grateful Dad turned 92 on May 17th & Mom will be 90 on June 8th. We love you both so much, Margaret, Jacky (Dave), Kelly (Buck) and Mack. Everyone stay safe.

Public Notices

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Growing stronger together

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Norwich Wastewater Treatment Plant Capacity Expansion

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Jesse Keith, P.Eng., Project Manager
Oxford County Public Works
1-800-755-0394 ext.3194 | jkeith@oxfordcounty.ca

John Tyrrell, M.Sc. (Eng.), P.Eng., Project Manager
R.V. Anderson Associates Limited
519-681-9916 ext. 5038 | jtyrrell@rvanderson.com

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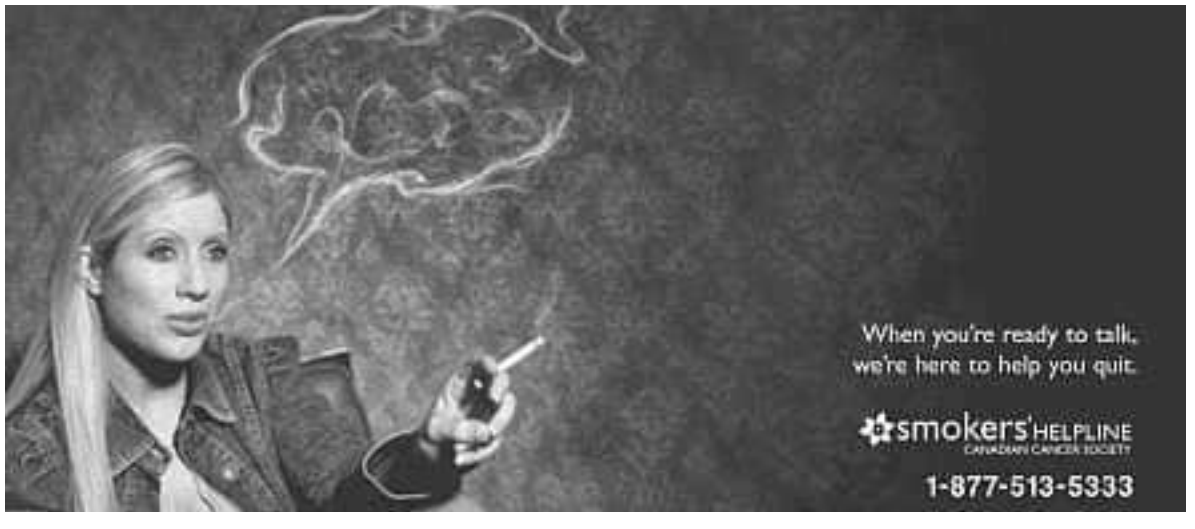
This Notice first issued on May 10, 2021

oxfordcounty.ca



WORSHIP SERVICES DIRECTORY

Place your service notice today!
Contact announcements@postmedia.com

Baptist

Norwich Baptist Church
5 Elgin St East, Norwich ON
Service streamed live at www.norwichbaptist.ca
For full details please call 519 863 3639

Sundays
You are welcome to join one of our small group service at 9.30am, 11.15am, 3pm and 6.30pm
Please call us at 519-863-3639 to confirm which service you wish to attend.
Online at www.norwichbaptist.com or www.sermonaudio.com

Whilst we do not agree with the restrictions have been placed on Churches we are endeavoring to keep as much as possible within the law at this time.

Tuesday
Prayer meeting 7pm

Wednesday
Bible Study 7pm

Hebrews 10v25
'Do not neglect to meet together'.

For more information please email us at pastor.norwichbaptist@gmail.com

Non-Denominational

Heritage Reformed Congregation
685 Main St. S. Burgessville, Ontario
www.hnrc.ca
Sermon Connection- Local 424-4400
Long Distance 1-866-892-9549
Pastors:
D. Lipsy
P. van der Hoek

Lord's Day Worship Services
Sundays 9:30 am and 5:30 pm
(Check our website for other services and events)

Other

MARANATHA CHRISTIAN REFORMED CHURCH
735 Frontenac Cres
Sunday Services: 10am
To attend: 519-539-5301
Livestream:
maranathacrcwoodstock.com
and click on Live Services

CLASSIFIEDS

CLASSIFIEDS.WOODSTOCKSENTINELREVIEW.COM

PHONE: 1-888-786-7821 • FAX: 1-866-757-0227 • EMAIL: CLASSIFIEDADS@POSTMEDIA.COM

Condos & Apartments

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For Seniors-
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All inclusive.
Incentives.
SAFE, SECURE, AFFORDABLE
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Decks, Fences & Siding

ALL TYPES of Siding cleaned and eavetroughs cleaned out. Call for an estimate.
519-537-2057

Antiques, Art & Collectibles

WANTED TO BUY:
Fruit Jars & Bottles. Tins, toys, advertising signs, pre 1930 postcards, photos, Canadian & US coins. Duck decoys, Military items, old comics, crock & China. Full or Partial Estates. Collections large or small.
Call John
226-206-0627

Seasonal

FOR SALE
4 foot Farm King rotary mower. $1,500. 4 foot roto-tiller. $1,500. 3 point hitch like new. Woodstock.
519-290-1015

Building & Reno Supplies

CARPET
I have several thousand yards of new StainMaster and 100% nylon carpet. I'll carpet your living room and hall for $489. Price includes carpet, pad, installation, (25 sq yds) No interest, No payment for 3 months, oac call Steve at 519-661-0822
CARPETDEALS.CA.

Building & Reno Supplies

VINYL FLOORING
I have over 100,000 sq.ft. of new vinyl flooring. Lot's of styles and colours from 1.00 sq.ft. Installation available. Call 877-871-3644
CLEARANCEFLOORING.CA

HARDWOOD FLOORING
I have over 100,000 sq.ft. of new hardwood flooring. Lot's of styles and colours from 3.00 sq.ft. Installation available. Call 877-871-3644
CLEARANCEFLOORING.CA

Food & Markets

Springbank Cheese offers more than 400 varieties, including aged Canadian favourites, imports from around the world, and squeaky fresh curds! On special at 85 cents each are three 20g Dutch Vergeer snacks – Old Cheddar, Gouda & Edam, and Canadian 4-year-old Goat Cheddar at $2.46 per 100g. Feeling adventurous, why not try Garden Herb, Hot Chili, Lavender and/or Tri-Colour Gouda, recently imported from the Netherlands? Shop online at **www.springbankcheese.ca** or stop by 201 Oxford Street (by the tracks). We're open Monday - Friday 9am to 5pm and Saturday 9am to 2:30pm. Curbside pickup is available.

Celebrating

Add your message to the Celebrations guestbook at **classifieds.woodstocksentinelreview.com** and share with Facebook and Twitter!

Birthdays

Mike's Custom Jewellery
Michael Feuerstein
Designer/Goldsmith
• Earrings • Pendants • Chains • Bracelets • Diamonds • Gold • Silver • Jewellery Repair • Quality & Service Guaranteed
30 years experience
We buy your old gold and diamonds! Let us create something new using your old stones and gold!
Why pay mall prices when you can shop at Mike's?
BY APPOINTMENT ONLY
519-425-0670
All Mike's work is done on premises
Specializing in Diamonds

Public Notices

OxfordCounty
Growing stronger together

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Oxford County Public Works
1-800-755-0394 ext.3194 | jkeith@oxfordcounty.ca

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R.V. Anderson Associates Limited
519-681-9916 ext. 5038 | jtyrrell@rvanderson.com

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This Notice first issued on May 10, 2021

oxfordcounty.ca

Notices to Agencies

John Tyrrell

From: Jesse Keith <jkeith@oxfordcounty.ca>
Sent: April 13, 2021 9:17 AM
To: Mark Badali (mark.badali@ontario.ca)
Cc: John Tyrrell; Don Ford; Melissa Abercrombie; Reuben Davis
Subject: FW: Municipal Class EA Study - Norwich WWTP Upgrades
Attachments: Indigenous Contacts Letter to MECP (Apr. 13, 2021).pdf; Draft Notice of Study Commencement - Norwich WWTP MCEA r1.pdf

Hi Mark,
I received Barb's auto reply stating that she has retired. It would be greatly appreciated if you can review the email to MECP below & associated attachments at your earliest availability.
Thanks Kindly,

JESSE KEITH, P. ENG. | **Project Engineer, Public Works**
OXFORD COUNTY | 21 Reeve St., PO Box 1614, Woodstock, ON, N4S 7Y3
WWW.OXFORDCOUNTY.CA | T 519.539.9800 / 1-800-755-0394, ext 3194
M 519.535.8473

From: Slattery, Barbara (MECP) [mailto:barbara.slattery@ontario.ca]
Sent: April-13-21 9:14 AM
To: Jesse Keith <jkeith@oxfordcounty.ca>
Subject: Automatic reply: Municipal Class EA Study - Norwich WWTP Upgrades
CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.
Hello,
I have retired from the Ministry effective March 31, 2021. I hope that over the years I have been able to answer your questions and assist you with your work. It has been my pleasure to do my part in our shared commitment to environmental protection and stewardship.
If you have emailed me about a file in the ministry's SWR, please note that Mark Badali is the REAC for the next 18 months. If you have emailed me about a file in the ministry's WCR, please note that Joan Del Villar Cuicas is the REAC for the next 18 months.
I wish you and your loved ones good health, happiness and success in all your endeavours.
Barb Slattery

From: Jesse Keith
Sent: April-13-21 9:13 AM
To: Slattery, Barbara (MECP) <barbara.slattery@ontario.ca>
Cc: John Tyrrell (jtyrrell@rvanderson.com) <jtyrrell@rvanderson.com>; Don Ford <dford@oxfordcounty.ca>; Melissa Abercrombie <mabercrombie@oxfordcounty.ca>; Reuben Davis <rdavis@oxfordcounty.ca>
Subject: Municipal Class EA Study - Norwich WWTP Upgrades
Hello Barb,
I hope you are doing well. Oxford County is commencing a Schedule 'C' Municipal Class EA Study to determine the preferred approach for upgrading the Norwich WWTP to meet the wastewater treatment needs of the community within the 25-year planning horizon. As per our Oxford County protocol and attached enquiry letter I am asking that MECP reconfirm the

appropriate Indigenous Communities which require interest-based consultation for this study, and whether you are aware of any asserted potential impacts to Aboriginal or treaty rights which might arise from this study project.
A Draft Notice of Study Commencement with brief backgrounder is also attached for your information and comment. Once we hear back from you, the Notice will be finalized and we will submit it along with the 'Project Information Form' to eanotification.swregion@ontario.ca
Your assistance with fulfilling this request at your earliest availability would be greatly appreciated.
Best Regards,

JESSE KEITH, P. ENG. | **Project Engineer, Public Works**
OXFORD COUNTY | 21 Reeve St., PO Box 1614, Woodstock, ON, N4S 7Y3
WWW.OXFORDCOUNTY.CA | T 519.539.9800 / 1-800-755-0394, ext 3194
M 519.535.8473

John Tyrrell

From:	Connor MacIsaac
Sent:	May 18, 2021 7:35 PM
To:	Badali, Mark (MECP)
Cc:	jkeith@oxfordcounty.ca; John Tyrrell; Tisha Doucette; EA Notices to SWRegion (MECP)
Subject:	RE: Norwich Wastewater Treatment Plant Capacity Expansion Municipal Class EA- Notice of Study Commencement
Attachments:	FW: Township of Norwich, MEA Class EA, Norwich Wastewater Treatment Plant Capacity Expansion

Hi Mark,

Please accept my apologies for any confusion that including additional MECP staff in the Notice of Commencement distribution may have caused. Thank you for the clarification that other MECP staff are not to be distributed Municipal Class EA Notices. Please see attached the Notice of Commencement distributed to the Southwestern Regional MECP Notification email.

Going forward we will ensure that all other notices for the project will be sent to the regional email address only, or directly to the Regional Environmental Assessment Coordinator, should one be assigned to the project. All other MECP staff have been removed from our project stakeholder list and will not receive further notices to avoid any additional confusion.

Thanks,

RVA IS GROWING!
Our NEW Halton and Halifax offices are now open.

Connor MacIsaac, EPt
Junior Environmental Planner, EA & Approvals
P: (905) 685-5049 ext. 4218

R.V. Anderson Associates Limited
43 Church Street, Suite 104, St. Catharines, ON L2R 7E1
rvanderson.com

From: Badali, Mark (MECP) <Mark.Badali1@ontario.ca>
Sent: May 18, 2021 4:58 PM
To: Connor MacIsaac <cmacIsaac@rvanderson.com>
Cc: jkeith@oxfordcounty.ca; John Tyrrell <JTyrrell@rvanderson.com>; Tisha Doucette <TDoucette@rvanderson.com>; EA Notices to SWRegion (MECP) <eanotification.swregion@ontario.ca>
Subject: RE: Norwich Wastewater Treatment Plant Capacity Expansion Municipal Class EA- Notice of Study Commencement

Thank you for your email.

As of May 1, 2018, the MECP has a new mandatory notification procedure for providing Class EA notices to the MECP. Per our notification procedures: Notices of Commencement, Completion, Addendum and Statements of Completion when applicable are required to be sent to the appropriate MECP regional email address, and other notices such as notices of public information centres can either be sent to the regional email address or directly to the Regional Environmental Assessment Coordinator who is assigned to your project. Please review the attached document and re-submit your notice to the appropriate MECP Regional

Email address. Instructions on how to determine the appropriate email address are included in the document.

Moving forward, please do not send notices to other MECP contacts besides the appropriate Regional Email address and the appropriate Regional Environmental Assessment Coordinator. The reason MECP implemented the regional email address notification procedure is to create certainty for proponents/consultants on where to send notices and to avoid situations where proponents send notices to multiple contacts in the MECP which complicates internal processes unnecessarily.

Thank you,

Mark Badali (he/him)
Environmental Resource Planner & EA Coordinator – Southwest Region
Project Review Unit | Environmental Assessment Branch
Ontario Ministry of the Environment, Conservation and Parks
Mark.Badali1@ontario.ca | (416) 457-2155

From: Connor MacIsaac <cmacIsaac@rvanderson.com>
Sent: May 18, 2021 4:28 PM
Cc: jkeith@oxfordcounty.ca; John Tyrrell <JTyrrell@rvanderson.com>; Tisha Doucette <TDoucette@rvanderson.com>
Subject: Norwich Wastewater Treatment Plant Capacity Expansion Municipal Class EA- Notice of Study Commencement

Dear Sir/Madam,

Please disregard my previous message.

On behalf of Oxford County, please find attached the Notice of Study Commencement for the Norwich Wastewater Treatment Plant Capacity Expansion Schedule C Municipal Class EA. The study will investigate alternative wastewater treatment solutions and designs. A webpage for this Environmental Assessment has been set up and all relevant documents will be uploaded including the Notice of Commencement. This webpage can be found here: Norwich WWTP MCEA Study (oxfordcounty.ca).

The project team values the participation of all stakeholders and wishes to ensure that the community's interests and concerns are taken into consideration. Specifically, at this time in the study, we are seeking your input on:

- Contact information and the identification of individuals that represent your agency or group that we should include as a primary contact throughout the study process;
- Description of the existing conditions or sensitivities within the study area as they relate to your interests; and
- Specific issues, concerns and/or expectations that your agency or group may have.

Please contact the project team members listed on the attached notice for further information on this project.

Regards,

Connor MacIsaac, EPt
Junior Environmental Planner, EA & Approvals
P: (905) 685-5049 ext. 4218

R.V. Anderson Associates Limited
43 Church Street, Suite 104, St. Catharines, ON L2R 7E1
rvanderson.com

PUBLIC WORKS
21 Reeve Street, PO Box 1614
Woodstock, ON N4S 7Y3
519.539.9800 I 1.800.755.0394
oxfordcounty.ca

May 20, 2021

Attention: Owner/Occupant

RE: Norwich Wastewater Treatment Plant Capacity Expansion
Municipal Class Environmental Assessment Study – Schedule C
Notice of Study Commencement

In 2011, Oxford County initiated a Municipal Class EA Study (Class EA Study) to upgrade and/or expand the facility in anticipation of projected development and associated WWTP flows. However, between 2011 and 2015, growth in the community was not at the level anticipated, and the County experienced a reduction in water usage (and subsequently wastewater flows). As a result, in June 2016, County Council approved that the Class EA Study be put on hold until which time increased development rates and associated WWTP flow rates are observed. Now, in response to approved future growth in the Township of Norwich, and associated projected increases in WWTP flow rates, Oxford County has re-initiated the Class EA Study for capacity expansion of the Norwich WWTP.

Accordingly, Oxford County has retained R.V. Anderson Associates Limited to undertake a Municipal Class Environment Assessment (EA) Study to assess a range of capacity expansion alternatives to address wastewater treatment needs of the community for the 25-Year planning horizon. Any potential impact of the project alternatives on social, cultural, economic and natural environments will be evaluated and assessed during the Study. The Study Area is shown in the attached Notice of Study Commencement.

This Class EA Study is being carried out in accordance with the planning and design process for Schedule *C* projects as outlined in the Municipal Engineers Association *Municipal Class Environmental Assessment* (October 2000, as amended in 2015), which is approved under the Ontario *Environmental Assessment Act*.

A key component of the study will involve consultation with interested stakeholders, the public and regulatory agencies. You are encouraged to provide your comments to be incorporated into the project planning. Thank you in advance for your participation. Should you have any questions or require additional information, please contact the undersigned by phone 519-539-9800, ext. 3194, fax 519-421-4711 or email jkeith@oxfordcounty.ca.

Sincerely,

Jesse Keith

Jesse Keith, P.Eng.
Project Engineer, Public Works

Encl. Notice of Study Commencement

cc: John Tyrrell, M.Sc. (Eng.), P.Eng., Project Manager, R.V. Anderson Associates Limited

John Tyrrell

From:	Connor MacIsaac
Sent:	May 20, 2021 3:50 PM
To:	info@thomasfield.com
Cc:	jkeith@oxfordcounty.ca; Tisha Doucette; John Tyrrell
Subject:	FW: Norwich Wastewater Treatment Plant Capacity Expansion Municipal Class EA- Notice of Study Commencement
Attachments:	TechnicalAgency-NoticeofStudyCommencement-Combined-vf.pdf

Dear Sir/Madam,

On behalf of Oxford County, please find attached the Notice of Study Commencement for the Norwich Wastewater Treatment Plant Capacity Expansion Schedule C Municipal Class EA. The study will investigate alternative wastewater treatment solutions and designs. A webpage for this Environmental Assessment has been set up and all relevant documents will be uploaded including the Notice of Commencement. This webpage can be found here: Norwich WWTP MCEA Study (oxfordcounty.ca).

The project team values the participation of all stakeholders and wishes to ensure that the community's interests and concerns are taken into consideration. Specifically, at this time in the study, we are seeking your input on:

- Contact information and the identification of individuals that represent your agency or group that we should include as a primary contact throughout the study process;
- Description of the existing conditions or sensitivities within the study area as they relate to your interests; and
- Specific issues, concerns and/or expectations that your agency or group may have.

Please contact the project team members listed on the attached notice for further information on this project.

Regards,

Connor MacIsaac, EPt
Junior Environmental Planner, EA & Approvals
P: (905) 685-5049 ext. 4218

R.V. Anderson Associates Limited
43 Church Street, Suite 104, St. Catharines, ON L2R 7E1
rvanderson.com

John Tyrrell

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Cc:	jkeith@oxfordcounty.ca; Tisha Doucette; John Tyrrell
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Connor MacIsaac, EPt
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P: (905) 685-5049 ext. 4218

R.V. Anderson Associates Limited
43 Church Street, Suite 104, St. Catharines, ON L2R 7E1
rvanderson.com

APPENDIX 1-2-2

Notice of PCC # 1

PCC # 1 Notice

Oxford County
Growing stronger together

PUBLIC NOTICE

Notice of Public Consultation Centre — Municipal Class Environmental Assessment Study

Norwich Wastewater Treatment Plant Capacity Expansion

Oxford County has identified the need to increase capacity of the Norwich Wastewater Treatment Plant to service existing needs and future projected population and employment growth (to 2046) in the community of Norwich.

About the study

In response to approved future growth in the community of Norwich and associated projected increases in Wastewater Treatment Plant (WWTP) flow rates, Oxford County is undertaking a Municipal Class Environmental Assessment (Class EA) Study for capacity expansion of the Norwich WWTP. More specifically, the purpose of the study is to comprehensively develop, evaluate and select a preferred long-term wastewater servicing solution and design alternative to service existing needs and future projected population and employment growth (to 2046).

The Study is being carried out in accordance with the planning and design process for Schedule C projects as outlined in the *Municipal Class Environmental Assessment* (2000, as amended in 2007, 2011 and 2015), approved under the *Ontario Environmental Assessment Act.*

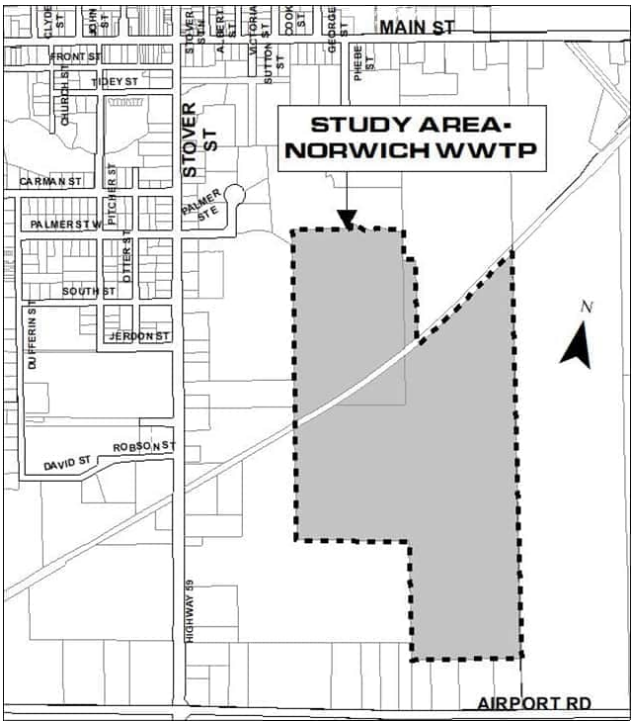
We want to hear from you

Consultation with stakeholders is a key component of the study process. As part of the Class EA study, a Public Consultation Centre (PCC) is being held to present the long-term wastewater servicing solutions that are being considered/ evaluated for capacity expansion of the Norwich WWTP, and to provide residents/interested parties with the opportunity to provide comments and ask questions of Oxford County Public Works and the County's Consultant (R.V. Anderson Associates Ltd.).

Public Consultation Centre (PCC)

The PCC will be in virtual meeting format, and will include a presentation by R.V. Anderson Associates Limited followed by a question and answer period. The agenda will include an introduction to the study, overview of the Class EA study process, summary of alternative solutions considered/ preliminary preferred solution, and discussion of next steps in the study. PCC date and registration details are as follows:

Date: Thursday, June 23, 2022
Time: 5:00 p.m. - 7:00 p.m.
Register: A link to register for the virtual PCC is located on the Study webpage: www.oxfordcounty.ca/NorwichWWTP-ClassEA



Contacts for information

If you have questions or comments, please contact either of the following project team members:

Jesse Keith, P.Eng.
Project Manager
Oxford County
jkeith@oxfordcounty.ca
519-539-9800 ext. 3194

John Tyrrell, M.Sc.(Eng.), P.Eng.
Project Manager
R.V. Anderson Associates Ltd.
jtyrrell@rvanderson.com
519-681-9916 ext. 5038

Comments received during the study will be considered and documented in the environmental study report.

Information will be collected in accordance with the Municipal Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record.

This notice issued June 2, 2022

Notices to Agencies

John Tyrrell

From:	Samya Chams
Sent:	June 9, 2022 9:57 AM
To:	Samya Chams
Cc:	Jesse Keith; John Tyrrell; Harpreet Rai; Tisha Doucette
Subject:	PCC#1 Notice Circulation - Norwich WWTP Class EA Study
Attachments:	Norwich WWTP_Notice of PCC#1.pdf

Dear Sir/Madam,

On behalf of the County of Oxford, please find attached the Notice of Public Consultation Centre (PCC) #1 for the Norwich Wastewater Treatment Plant Capacity Expansion Municipal Class Environmental Assessment (MCEA) Study. A webpage for this Environmental Assessment has been created and all relevant documents will be uploaded including the Notice of Study Commencement. This webpage can be found here: Norwich WWTP MCEA Study (oxfordcounty.ca).

The project team values the participation of all stakeholders and wishes to ensure that the community's interests and concerns are taken into consideration. Please contact the project team members listed on the attached notice should you require further information on this project.

Thank you,

Samya

Samya Chams, B.A (she/her)
ADMINISTRATIVE ASSISTANT/ PROJECT SUPPORT COORDINATOR

t 519 681 9916 ext. 5021
a 557 Southdale Road East, Suite 200, London, ON N6E 1A2

rvanderson.com

Notice to Others

APPENDIX 1-2-3

Notice of PCC # 2

NOTICE OF PUBLIC CONSULTATION CENTRE

Norwich Wastewater Treatment Plant capacity expansion

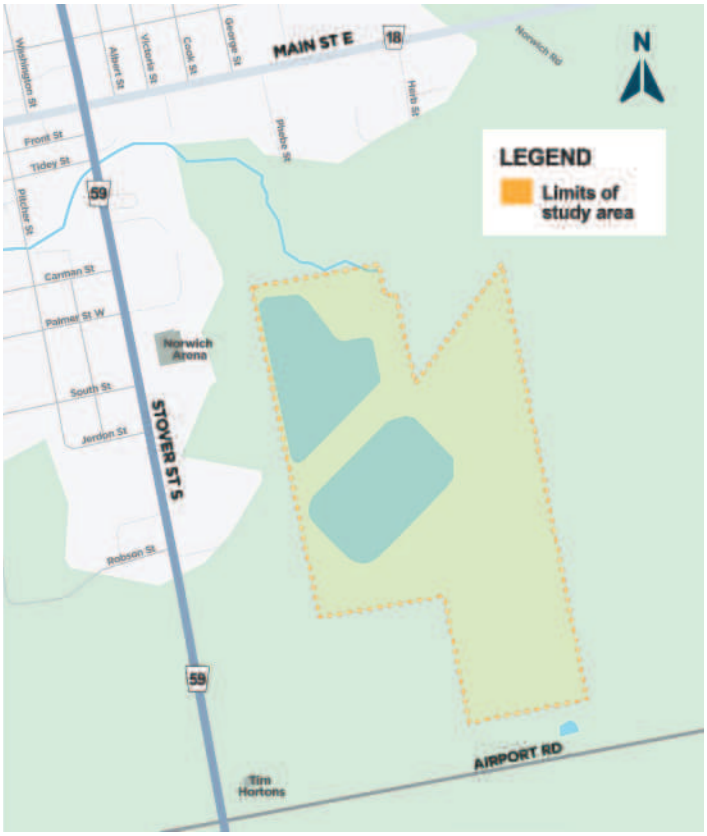
Municipal Class Environmental Assessment Study

Oxford County has identified the need to increase capacity of the Norwich Wastewater Treatment Plant to service existing needs and future projected population and employment growth to 2046 in the Village of Norwich.

About the study

In response to approved future growth in the Village of Norwich and associated projected increases in Wastewater Treatment Plant (WWTP) flow rates, Oxford County is undertaking a Municipal Class Environmental Assessment (Class EA) Study for capacity expansion of the Norwich WWTP. More specifically, the purpose of the study is to comprehensively develop, evaluate and select a preferred long-term wastewater servicing solution and design alternative to service existing needs and future projected population and employment growth to 2046.

The study is being carried out in accordance with the planning and design process for Schedule C projects as outlined in the Municipal Class Environmental Assessment (2023), approved under the Ontario *Environmental Assessment Act*.



We want to hear from you

Consultation with stakeholders is a key component of the study process and input will be sought throughout the study. A virtual (online) Public Consultation Centre (PCC) is being held to provide a project update, present the evaluation criteria for selecting the preferred servicing solution, and present the preferred solution. This is the second PCC for the project, with the first held in June 2022.

Thursday, December 12, 2024
Online: 6:00 - 8:00 p.m.

For login details to join the online PCC, please visit the project website on Speak Up, Oxford! at www.speakup.oxfordcounty.ca/norwich-wwtp

Project contacts

John Tyrrell, M.Sc.(Eng.), P.Eng.
Regional Manager
R.V. Anderson Associates Limited
519-681-9916 ext. 5038
jtyrrell@rvanderson.com

Harry Goossens, P.Eng.
Project Engineer, Oxford County
519-533-8161
hgoossens@oxfordcounty.ca

Information collected will be used in accordance with the Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record.

This notice first issued on November 21, 2024

Oxford County
Growing stronger together

APPENDIX 1-3

Indigenous Consultation

John Tyrrell

From:	Connor MacIsaac
Sent:	May 18, 2021 4:28 PM
Cc:	jkeith@oxfordcounty.ca; John Tyrrell; Tisha Doucette
Subject:	Norwich Wastewater Treatment Plant Capacity Expansion Municipal Class EA- Notice of Study Commencement
Attachments:	TechnicalAgency-NoticeofStudyCommencement-Combined-vf.pdf

Dear Sir/Madam,

Please disregard my previous message.

On behalf of Oxford County, please find attached the Notice of Study Commencement for the Norwich Wastewater Treatment Plant Capacity Expansion Schedule C Municipal Class EA. The study will investigate alternative wastewater treatment solutions and designs. A webpage for this Environmental Assessment has been set up and all relevant documents will be uploaded including the Notice of Commencement. This webpage can be found here: Norwich WWTP MCEA Study (oxfordcounty.ca).

The project team values the participation of all stakeholders and wishes to ensure that the community's interests and concerns are taken into consideration. Specifically, at this time in the study, we are seeking your input on:

- Contact information and the identification of individuals that represent your agency or group that we should include as a primary contact throughout the study process;
- Description of the existing conditions or sensitivities within the study area as they relate to your interests; and
- Specific issues, concerns and/or expectations that your agency or group may have.

Please contact the project team members listed on the attached notice for further information on this project.

Regards,

RVA IS GROWING!
Our NEW Halton and Halifax offices are now open.

Connor MacIsaac, EPt
Junior Environmental Planner, EA & Approvals
P: (905) 685-5049 ext. 4218

R.V. Anderson Associates Limited
43 Church Street, Suite 104, St. Catharines, ON L2R 7E1
rvanderson.com

PUBLIC WORKS
21 Reeve Street, PO Box 1614
Woodstock, ON N4S 7Y3
519.539.9800 I 1.800.755.0394
oxfordcounty.ca

May 18, 2021

Mississauga of the Credit First Nation
4065 Hwy. 6, Hagersville, ON
N0A 1H0

Via E-Mail Only

Attention: Fawn Sault, Consultation Coordinator

RE: Norwich Wastewater Treatment Plant Capacity Expansion
Municipal Class Environmental Assessment Study – Schedule C
Notice of Study Commencement

Dear Fawn Sault:

In 2011, Oxford County initiated a Municipal Class EA Study (Class EA Study) to upgrade and/or expand the facility in anticipation of projected development and associated WWTP flows. However, between 2011 and 2015, growth in the community was not at the level anticipated, and the County experienced a reduction in water usage (and subsequently wastewater flows). As a result, in June 2016, County Council approved that the Class EA Study be put on hold until which time increased development rates and associated WWTP flow rates are observed. Now, in response to approved future growth in the Township of Norwich, and associated projected increases in WWTP flow rates, Oxford County has re-initiated the Class EA Study for capacity expansion of the Norwich WWTP.

Accordingly, Oxford County has retained R.V. Anderson Associates Limited to undertake a Municipal Class Environment Assessment (EA) Study to assess a range of capacity expansion alternatives to address wastewater treatment needs of the community for the 25-Year planning horizon. Any potential impact of the project alternatives on social, cultural, economic and natural environments will be evaluated and assessed during the Study. The Study Area is shown in the attached Notice of Study Commencement.

This Class EA Study is being carried out in accordance with the planning and design process for Schedule *C* projects as outlined in the Municipal Engineers Association *Municipal Class Environmental Assessment* (October 2000, as amended in 2015), which is approved under the Ontario *Environmental Assessment Act*.

Consultation for this Class EA Study will comply with the mandatory guidelines developed by the Municipal Engineers Association (MEA) for First Nations and Aboriginal Peoples consultation as detailed in its Municipal Class Environment Assessment (EA) document (October 2000, amended 2007, 2011 & 2015) which is approved under the *Ontario Environmental Assessment Act*. Oxford County also recognizes and follows the Ministry of Environment, Conservation and Parks (MECP) guidance protocol (Code of Practice for Consultation in Ontario's Environmental Assessment Process) for Aboriginal consultation under the *Ontario Environmental Assessment Act*.

Accordingly, the County willingly accepts its responsibility to conduct *interest-based consultation* with Indigenous Communities as part of the Environmental Assessment process. Oxford County is committed to the open flow of information and to ensuring that there are meaningful opportunities for Mississaugas of the Credit First Nation to provide input during this Class EA Study. As our neighbours in our community, we wish to build a strong and open relationship with your Nation.

In order to initiate engagement with this Study, we are notifying you of the project (see enclosed Notice of Commencement) in hopes that you can assist our project team in determining if your community may hold an interest in this project. For your convenience, we have enclosed a "Project Response Form" for you to review, complete and submit to the County's project manager as a first consultation step. Specifically, we are seeking your input on:

- Any preliminary comments or concerns that your community has on the proposed project;
- The level of interest in the project from the community for further engagement; and
- The best methods to communicate with your community.

Your comments are welcome and will be taken into consideration throughout this Class EA Study. Our project team would be pleased to meet with you at any time during the Study to answer your questions or respond to any concerns you may have.

Should potential adverse impacts of the project undertakings on asserted or established Aboriginal or treaty rights be anticipated or determined to exist, the Crown has a legal *rights-based duty to consult* Indigenous Communities. Where the Crown's rights-based duty to consult process may be triggered, the MECP Environmental Approvals Branch will assess the extent of any Crown duty to consult in such circumstances. In such cases, additional procedural aspects of the consultation process may be delegated from the MECP Environmental Approvals Branch to Oxford County (the Study proponent).

Thank you in advance for your participation. Should you have any questions or require additional information, please contact the undersigned by phone 519-539-9800, ext. 3194, fax 519-421-4711 or email jkeith@oxfordcounty.ca.

Sincerely,

Jesse Keith, P.Eng.
Project Engineer, Public Works

Encl.. Notice of Study Commencement
Project Response Form

cc: John Tyrrell, M.Sc.(Eng.), P.Eng., Project Manager, R.V. Anderson Associates Limited
Mark Badali, Environmental Resource Planner & EA Coordinator, MECP
doca@mncfn.ca

Oxford County
Growing stronger together

NOTICE OF STUDY COMMENCEMENT

Municipal Class Environmental Assessment Study
Norwich Wastewater Treatment Plant Capacity Expansion

PROJECT BACKGROUND

Oxford County owns and operates the Norwich Wastewater Treatment Plant (WWTP), which provides tertiary treatment for wastewater generated in the Township of Norwich. The WWTP consists of two facultative lagoon cells and four intermittent sand filters that polish the WWTP effluent prior to discharge to Otter Creek.

In 2011, Oxford County initiated a Municipal Class EA Study (Class EA Study) to upgrade and/or expand the facility in anticipation of projected development and associated WWTP flows. However, between 2011 and 2015, growth in the community was not at the level anticipated, and the County experienced a reduction in water usage (and subsequently wastewater flows). As a result, in June 2016, County Council approved that the Class EA Study be put on hold until which time increased development rates and associated WWTP flow rates are observed.

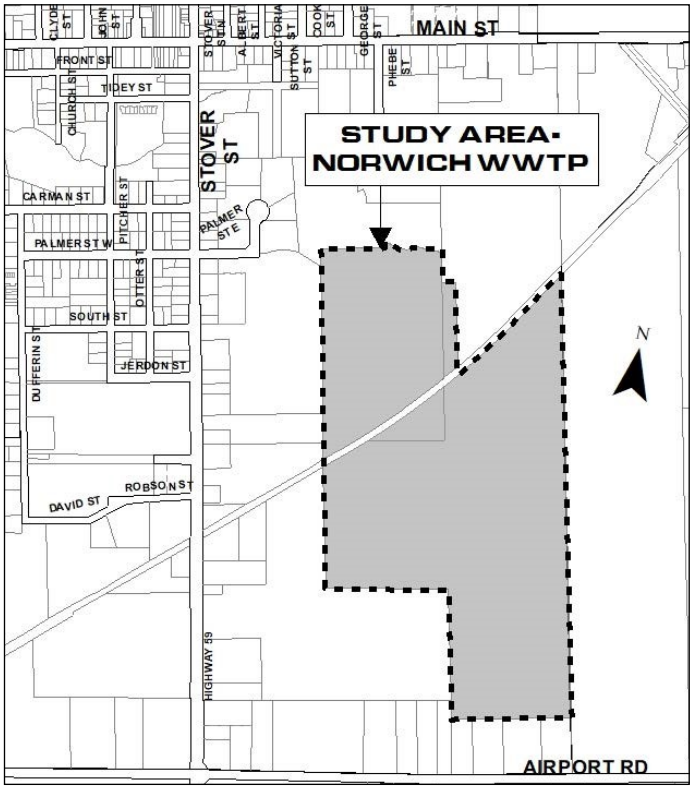
THE STUDY

In response to approved future growth in the Township of Norwich, and associated projected increases in WWTP flow rates, Oxford County has re-initiated the Class EA Study for capacity expansion of the Norwich WWTP. The Class EA Study will determine the most cost-effective, environmentally sound, and sustainable approach to servicing the Norwich WWTP to meet the wastewater servicing needs of the community within the 25-year planning horizon. The project is being completed as a **Schedule "C"** project in accordance with the *Municipal Class Environmental Assessment* (October 2000, amended in 2007, 2011 & 2015), which is approved under the *Ontario Environmental Assessment Act.*

PUBLIC COMMENTS

This notice signals the commencement of the Municipal Class EA Study, a Study which will identify and evaluate alternative solutions to develop a preferred WWTP capacity expansion design concept in consultation with adjacent property owners, regulatory agencies, indigenous communities, members of the local business community and the public.

Public consultation will occur during the course of the study to present and receive comments on the project, alternative solutions, and the preferred alternative for expanding the wastewater treatment capacity of the Norwich WWTP. Details, including time and location, will be announced via a subsequent notice and posted to the County's project webpage: *www.oxfordcounty.ca/Projects-studies*



Upon completion, an Environmental Study Report will be prepared and made available for final public review and comment.

COMMENTS INVITED

If you have any questions or comments regarding the study, or wish to be added to the Study mailing list, please contact either of the following project team members:

Jesse Keith, P.Eng., Project Manager
Oxford County Public Works
1-800-755-0394 ext.3194 | jkeith@oxfordcounty.ca

John Tyrrell, M.Sc. (Eng.), P.Eng., Project Manager
R.V. Anderson Associates Limited
519-681-9916 ext. 5038 | jtyrrell@rvanderson.com

Comments received through the course of the Study will be considered and documented in the Environmental Study Report.

Information collected will be used in accordance with the *Freedom of Information and Protection of Privacy Act*. With the exception of personal information, all comments will become part of the public records.

This Notice first issued on May 10, 2021

John Tyrrell

From:	Connor MacIsaac
Sent:	May 18, 2021 4:19 PM
To:	environment@oneida.on.ca
Cc:	Mark.Badali1@ontario.ca; jkeith@oxfordcounty.ca; John Tyrrell
Subject:	Norwich Wastewater Treatment Plant Capacity Expansion Class EA - Notice of Study Commencement
Attachments:	Project Response Form.pdf; OneidaNationoftheThames-NoticeofStudyCommencement-Combined.pdf

Dear Sir/Madam,

On behalf of Oxford County, please find attached the Notice of Study Commencement for the Norwich Wastewater Treatment Plant Capacity Expansion (Schedule C MCEA). The study will assess a range of capacity expansion alternatives to address wastewater treatment needs of the community for the 25-Year planning horizon.

For your convenience, we have enclosed a “Project Response Form” for you to review, complete and submit to the County’s project manager as a first consultation step.

Regards,

RVA IS GROWING!
Our NEW Halton and Halifax offices are now open.

Connor MacIsaac, EPt
Junior Environmental Planner, EA & Approvals
P: (905) 685-5049 ext. 4218

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rvanderson.com

PUBLIC WORKS
21 Reeve Street, PO Box 1614
Woodstock, ON N4S 7Y3
519.539.9800 I 1.800.755.0394
oxfordcounty.ca

May 18, 2021

Oneida Nation of the Thames
Oneida Nation Administration
2212 Elm Ave., Southwold, Ontario N0L 2G0

Via E-Mail Only

RE: Norwich Wastewater Treatment Plant Capacity Expansion
Municipal Class Environmental Assessment Study – Schedule C
Notice of Study Commencement

Dear Sir/Madam:

In 2011, Oxford County initiated a Municipal Class EA Study (Class EA Study) to upgrade and/or expand the facility in anticipation of projected development and associated WWTP flows. However, between 2011 and 2015, growth in the community was not at the level anticipated, and the County experienced a reduction in water usage (and subsequently wastewater flows). As a result, in June 2016, County Council approved that the Class EA Study be put on hold until which time increased development rates and associated WWTP flow rates are observed. Now, in response to approved future growth in the Township of Norwich, and associated projected increases in WWTP flow rates, Oxford County has re-initiated the Class EA Study for capacity expansion of the Norwich WWTP.

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Consultation for this Class EA Study will comply with the mandatory guidelines developed by the Municipal Engineers Association (MEA) for First Nations and Aboriginal Peoples consultation as detailed in its Municipal Class Environment Assessment (EA) document

(October 2000, amended 2007, 2011 & 2015) which is approved under the *Ontario Environmental Assessment Act*. Oxford County also recognizes and follows the Ministry of Environment, Conservation and Parks (MECP) guidance protocol (Code of Practice for Consultation in Ontario's Environmental Assessment Process) for Aboriginal consultation under the *Ontario Environmental Assessment Act*.

Accordingly, the County willingly accepts its responsibility to conduct *interest-based consultation* with Indigenous Communities as part of the Environmental Assessment process. Oxford County is committed to the open flow of information and to ensuring that there are meaningful opportunities for Oneida Nation of the Thames to provide input during this Class EA Study. As our neighbours in our community, we wish to build a strong and open relationship with your Nation.

In order to initiate engagement with this Study, we are notifying you of the project (see enclosed Notice of Commencement) in hopes that you can assist our project team in determining if your community may hold an interest in this project. For your convenience, we have enclosed a "Project Response Form" for you to review, complete and submit to the County's project manager as a first consultation step. Specifically, we are seeking your input on:

- Any preliminary comments or concerns that your community has on the proposed project;
- The level of interest in the project from the community for further engagement; and
- The best methods to communicate with your community.

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Should potential adverse impacts of the project undertakings on asserted or established Aboriginal or treaty rights be anticipated or determined to exist, the Crown has a legal *rights-based duty to consult* Indigenous Communities. Where the Crown's rights-based duty to consult process may be triggered, the MECP Environmental Approvals Branch will assess the extent of any Crown duty to consult in such circumstances. In such cases, additional procedural aspects of the consultation process may be delegated from the MECP Environmental Approvals Branch to Oxford County (the Study proponent).

Thank you in advance for your participation. Should you have any questions or require additional information, please contact the undersigned by phone 519-539-9800, ext. 3194, fax 519-421-4711 or email jkeith@oxfordcounty.ca.

Sincerely,

Jesse Keith

Jesse Keith, P.Eng.
Project Engineer, Public Works

Encl.. Notice of Study Commencement
Project Response Form

cc: John Tyrrell, M.Sc.(Eng.), P.Eng., Project Manager, R.V. Anderson Associates Limited
Mark Badali, Environmental Resource Planner & EA Coordinator, MECP

Oxford County
Growing stronger together

NOTICE OF STUDY COMMENCEMENT

Municipal Class Environmental Assessment Study
Norwich Wastewater Treatment Plant Capacity Expansion

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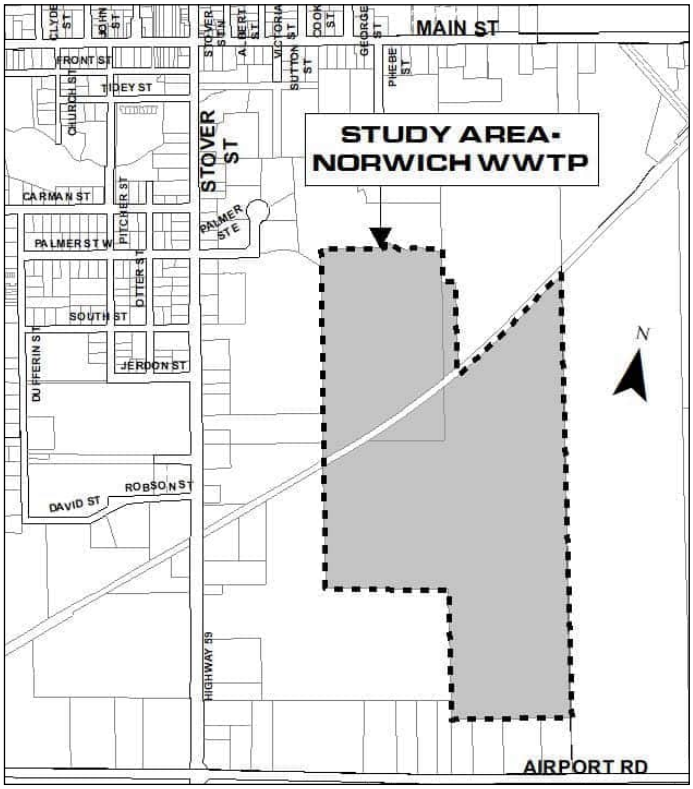
PUBLIC COMMENTS

This notice signals the commencement of the Municipal Class EA Study, a Study which will identify and evaluate alternative solutions to develop a preferred WWTP capacity expansion design concept in consultation with adjacent property owners, regulatory agencies, indigenous communities, members of the local business community and the public.

Public consultation will occur during the course of the study to present and receive comments on the project, alternative solutions, and the preferred alternative for expanding the wastewater treatment capacity of the Norwich WWTP. Details, including time and location, will be announced via a subsequent notice and posted to the County's project webpage: *www.oxfordcounty.ca/Projects-studies*



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COMMENTS INVITED

If you have any questions or comments regarding the study, or wish to be added to the Study mailing list, please contact either of the following project team members:

Jesse Keith, P.Eng., Project Manager
Oxford County Public Works
1-800-755-0394 ext.3194 | jkeith@oxfordcounty.ca

John Tyrrell, M.Sc. (Eng.), P.Eng., Project Manager
R.V. Anderson Associates Limited
519-681-9916 ext. 5038 | jtyrrell@rvanderson.com

Comments received through the course of the Study will be considered and documented in the Environmental Study Report.

Information collected will be used in accordance with the *Freedom of Information and Protection of Privacy Act*. With the exception of personal information, all comments will become part of the public records.

This Notice first issued on May 10, 2021

Oxford County
Growing stronger together

Project Response Form

Notice of Study Commencement
Norwich Wastewater Treatment Plant Capacity Expansion
Class Environmental Assessment Study

Name: _____
(Please Print)

Phone No: _____

Signed: _____

Date: _____

If there is a different contact for your organization that we should follow-up with, please let us know:	
Name:	
Address:	
Phone:	
Email:	

The study is in its initial stages and information can be provided as it progresses.

Please assist us in identifying your interests:

		YES	**NO**
1.	Do you wish to participate in this project?		
2.	If the answer to Question 1 is “no”, would you like to be removed from the contact list?		
3.	Are there areas of cultural significance to your community in close proximity to the study area that Oxford staff should be aware of? (if yes, please provide details below)		
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5.	Would your community / organization like to meet with Oxford staff to discuss this study?		

Is there any additional information your community requires from the Oxford County in order to better understand the study and to identify if / how the project may adversely impact Aboriginal and / or Treat rights of your community?

Please identify any initial comments your community or organization may have at this time.

Please return this completed to:**JESSE KEITH, P. ENG.** | **Project Engineer, Public Works**
OXFORD COUNTY | 21 Reeve St., PO Box 1614, Woodstock, ON, N4S 7Y3
T 519.539.9800 / 1-800-755-0394, ext 3194 | jkeith@oxfordcounty.ca

John Tyrrell

From:	Connor MacIsaac
Sent:	May 18, 2021 4:15 PM
To:	rvanstone@sixnations.ca
Cc:	tanyahill-montour@sixnations.ca; jkeith@oxfordcounty.ca; John Tyrrell
Subject:	Norwich Wastewater Treatment Plant Capacity Expansion Class EA - Notice of Study Commencement
Attachments:	SixNationsofGrandRiver-NoticeofStudyCommencement - Combined.pdf; Project Response Form.pdf

Dear Sir/Madam,

On behalf of Oxford County, please find attached the Notice of Study Commencement for the Norwich Wastewater Treatment Plant Capacity Expansion (Schedule C MCEA). The study will assess a range of capacity expansion alternatives to address wastewater treatment needs of the community for the 25-Year planning horizon.

For your convenience, we have enclosed a “Project Response Form” for you to review, complete and submit to the County’s project manager as a first consultation step.

Regards,

RVA IS GROWING!
Our NEW Halton and Halifax offices are now open.

Connor MacIsaac, EPt
Junior Environmental Planner, EA & Approvals
P: (905) 685-5049 ext. 4218

R.V. Anderson Associates Limited
43 Church Street, Suite 104, St. Catharines, ON L2R 7E1
rvanderson.com

PUBLIC WORKS
21 Reeve Street, PO Box 1614
Woodstock, ON N4S 7Y3
519.539.9800 I 1.800.755.0394
oxfordcounty.ca

May 18, 2021

Six Nations of the Grand River
Consultation and Accommodations Team
2498 Chiefswood Rd. P.O. Box 5000
Ohsweken, ON N0A 1M0

Via E-Mail Only

Attention: Robin Vanstone, Consultation Supervisor

RE: Norwich Wastewater Treatment Plant Capacity Expansion
Municipal Class Environmental Assessment Study – Schedule C
Notice of Study Commencement

Dear Robin Vanstone:

In 2011, Oxford County initiated a Municipal Class EA Study (Class EA Study) to upgrade and/or expand the facility in anticipation of projected development and associated WWTP flows. However, between 2011 and 2015, growth in the community was not at the level anticipated, and the County experienced a reduction in water usage (and subsequently wastewater flows). As a result, in June 2016, County Council approved that the Class EA Study be put on hold until which time increased development rates and associated WWTP flow rates are observed. Now, in response to approved future growth in the Township of Norwich, and associated projected increases in WWTP flow rates, Oxford County has re-initiated the Class EA Study for capacity expansion of the Norwich WWTP.

Accordingly, Oxford County has retained R.V. Anderson Associates Limited to undertake a Municipal Class Environment Assessment (EA) Study to assess a range of capacity expansion alternatives to address wastewater treatment needs of the community for the 25-Year planning horizon. Any potential impact of the project alternatives on social, cultural, economic and natural environments will be evaluated and assessed during the Study. The Study Area is shown in the attached Notice of Study Commencement.

This Class EA Study is being carried out in accordance with the planning and design process for Schedule *C* projects as outlined in the Municipal Engineers Association *Municipal Class Environmental Assessment* (October 2000, as amended in 2015), which is approved under the Ontario *Environmental Assessment Act*.

Consultation for this Class EA Study will comply with the mandatory guidelines developed by the Municipal Engineers Association (MEA) for First Nations and Aboriginal Peoples consultation as detailed in its Municipal Class Environment Assessment (EA) document (October 2000, amended 2007, 2011 & 2015) which is approved under the *Ontario Environmental Assessment Act*. Oxford County also recognizes and follows the Ministry of Environment, Conservation and Parks (MECP) guidance protocol (Code of Practice for Consultation in Ontario's Environmental Assessment Process) for Aboriginal consultation under the *Ontario Environmental Assessment Act*.

Accordingly, the County willingly accepts its responsibility to conduct *interest-based consultation* with Indigenous Communities as part of the Environmental Assessment process. Oxford County is committed to the open flow of information and to ensuring that there are meaningful opportunities for Six Nations of the Grand River to provide input during this Class EA Study. As our neighbours in our community, we wish to build a strong and open relationship with your Nation.

In order to initiate engagement with this Study, we are notifying you of the project (see enclosed Notice of Commencement) in hopes that you can assist our project team in determining if your community may hold an interest in this project. For your convenience, we have enclosed a "Project Response Form" for you to review, complete and submit to the County's project manager as a first consultation step. Specifically, we are seeking your input on:

- Any preliminary comments or concerns that your community has on the proposed project;
- The level of interest in the project from the community for further engagement; and
- The best methods to communicate with your community.

Your comments are welcome and will be taken into consideration throughout this Class EA Study. Our project team would be pleased to meet with you at any time during the Study to answer your questions or respond to any concerns you may have.

Should potential adverse impacts of the project undertakings on asserted or established Aboriginal or treaty rights be anticipated or determined to exist, the Crown has a legal *rights-based duty to consult* Indigenous Communities. Where the Crown's rights-based duty to consult process may be triggered, the MECP Environmental Approvals Branch will assess the extent of any Crown duty to consult in such circumstances. In such cases, additional procedural aspects of the consultation process may be delegated from the MECP Environmental Approvals Branch to Oxford County (the Study proponent).

Thank you in advance for your participation. Should you have any questions or require additional information, please contact the undersigned by phone 519-539-9800, ext. 3194, fax 519-421-4711 or email jkeith@oxfordcounty.ca.

Sincerely,

Jesse Keith, P.Eng.
Project Engineer, Public Works

Encl.. Notice of Study Commencement
Project Response Form

cc: John Tyrrell, M.Sc.(Eng.), P.Eng., Project Manager, R.V. Anderson Associates Limited
Mark Badali, Environmental Resource Planner & EA Coordinator, MECP

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NOTICE OF STUDY COMMENCEMENT

Municipal Class Environmental Assessment Study
Norwich Wastewater Treatment Plant Capacity Expansion

PROJECT BACKGROUND

Oxford County owns and operates the Norwich Wastewater Treatment Plant (WWTP), which provides tertiary treatment for wastewater generated in the Township of Norwich. The WWTP consists of two facultative lagoon cells and four intermittent sand filters that polish the WWTP effluent prior to discharge to Otter Creek.

In 2011, Oxford County initiated a Municipal Class EA Study (Class EA Study) to upgrade and/or expand the facility in anticipation of projected development and associated WWTP flows. However, between 2011 and 2015, growth in the community was not at the level anticipated, and the County experienced a reduction in water usage (and subsequently wastewater flows). As a result, in June 2016, County Council approved that the Class EA Study be put on hold until which time increased development rates and associated WWTP flow rates are observed.

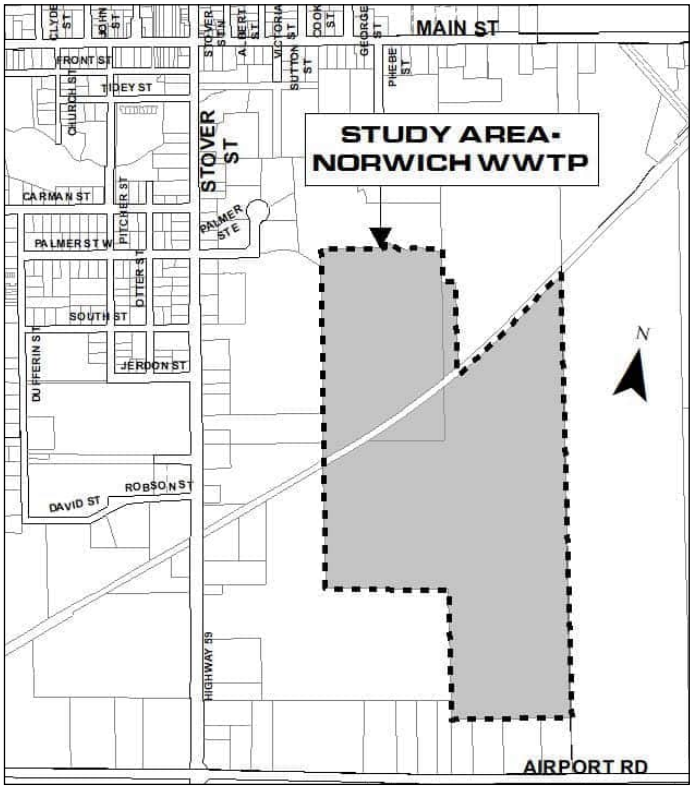
THE STUDY

In response to approved future growth in the Township of Norwich, and associated projected increases in WWTP flow rates, Oxford County has re-initiated the Class EA Study for capacity expansion of the Norwich WWTP. The Class EA Study will determine the most cost-effective, environmentally sound, and sustainable approach to servicing the Norwich WWTP to meet the wastewater servicing needs of the community within the 25-year planning horizon. The project is being completed as a **Schedule "C"** project in accordance with the *Municipal Class Environmental Assessment* (October 2000, amended in 2007, 2011 & 2015), which is approved under the *Ontario Environmental Assessment Act.*

PUBLIC COMMENTS

This notice signals the commencement of the Municipal Class EA Study, a Study which will identify and evaluate alternative solutions to develop a preferred WWTP capacity expansion design concept in consultation with adjacent property owners, regulatory agencies, indigenous communities, members of the local business community and the public.

Public consultation will occur during the course of the study to present and receive comments on the project, alternative solutions, and the preferred alternative for expanding the wastewater treatment capacity of the Norwich WWTP. Details, including time and location, will be announced via a subsequent notice and posted to the County's project webpage: *www.oxfordcounty.ca/Projects-studies*



Upon completion, an Environmental Study Report will be prepared and made available for final public review and comment.

COMMENTS INVITED

If you have any questions or comments regarding the study, or wish to be added to the Study mailing list, please contact either of the following project team members:

Jesse Keith, P.Eng., Project Manager
Oxford County Public Works
1-800-755-0394 ext.3194 | jkeith@oxfordcounty.ca

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This Notice first issued on May 10, 2021

Oxford County
Growing stronger together

Project Response Form

Notice of Study Commencement
Norwich Wastewater Treatment Plant Capacity Expansion
Class Environmental Assessment Study

Name: _____
(Please Print)

Phone No: _____

Signed: _____

Date: _____

If there is a different contact for your organization that we should follow-up with, please let us know:	
Name:	
Address:	
Phone:	
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The study is in its initial stages and information can be provided as it progresses.

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1.	Do you wish to participate in this project?		
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OXFORD COUNTY | 21 Reeve St., PO Box 1614, Woodstock, ON, N4S 7Y3
T 519.539.9800 / 1-800-755-0394, ext 3194 | jkeith@oxfordcounty.ca

John Tyrrell

From:	Connor MacIsaac
Sent:	May 18, 2021 4:22 PM
To:	consultations@metisnation.org
Cc:	John Tyrrell; jkeith@oxfordcounty.ca; Mark.Badali1@ontario.ca
Subject:	Norwich Wastewater Treatment Plant Capacity Expansion Class EA - Notice of Study Commencement
Attachments:	Project Response Form.pdf; Métis Nation of Ontario-NoticeofStudyCommencement-Combined.pdf

Dear Sir/Madam,

On behalf of Oxford County, please find attached the Notice of Study Commencement for the Norwich Wastewater Treatment Plant Capacity Expansion (Schedule C MCEA). The study will assess a range of capacity expansion alternatives to address wastewater treatment needs of the community for the 25-Year planning horizon.

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Regards,

RVA IS GROWING!
Our NEW Halton and Halifax offices are now open.

Connor MacIsaac, EPt
Junior Environmental Planner, EA & Approvals
P: (905) 685-5049 ext. 4218

R.V. Anderson Associates Limited
43 Church Street, Suite 104, St. Catharines, ON L2R 7E1
rvanderson.com

John Tyrrell

From:	Connor MacIsaac
Sent:	May 18, 2021 4:35 PM
To:	hdi2@bellnet.ca
Cc:	John Tyrrell; jkeith@oxfordcounty.ca; Mark.Badali1@ontario.ca
Subject:	Norwich Wastewater Treatment Plant Capacity Expansion Class EA - Notice of Study Commencement
Attachments:	HaudenosauneeConfederaryCC-NoticeofStudyCommencement-Combined.pdf; Project Response Form.pdf

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43 Church Street, Suite 104, St. Catharines, ON L2R 7E1
rvanderson.com

PUBLIC WORKS
21 Reeve Street, PO Box 1614
Woodstock, ON N4S 7Y3
519.539.9800 I 1.800.755.0394
oxfordcounty.ca

May 18, 2021

Haudenosaunee Confederacy Chiefs Council
Haudenosaunee Development Institute
16 Sunrise Court – Suite 600 P.O. Box 714
Ohsweken, Ontario, N0A 1M0

Via E-Mail Only

Attention: Haudenosaunee Development Institute, Haudenosaunee Confederacy Chiefs Council

RE: Norwich Wastewater Treatment Plant Capacity Expansion
Municipal Class Environmental Assessment Study – Schedule C
Notice of Study Commencement

Dear Sir/Madam:

In 2011, Oxford County initiated a Municipal Class EA Study (Class EA Study) to upgrade and/or expand the facility in anticipation of projected development and associated WWTP flows. However, between 2011 and 2015, growth in the community was not at the level anticipated, and the County experienced a reduction in water usage (and subsequently wastewater flows). As a result, in June 2016, County Council approved that the Class EA Study be put on hold until which time increased development rates and associated WWTP flow rates are observed. Now, in response to approved future growth in the Township of Norwich, and associated projected increases in WWTP flow rates, Oxford County has re-initiated the Class EA Study for capacity expansion of the Norwich WWTP.

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Accordingly, the County willingly accepts its responsibility to conduct *interest-based consultation* with Indigenous Communities as part of the Environmental Assessment process. Oxford County is committed to the open flow of information and to ensuring that there are meaningful opportunities for Haudenosaunee Confederacy Chiefs Council to provide input during this Class EA Study. As our neighbours in our community, we wish to build a strong and open relationship with your Nation.

In order to initiate engagement with this Study, we are notifying you of the project (see enclosed Notice of Commencement) in hopes that you can assist our project team in determining if your community may hold an interest in this project. For your convenience, we have enclosed a "Project Response Form" for you to review, complete and submit to the County's project manager as a first consultation step. Specifically, we are seeking your input on:

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Sincerely,

Jesse Keith, P.Eng.
Project Engineer, Public Works

Encl.. Notice of Study Commencement
Project Response Form

cc: John Tyrrell, M.Sc.(Eng.), P.Eng., Project Manager, R.V. Anderson Associates Limited
Mark Badali, Environmental Resource Planner & EA Coordinator, MECP

Oxford County
Growing stronger together

NOTICE OF STUDY COMMENCEMENT

Municipal Class Environmental Assessment Study
Norwich Wastewater Treatment Plant Capacity Expansion

PROJECT BACKGROUND

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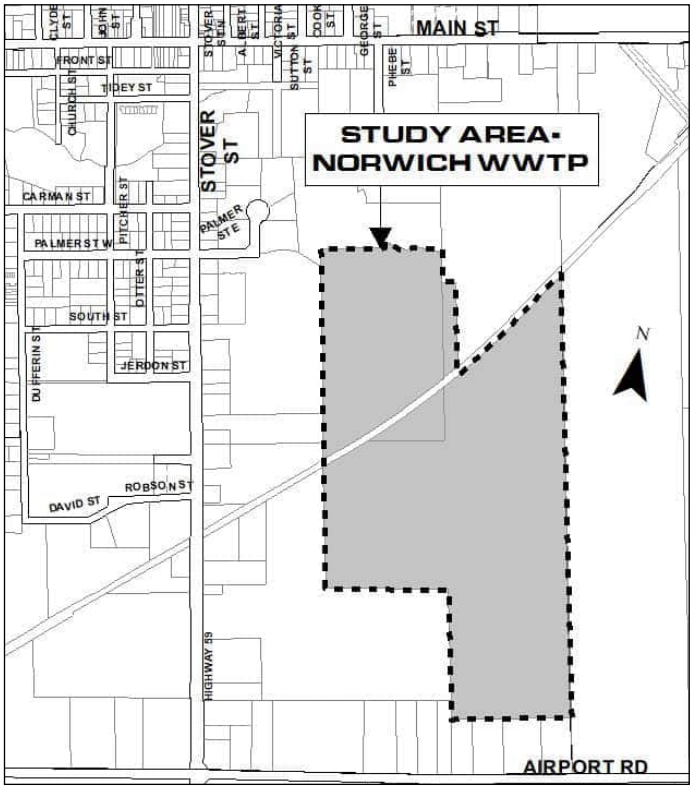

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This Notice first issued on May 10, 2021

Oxford County
Growing stronger together

Project Response Form

Notice of Study Commencement
Norwich Wastewater Treatment Plant Capacity Expansion
Class Environmental Assessment Study

Name: _____
(Please Print)

Phone No: _____

Signed: _____

Date: _____

If there is a different contact for your organization that we should follow-up with, please let us know:	
Name:	
Address:	
Phone:	
Email:	

The study is in its initial stages and information can be provided as it progresses.

Please assist us in identifying your interests:

		YES	**NO**
1.	Do you wish to participate in this project?		
2.	If the answer to Question 1 is “no”, would you like to be removed from the contact list?		
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Please return this completed to:**JESSE KEITH, P. ENG.** | **Project Engineer, Public Works**
OXFORD COUNTY | 21 Reeve St., PO Box 1614, Woodstock, ON, N4S 7Y3
T 519.539.9800 / 1-800-755-0394, ext 3194 | jkeith@oxfordcounty.ca

APPENDIX 1-4

Public Consultation Centres

PCC # 1

Presentation

Municipal Class Environmental Assessment Study – Norwich Wastewater Treatment Plant Capacity Expansion

PUBLIC CONSULTATION CENTRE # 1
VIRTUAL MEETING
JUNE 23, 2022
5:00 PM – 7:00 PM

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Committed to
100% RE | Zero Waste | Zero Poverty

OUTLINE

Presentation by Project Teams

Question and Answer Period “Raise Your Hand”

Presentation and Question and Answer Summary will be available at http://www.oxfordcounty.ca/NorwichWWTP-ClassEA

To assist in the ongoing Class Environmental Assessment Study, please provide any comments by July 8, 2022

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PURPOSE OF THIS MEETING

- Introduce you to the study
- Provide an overview of the study process
- Identify the reason for this study
- Summarize the alternative solutions considered and the preferred solution
- Next steps

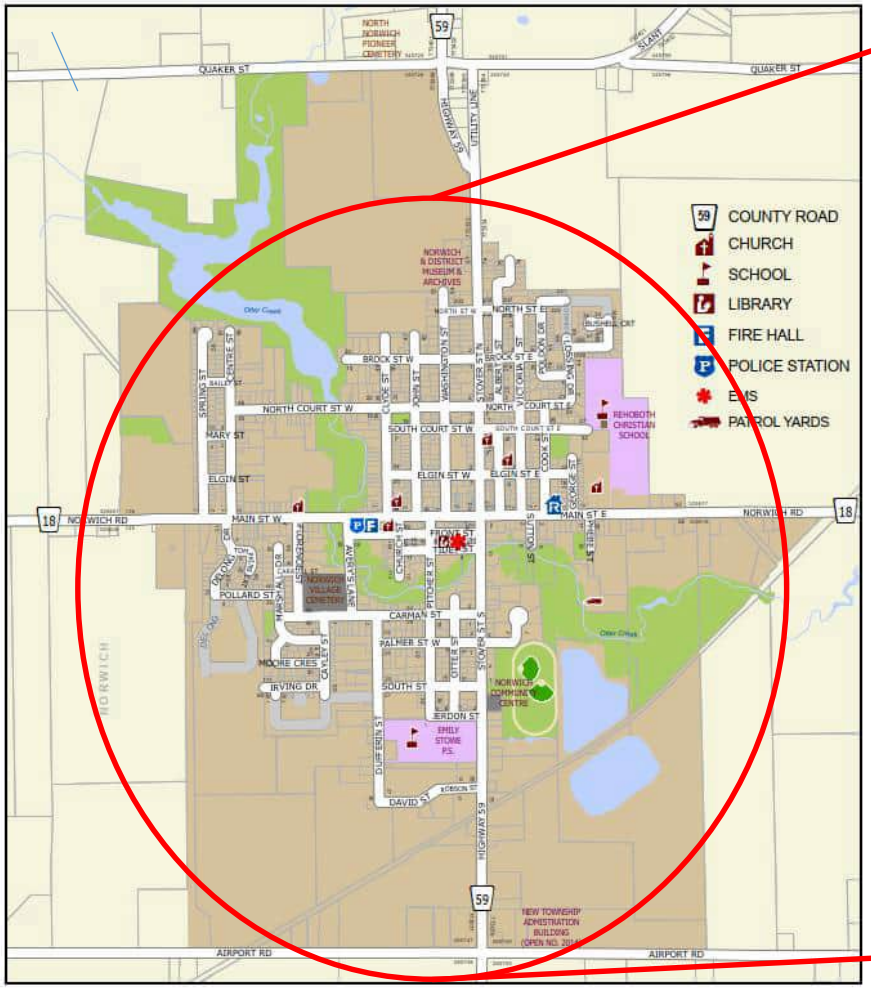
We want to hear from you!

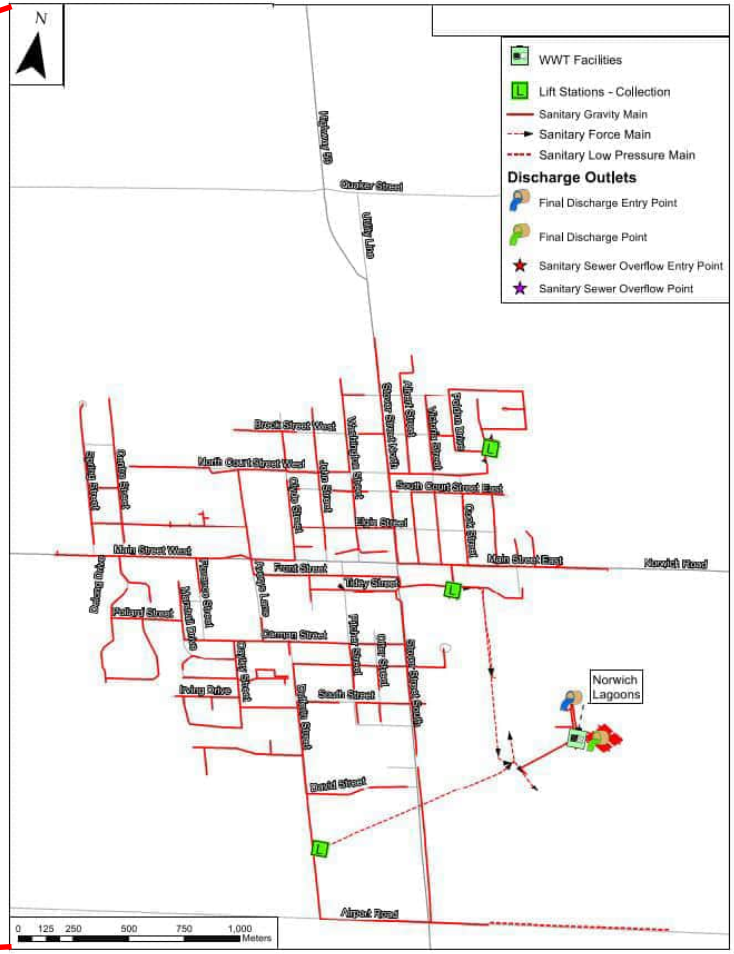
- Do you have any observations that you would like to share?
- Do you have any questions regarding the study?
- Do you have any questions regarding the Class EA Study process?

STUDY AREA AND BACKGROUND

- The Community of Norwich has a current service population of approximately 4,328
- The current Norwich Wastewater Treatment Plant (WWTP) was originally constructed in 1974 and expanded in the mid-1990's
- Norwich WWTP consists of
  - North lagoon (facultative) with 89,160 m^3 volume
  - South lagoon (facultative) with 92,880 m^3 volume
  - four (4) intermittent sand filters
  - Average Day Flow (ADF) capacity of 1530 m^3/day
- WWTP discharges intermittently to Otter Creek with annual average daily discharge less than ADF capacity

NORWICH SETTLEMENT AND SERVICE AREA





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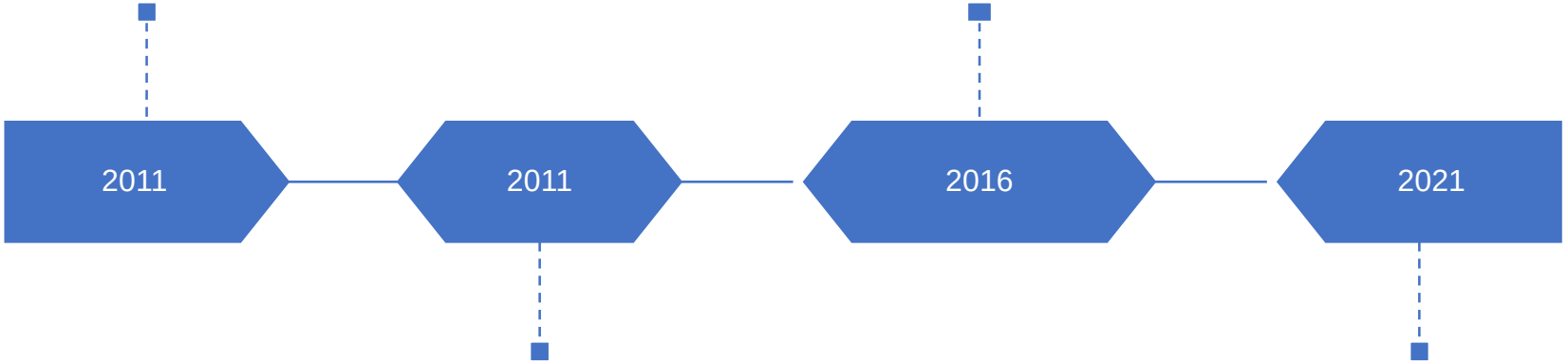
100% RE | Zero Waste | Zero Poverty

STUDY AREA AND BACKGROUND

County began a Class EA Study to expand the Norwich WWTP in 2011

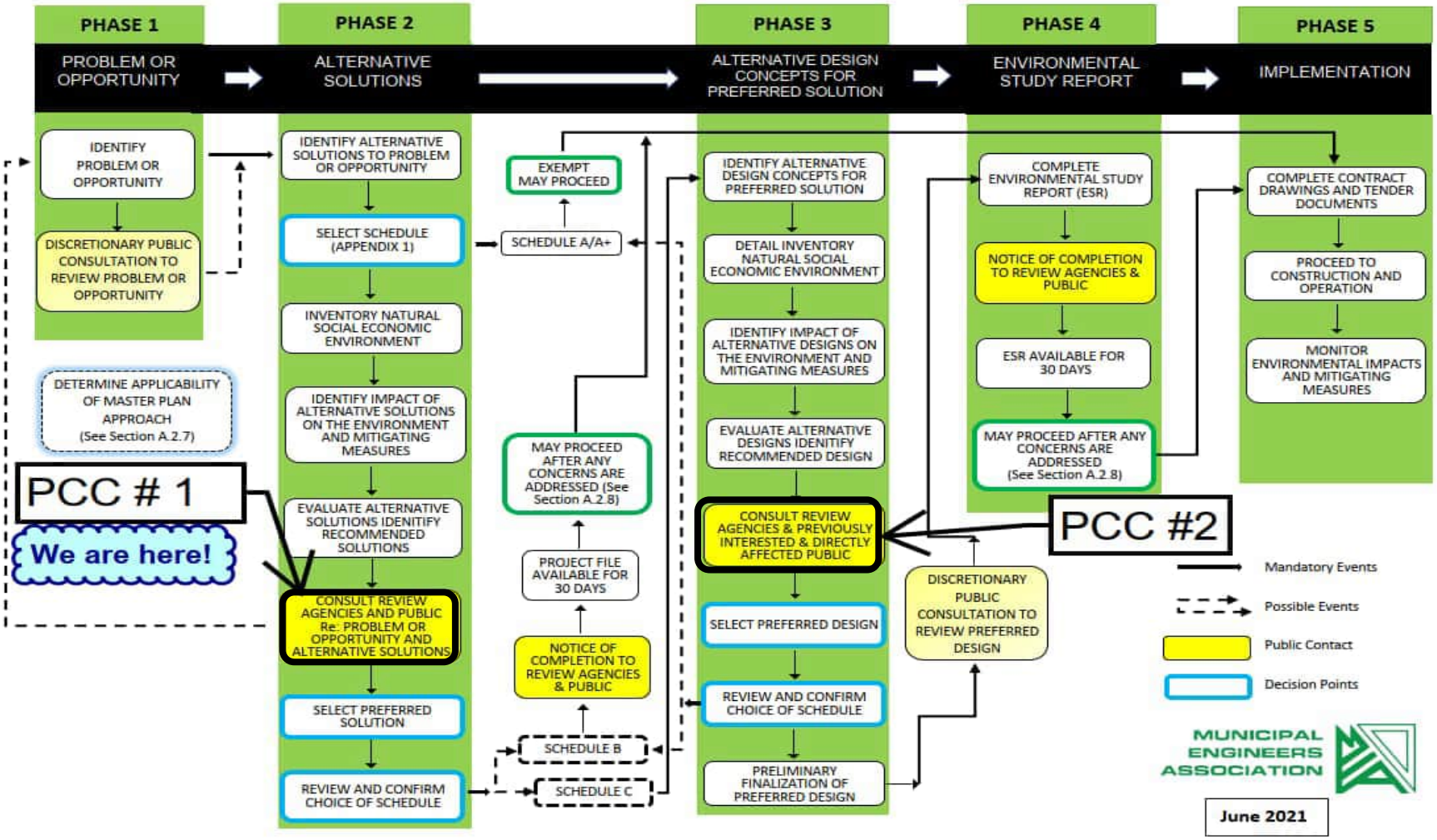


This included a Public Consultation Centre (PCC) held in 2011, undertaking an Assimilative Capacity Study (ACS) in 2012

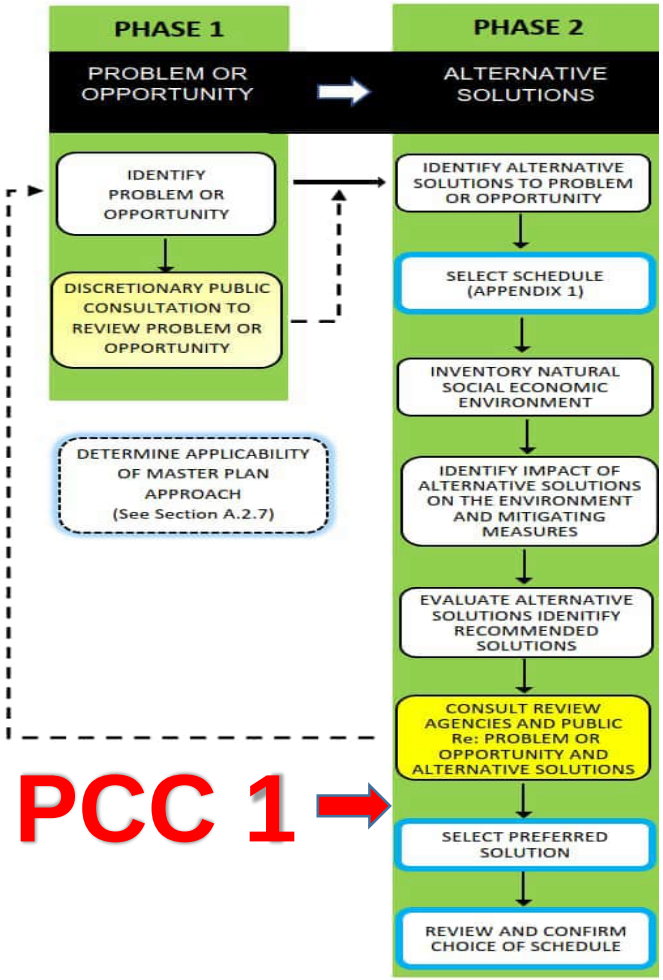
Process was halted in 2016 due to reduced water usage by residents in the community, and Council approved that the Study be put on hold

In 2021, the County recommenced the study based on anticipated future growth beyond current capacity

CLASS EA PROCESS

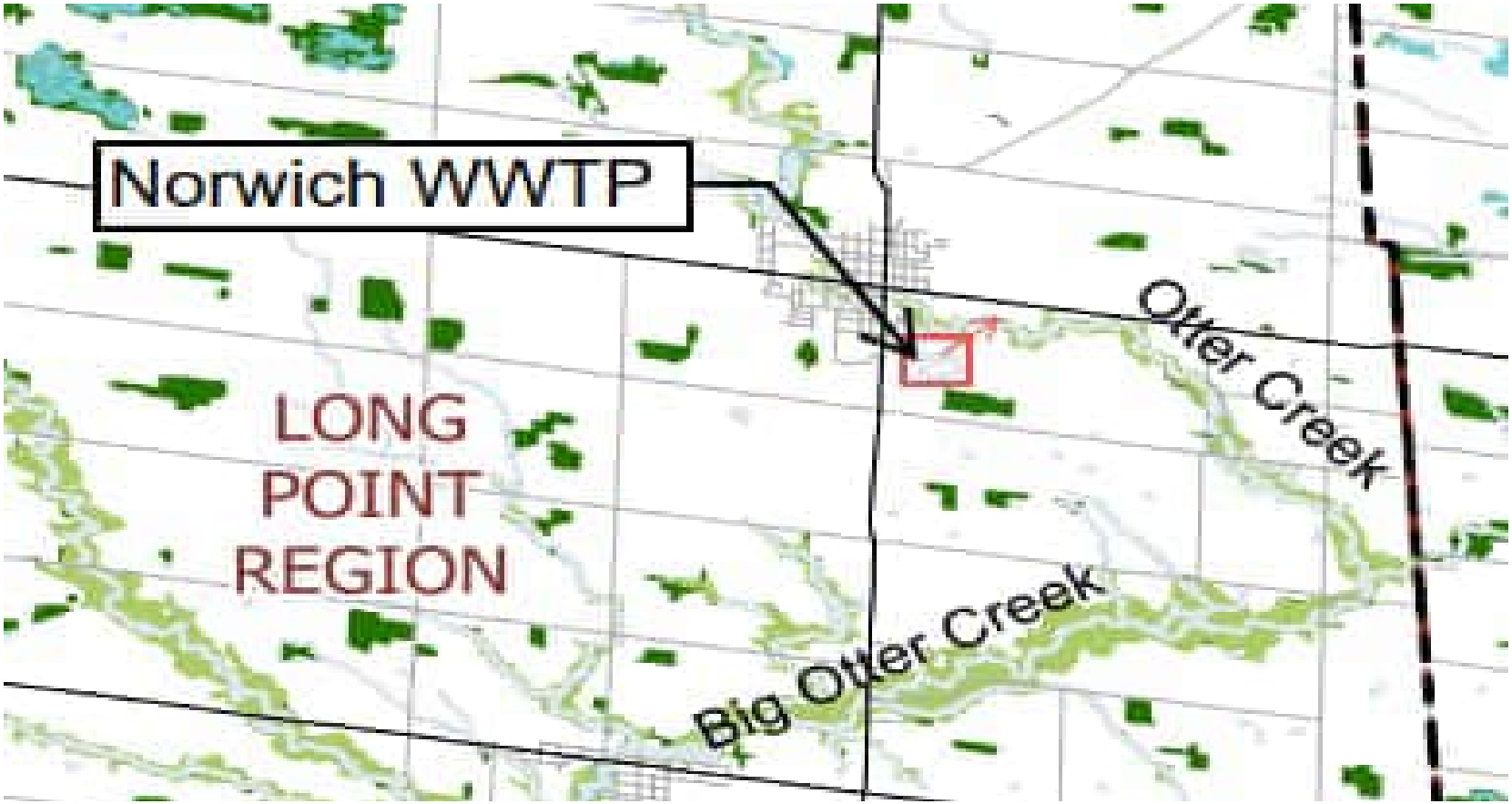


PHASE 2 OF CLASS EA STUDY – ALTERNATIVE SOLUTIONS



- This study is being undertaken in accordance with the Municipal Class Environmental Assessment process for a Schedule C Project
- Phase 2 of the process ensures all **reasonable alternatives** including 'Do Nothing' are considered and that a preferred alternative will have **minimal impact on the natural, cultural, social** and **economic environment**

NATURAL ENVIRONMENT



Municipal Boundary
Watershed Boundaries
Significant Valleylands
Provincially Significant Wetlands
Earth Science Areas of Natural and Scientific Interest
Life Science Areas of Natural and Scientific Interest
Significant Woodlands

NATURAL ENVIRONMENT

Through review of background data and field investigations, the following constraints and considerations were identified:

- Otter Creek, its aquatic community, and the Significant Valleyland that conveys it
- Significant Woodland immediately south of the Study Area
- Local wildlife, including the potential for Species at Risk (SAR) protected under the *Endangered Species Act* (ESA, 2007)
- Invasive Phragmites Reed

PROBLEM/OPPORTUNITY STATEMENT

To comprehensively develop, evaluate and select a preferred long-term wastewater servicing solution and wastewater treatment plant design alternative to service future projected population and employment growth (to 2046) in the community of Norwich

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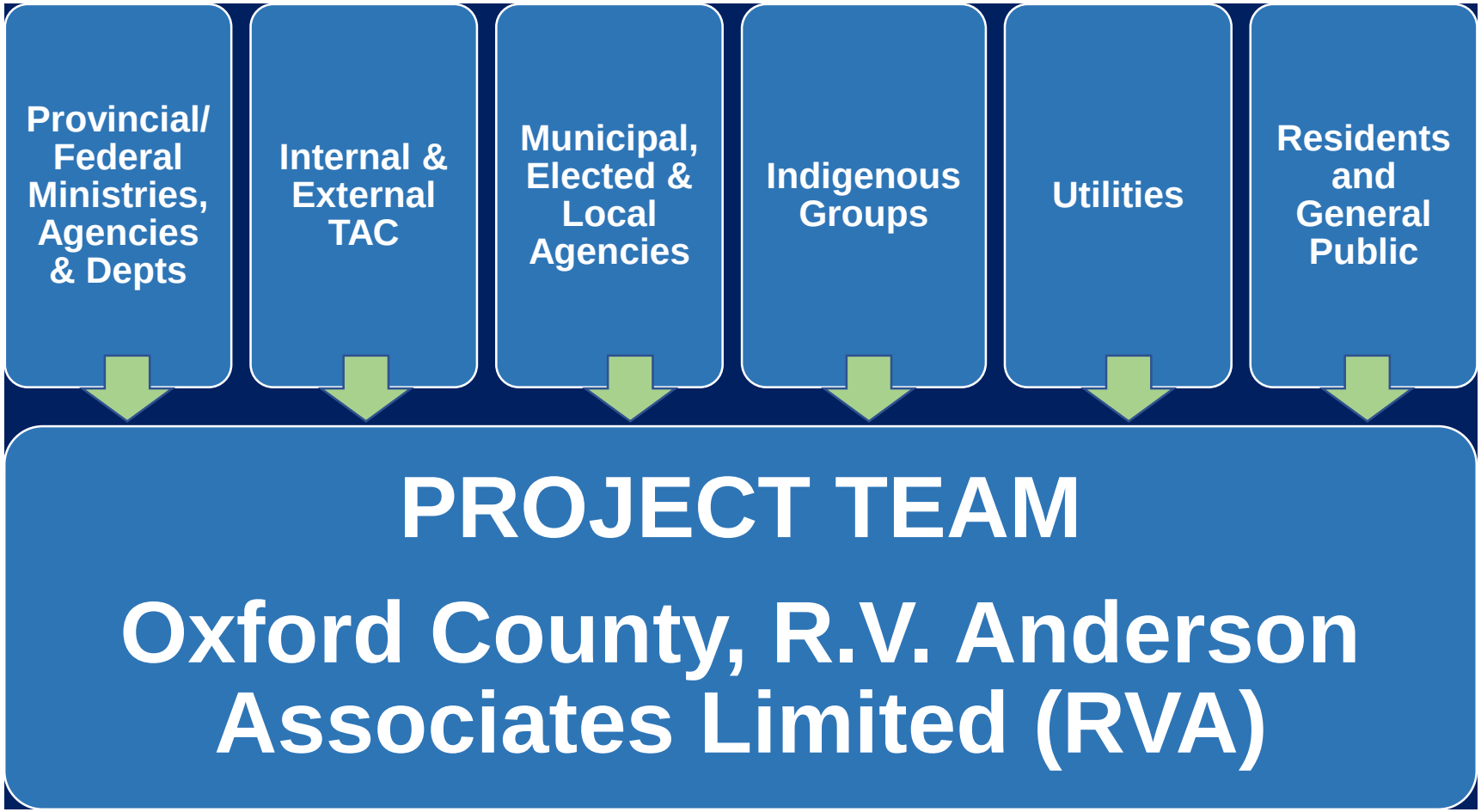
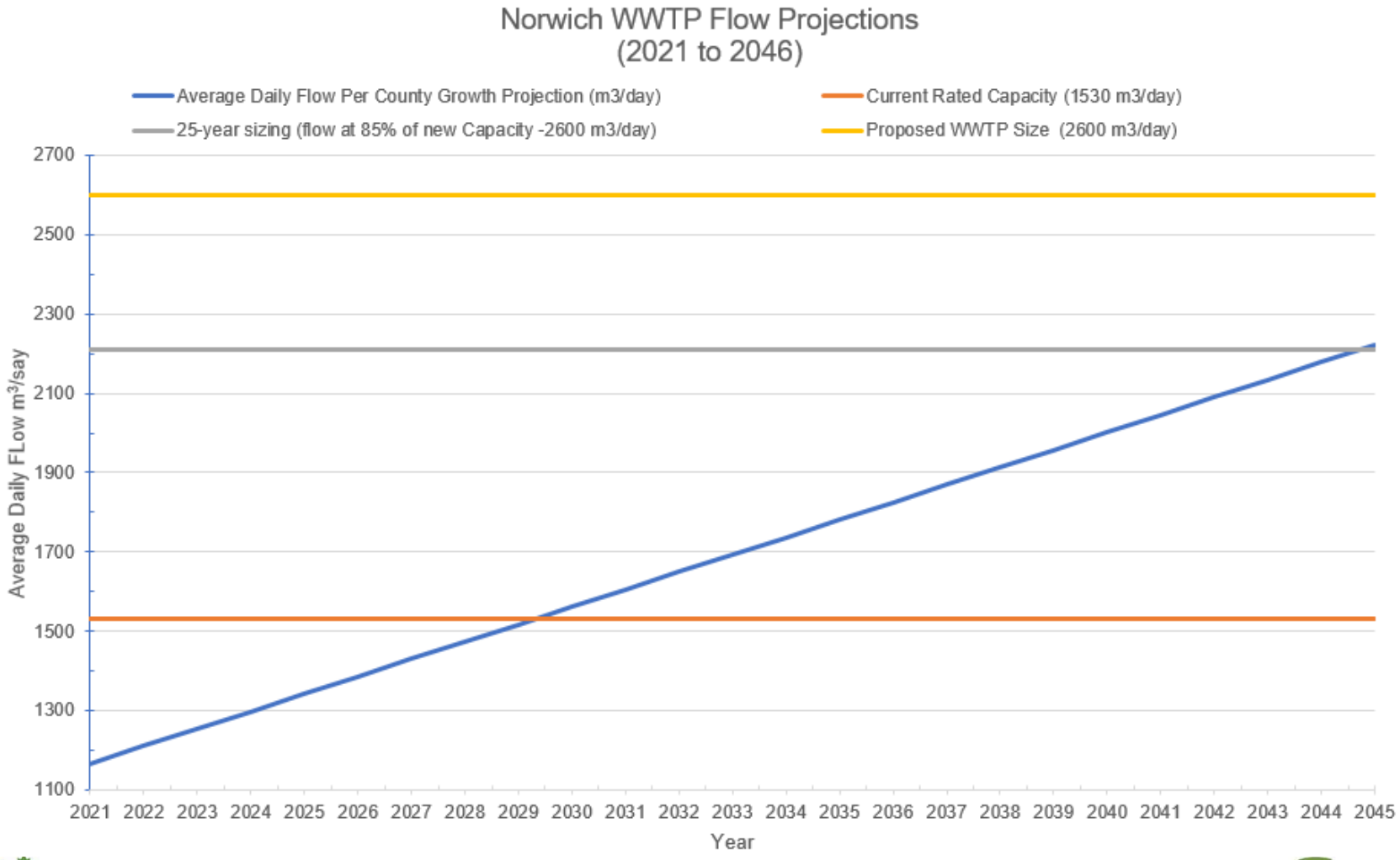
INPUT INTO CLASS EA PROCESS



WASTEWATER FLOW PROJECTIONS



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WWTP EFFLUENT QUALITY REQUIREMENTS – CURRENT

Effluent Parameters	Limits		Objectives	
	Monthly Average Conc. (mg/L)	Average Loading (kg/d)	Monthly Average Conc. (mg/L)	Average Loading (kg/d)
$cBOD_5$	10.0	23.7	5.0	11.8
TSS	10.0	23.7	5.0	11.8
Total Phosphorus				
Non-Freezing Period	0.5	1.2	0.3	0.7
Freezing Period	1.0	2.4	0.8	1.9
Total Ammonia Nitrogen				
Non-Freezing Period	3.0 (5.0)	11.8	2.0	7.1
Freezing Period	5.0 (8.0)	18.9	4.0	11.8
Total Chlorine Residual	0.002 (0.01)	0.005	0.000	0.000
Dissolved Oxygen	> 4	N/A	> 5	N/A
E. Coli	200 CFU/100 mL	N/A	150 CFU/100 mL	N/A

Notes:

1. Values in brackets indicate daily concentration limits.
2. In addition to Total Ammonia Nitrogen concentrations noted above, the un-ionized ammonia concentration in the effluent shall not exceed 0.1 mg/L for monthly average values and 0.2 mg/L for any individual sample
3. The loadings are based on average daily flow of 2,366 m^3/d over 236-day discharge period

- Limits represent the effluent compliance values that must be achieved, whereas objectives represent the values that the system is designed to achieve and should be achieved mostly
- Freezing period means the period during which the water temperature of the receiving stream is equal to or below 5 degrees Celsius, normally from December 1 to April 30

WWTP EFFLUENT QUALITY REQUIREMENTS – FUTURE

To plan the treatment requirements for the WWTP expansion, the effluent quality requirements must be set to confirm the level of treatment.

These requirements are set by the Ministry of Environment and Conservation of Parks (MECP) and are based on assimilative capacity study (ACS) of receiving water

The County had completed an ACS during the Class EA Study started in 2011

The County has recently reviewed ACS update requirements with the MECP

MECP has requested that the County undertake a new ACS

WWTP EFFLUENT QUALITY REQUIREMENTS – FUTURE

- The County began sampling program of Otter Creek in February 2022
- Sampling of Otter Creek will continue until December 2022
- Following the sampling program, analysis will be completed, and the County will propose the effluent concentration and load limits for the expanded WWTP
- MECP and the County will negotiate and agree upon these limits
- Based on these limits a design level solution will be confirmed and Phases 3 and 4 of the Class EA Study completed

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ALTERNATIVE SOLUTIONS FROM 2011 CLASS EA STUDY

1. Do nothing
2. Limit growth
3. Reduce wastewater flows through water efficiency measures and extraneous flow reduction
4. **Decommission the existing plant and build a new mechanical WWTP on the existing site**
5. Decommission the existing plant and build a new mechanical WWTP on a new site
6. Decommission the existing plant and transfer wastewater from Norwich to the Woodstock WWTP for treatment
7. Decommission the existing plant and transfer wastewater from Norwich to the Tillsonburg WWTP for treatment
8. **Build a new mechanical treatment plant to treat additional flows related to community growth and maintain the existing lagoon- based system to treat existing flows**
9. **Optimize, upgrade and/or expand the existing lagoon-based system to treat projected future flows**

The bolded were shortlisted

CURRENT ALTERNATIVE SOLUTIONS

We are going to carry forward the following alternative solutions:

- #1 – (2011 Alternative 1) Do nothing – mandatory to review for a Class EA Studies
- # 2 – (combination of 2011 Alternatives 4 and 8) Build a new mechanical WWTP on the existing site and repurpose existing lagoons
- #3 – (2011 Alternative 9) Optimize, upgrade and/or expand the existing lagoon-based system to treat projected future flows

EVALUATION OF ALTERNATIVE SOLUTIONS

- We are going to review the solutions based upon the following criteria:
  - Financial
  - Technical
  - Environmental
  - Social
  - Cultural and Archaeological
- This will be a qualitative review as the high level options do not require a detailed quantification of benefit, cost or impact to short list.
- The Phase 3 review of Alternate Design Concepts will be based on a quantitative review criteria

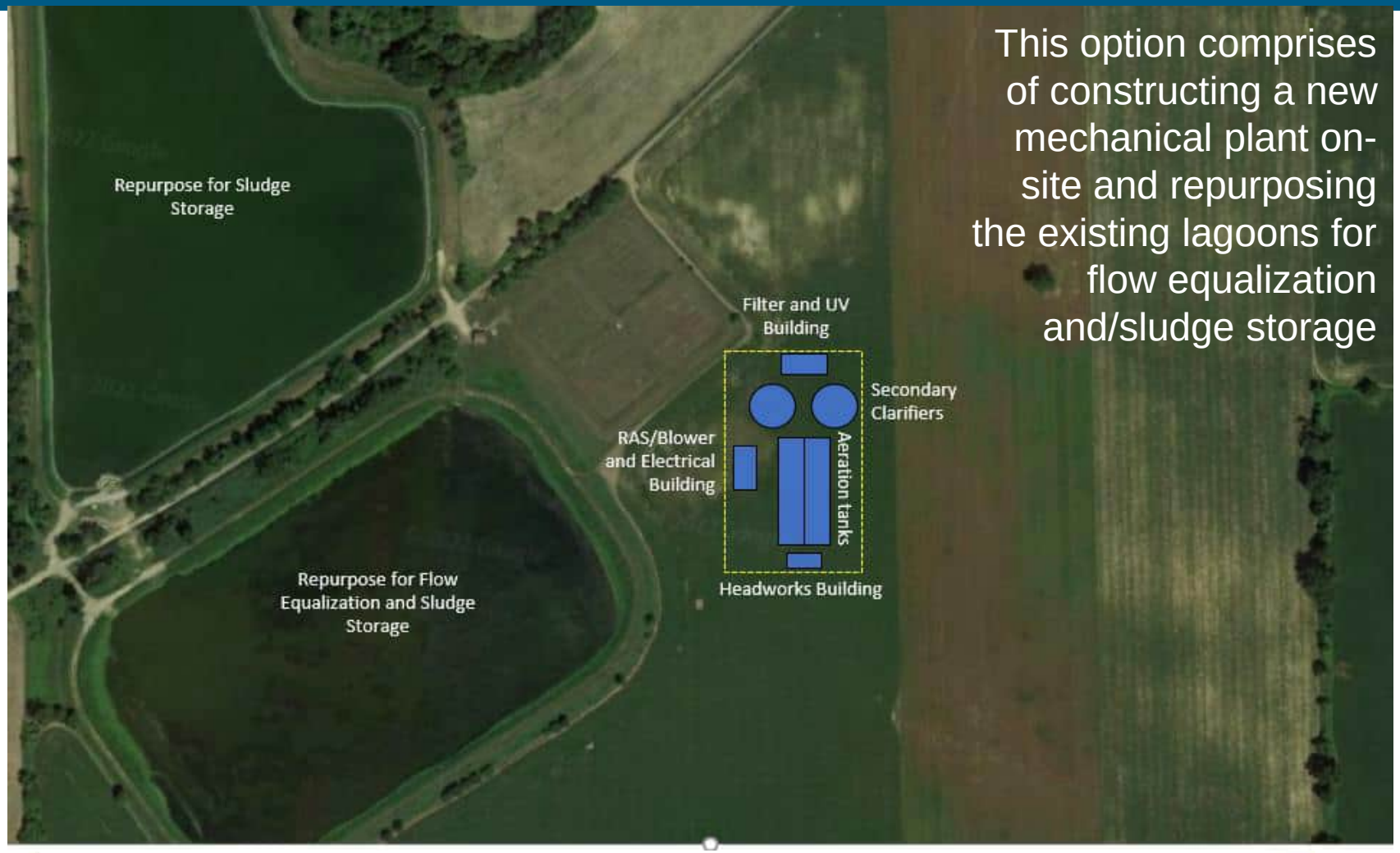
ALTERNATIVE 1 – DO NOTHING

This alternative includes no measures for improving the performance of Lagoons:

- Financial – No Capital Cost
- Technical - MECP approval will limit the growth up to the current rated capacity of the WWTP
- Environmental - Adverse effect on water, soil and air quality
- Social Cultural and Archaeological – No cultural or archaeological impact but “Do Nothing” does not support future growth for full planning horizon up to 2046 which is part of the County’s strategic direction.

Therefore, this option is discarded as it does not allow the County to achieve the goals of this project’s Problem/ Opportunity Statement

ALTERNATIVE 2 – CONSTRUCT A NEW MECHANICAL WWTP



This option comprises of constructing a new mechanical plant on-site and repurposing the existing lagoons for flow equalization and/sludge storage

ALTERNATIVE 3 – UPGRADE OF THE EXISTING LAGOON SYSTEM

This option comprises of upgrading the existing lagoon system with optional post-lagoon polishing followed by tertiary treatment and disinfection

EVALUATION OF ALTERNATIVES 2 AND 3

Evaluation Criteria	Alternative 2 – Construct a New Mechanical WWTP	Rating	Alternative 3 – Upgrade the Existing Lagoon System	Rating
Financial	• Capital cost range for a new mechanical WWTP at Lagoon site is $20M - $26M • Additional capital cost associated with cleaning of lagoons and their conversion to equalization ponds • Higher operation and maintenance (O&M) cost due to increased operational effort, equipment maintenance, and monitoring/control requirements		• Capital cost range for upgrade of existing Lagoon WWTP is $8M - $11M • Lower operation and maintenance cost compared for the new WWTP compared to a mechanical WWTP (Alternative 2) due to due lower operational effort, fewer equipment to operate and maintain, and fewer processes to monitor and operate	
Technical	• Capable of meeting the projected wastewater servicing needs by proving the required level of treatment and meeting the effluent quality requirements • Can be designed with required redundancy and modularity for additional capacity in future • Relatively low compatibility with the existing lagoon system and allows only a moderately efficient use of the existing lagoon system • Higher operational complexity needing higher O&M and control effort than a lagoon system		• Capable of meeting the projected wastewater servicing needs by proving the required level of treatment and meeting the effluent quality requirements • Can be designed with required redundancy and modularity for additional capacity in future • High compatibility with the existing lagoon system facilitating an efficient use of the existing lagoon system for future wastewater treatment • Low operational complexity with significantly lower O&M and control effort compared to a mechanical plant	
Environmental	• This alternative has a relatively higher carbon footprint for both construction and operation • The proposed solution would be resilient to climate change with the use of existing lagoon cells as equalization and/or sludge storage ponds • This alternative is likely to have a moderate impact on wildlife and vegetation due to higher amount of excavation and construction compared to a lagoon upgrade		• This alternative has a low carbon footprint for construction as well as operation • The proposed solution would be resilient to climate change with the retention of existing lagoon cells as a key treatment process facilitating attenuation of peak wet weather flows • This alternative is likely to have a low impact on wildlife and vegetation due to lower amount of excavation and construction activity compared to a mechanical plant	
Social, Cultural and Archeological	• Alternative can support existing developed areas and future growth • Moderate visual, noise, and potential archaeological impacts due to high degree of construction • Odour and noise impacts during operation minimized due to use of aeration and other control means • Longer construction duration compared to Alternative 3		• Alternative can accommodate for future growth and support existing developed areas • Low visual, noise, and archaeological impacts due to low degree of construction • Odour and noise impacts during operation minimized due to use of aeration and other control means • Shorter construction duration compared to Alternative 2	
Overall Conclusion				

PREFERRED ALTERNATIVE

Based upon the County/RVA review:

- Alternative 3 “Optimize, upgrade and/or expand the existing lagoon-based system to treat projected future flows” has been deemed most cost effective, environmentally sound, and sustainable approach to servicing the Norwich WWTP and meeting the wastewater servicing needs of the community to 2046

NEXT STEPS

Continue

- Field sampling for ACS up to December 2022

Review and confirm

- Effluent requirements for the expanded WWTP with MECP (early 2023)

Undertake

- Phase 3 of Class EA to develop Alternate Design Concepts (complete following MECP consultation)

Present

- Alternative Design Concepts and preliminary preferred design concept to public at PCC # 2 (Q1 2023)

Confirm

- Preferred design concept, complete Phase 4 with an Environmental Study Report (ESR)

Submit

- ESR for public review and finalize Class EA (mid 2023)


DISCUSSION

THANK YOU FOR ATTENDING!

- Please feel free to submit your comments via email, phone a member of the study team or visit the study website on http://www.oxfordcounty.ca/NorwichWWTP-ClassEA

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PCC # 1
Questions

Question & Answer (Q & A) Summary
Public Consultation Centre (PCC) # 1
Norwich Wastewater Treatment Plant (WWTP) Capacity Expansion
Municipal Class Environmental Assessment (Class EA) Study

PUBLIC QUESTIONS

Question 1:

What is the anticipated capital roll-out/construction period duration? (How soon for implementation of an increase in service capacity?)

Answer 1:

At this time, Oxford County Public Works is targeting completion of the subject Class EA Study by mid-2023. Detailed design, regulatory approvals, and construction is planned to immediately follow. It's estimated that construction will extend for approximately 18 months and be completed/additional rated WWTP capacity will be available by end of 2026; however, it was noted that external factors, etc. could effect this forecast.

Question 2:

How do current flows compare to the current rated capacity of the WWTP?

Answer 2:

As shown on Slide 13 of the presentation, the average day flow at the end of 2021 was 1,145 cubic metres per day (m^3/day) as per the County's 2021 Annual Wastewater Treatment System Summary Report for the Norwich WWTP. That equates to approximately 75% of the plant's current rated/permitted capacity of 1,530 m^3/day.

Question 3:

When should a WWTP capacity expansion Class EA Study commence?

Answer 3:

Typically a Class EA Study would be initiated prior to a WWTP reaching 85% of its rated capacity (based on average annual flows over last 5 years) to allow time to complete the required planning/Class EA Study, detailed design & approvals, and construction.

Question 4:

What reserve capacity is currently available?

Answer 4:

Oxford County Public Works and Community Planning closely monitor planning applications/files (e.g. subdivision and site plan developments) and associated allocation of water & wastewater capacity. Considering the County's Water & Wastewater Capacity Allocation policy, it's currently estimated that less than 10% of reserve capacity is available (considering unconnected lots, registered/draft approved lots, etc.)

END OF Q & A SUMMARY FROM PCC#1

PCC # 2

Presentatoin

Municipal Class Environmental Assessment Study – Norwich Wastewater Treatment Plant Capacity Expansion

Public Consultation Centre #2

December 12, 2024

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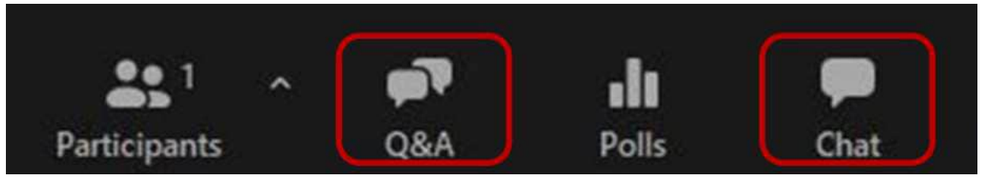
RVA

During the Presentation

- This meeting is being recorded and will be posted to the project website
- When joining the meeting, your microphone and video will be turned off. Use the Chat button to let us know about any technical difficulties.
- Use the Q&A button to put forward a question to the presenters. Questions will be answered after the presentation



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Purpose of Meeting

- Review Project Background
- Review work to PCC#1 and selection of planning solution
- Review work undertaken since PCC#1
  - Assimilative Capacity Study
  - Confirmation of Discharge Requirements with MECP
  - Conceptual Treatment Requirements
- Review Design Alternatives for Implementation
- Preliminary Selection of Design Alternative
- Next Steps

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Project Background

- The Community of Norwich has a current service population of approximately 4,400
- The current Norwich Wastewater Treatment Plant (WWTP) was originally constructed in 1974 and expanded in the mid-1990's
- Norwich WWTP consists of
  - North lagoon (facultative) with 117,700 m^3 volume
  - South lagoon (facultative) with 92,880 m^3 volume
  - Four (4) intermittent sand filters
- Average Day Flow (ADF) capacity of 1,530 m^3/day
- WWTP discharges intermittently to Otter Creek with daily discharge limited to 5,160 m^3/day

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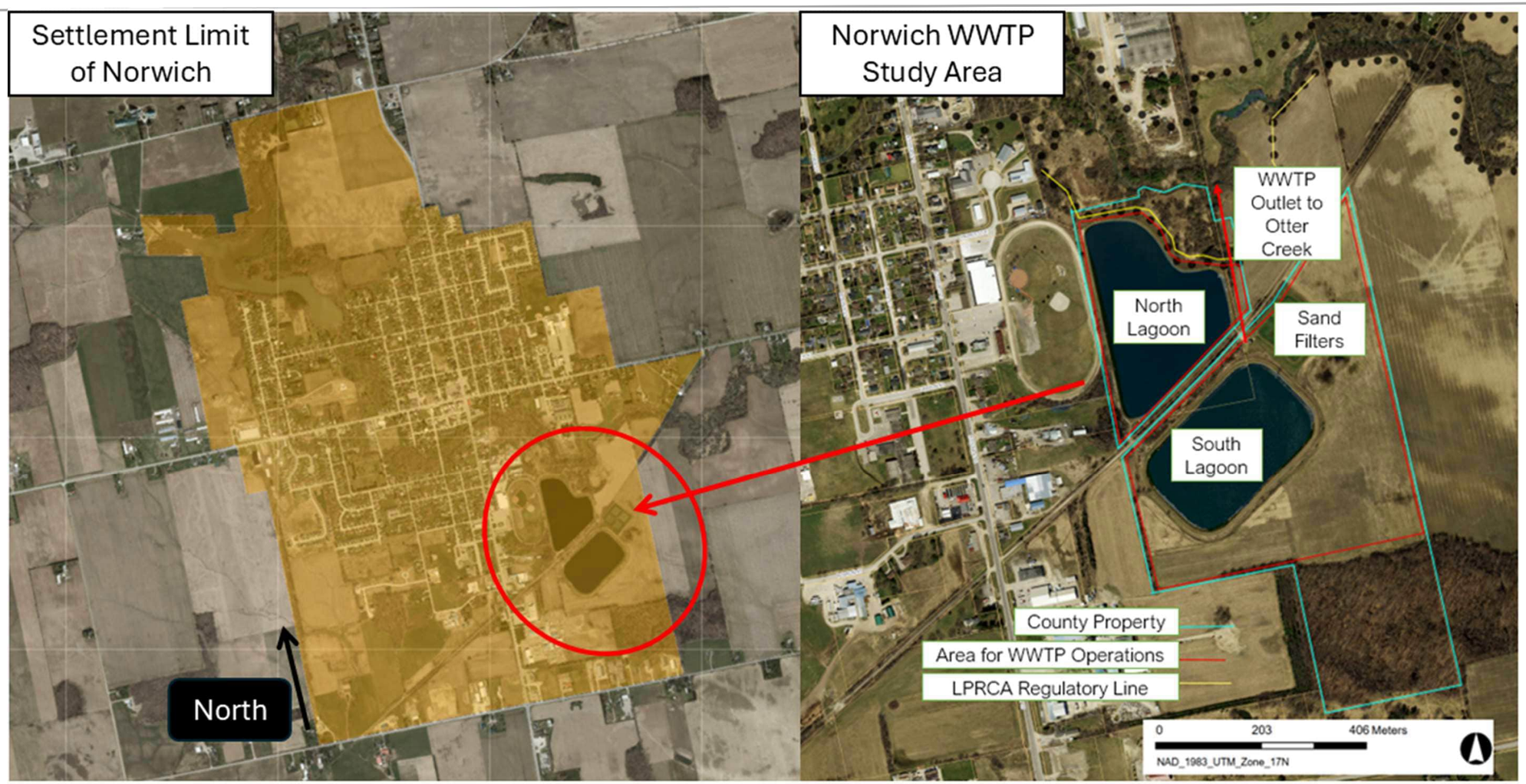
Norwich Settlement and Service Area



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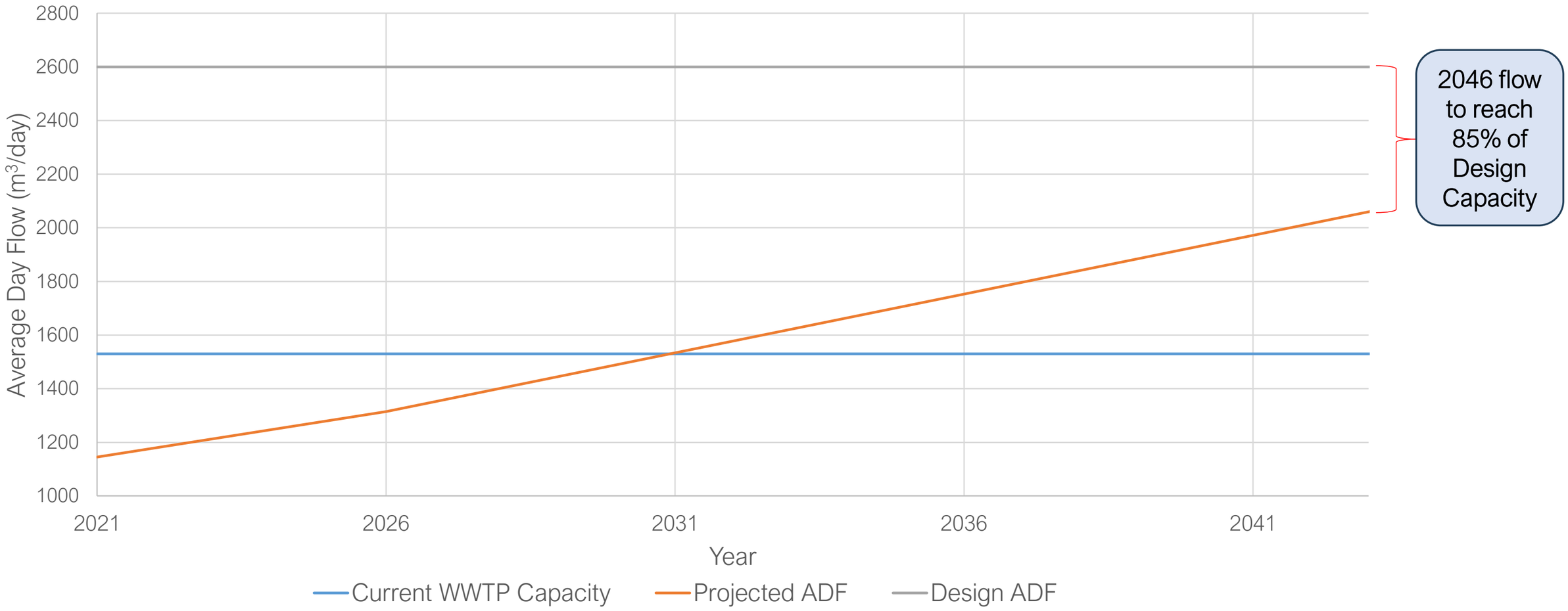
Wastewater Flow Projections



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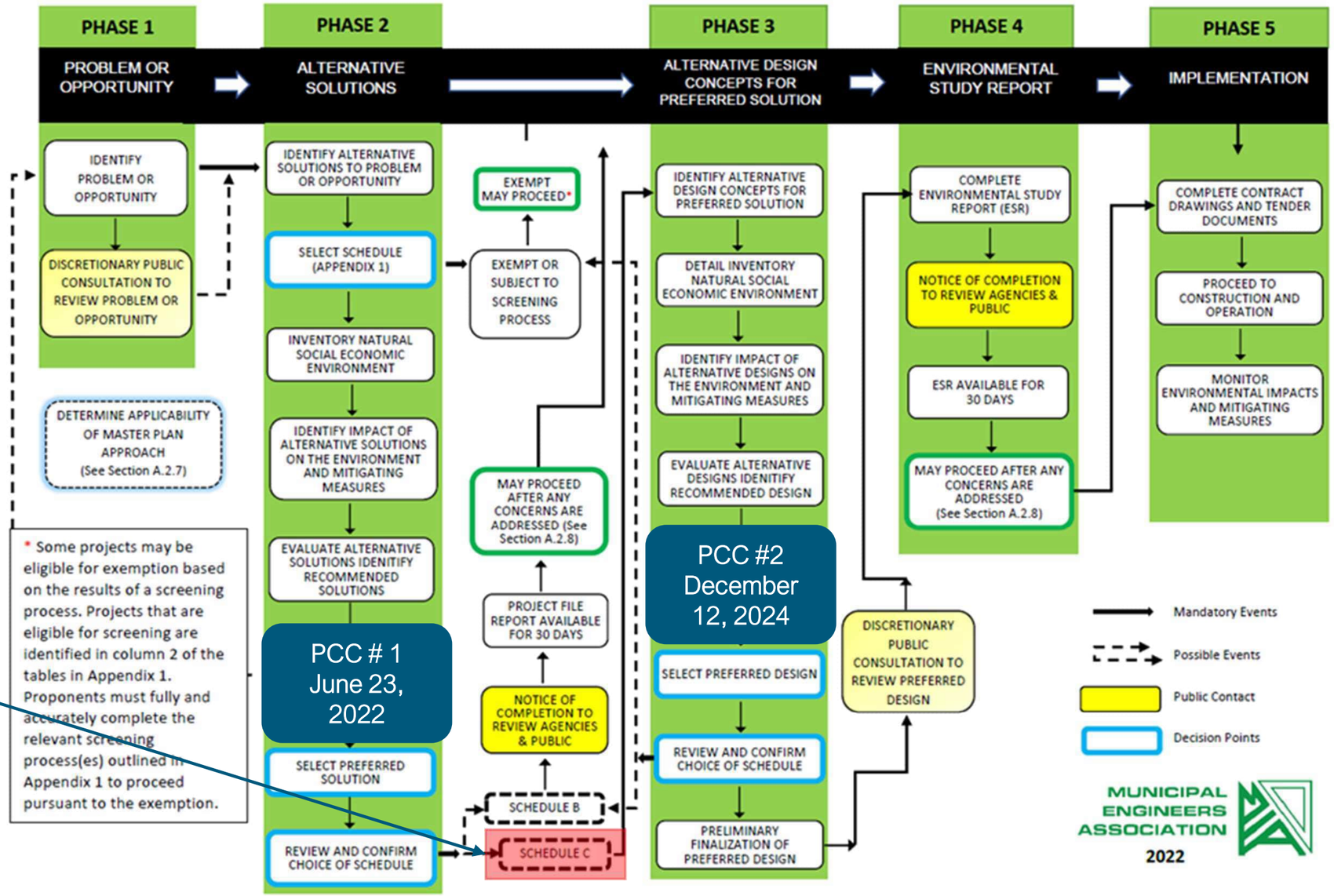
MCEA Process



This is a Schedule C Projected per MCEA Process

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Phases 1 and 2 of MCEA (2021-2022)

- Phase 1 Problem and Opportunity Statement

  "To comprehensively develop, evaluate and select a preferred long-term wastewater servicing solution and wastewater treatment plant design alternative to service future projected population and employment growth (to 2046) in the community of Norwich."

- Phase 2 Review Alternative Solutions reviewed
  - #1 – Do nothing – mandatory to review for a Class EA Studies
  - #2 – Build a new mechanical WWTP on the existing site and repurpose existing lagoons
  - #3 – Optimize, upgrade and/or expand the existing lagoon-based system to treat projected future flows
- Per review detailed in PCC # 1 in June 2022, Alternative Solution #3 Optimize, upgrade and/or expand the existing lagoon-based system was selected

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Work Since PCC#1 (2022 to 2024)

- Undertaking Phase 3 of the MCEA Process(Alternative Design Concepts for Preferred Solution)
- Terms of Reference for an Assimilative Capacity Study (ACS) confirmed with MECP (2022)
- Water quality sampling upstream and downstream of WWTP (completed by end of 2022)
- Undertaking of modeling of future flow from WWTP at 2600 m^3/day (2023 to 2024)
- Review and confirmation of effluent and discharge targets for WWTP at 2600 m^3/day (2024)
- Confirmation of effluent and discharge targets for WWTP with MECP (2024)
- Development and Review of Design Alternatives for WWTP expansion to 2600 m^3/day

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ACS Findings

- Influent wastewater quality was based on historic data from WWTP
- WWTP quality to meet criteria established by ACS
- Otter Creek is outlet point for WWTP and is 5.6 km from Big Otter Creek
- Average discharge from WWTP at 2600 m^3/day is 30 L/s and the 20-year low flow value for Otter Creek varies month to month but can be as low as 23 L/s in July
- County considered various means to control discharge from WWTP and decided that the method to achieve this is through limiting monthly flows
- ACS calculated a minimum dilution rate for each month at the 20-year low flow to achieve a dilution of 1.88 (stream flow): 1 (WWTP outfall)
- This would be achieved by storing treated wastewater in the existing available lagoon volume and establishing additional storage

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Discharge Limits for Expanded WWTP

	Month	Jan	Feb [1]	Mar	Apr	May	Jun
Discharge (m^3)	Daily	3,793	3,688	4,204	6,912	3,245	1,845
	Monthly	117,584	103,261	130,319	206,753	100,603	55,337

	Month	Jul	Aug	Sept	Oct	Nov	Dec
Discharge (m^3)	Daily	209	637	1,131	1,245	1,785	2,721
	Monthly	6,481	19,755	33,920	38,583	53,536	84,364

Note 1 – assumes 28-day month, leap year volume will be 106,953 m^3

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Effluent Limits for Expanded WWTP

Parameter		Existing Operating Averages	Existing Operating Effluent Limit/Objective	Recommended Effluent Limit	Recommended Effluent Objective
Total Phosphorus	Non-Freezing (Apr-Nov)	0.24 mg/L	0.50/0.30 mg/L	0.20 mg/L	0.10 mg/L
	Freezing (Dec-Mar)	0.23 mg/L	1.00/0.80 mg/L		
Total Ammonia as N	Non-Freezing (Apr-Nov)	0.61 mg/L	3.00/2.00 mg/L	1.50 mg/L	1.00 mg/L
	Freezing (Dec-Mar)	1.95 mg/L	5.00/4.00 mg/L	4.00 mg/L	2.00 mg/L
Fecal Coliforms as E. Coli		114 CFU/100 mL	200/150 CFU/100 mL	100 CFU/100 mL	50 CFU/100 mL
Total Suspended Solids		3.00 mg/L	10.00/5.00 mg/L	10.00 mg/L	5.00 mg/L
Dissolved Oxygen		7.80 mg/L	>4.00/ >5.00 mg/L	>6.00 mg/L	>6.00 mg/L
$cBOD_5$		3.30 mg/L	10.00/5.00 mg/L	10.00 mg/L	5.00 mg/L

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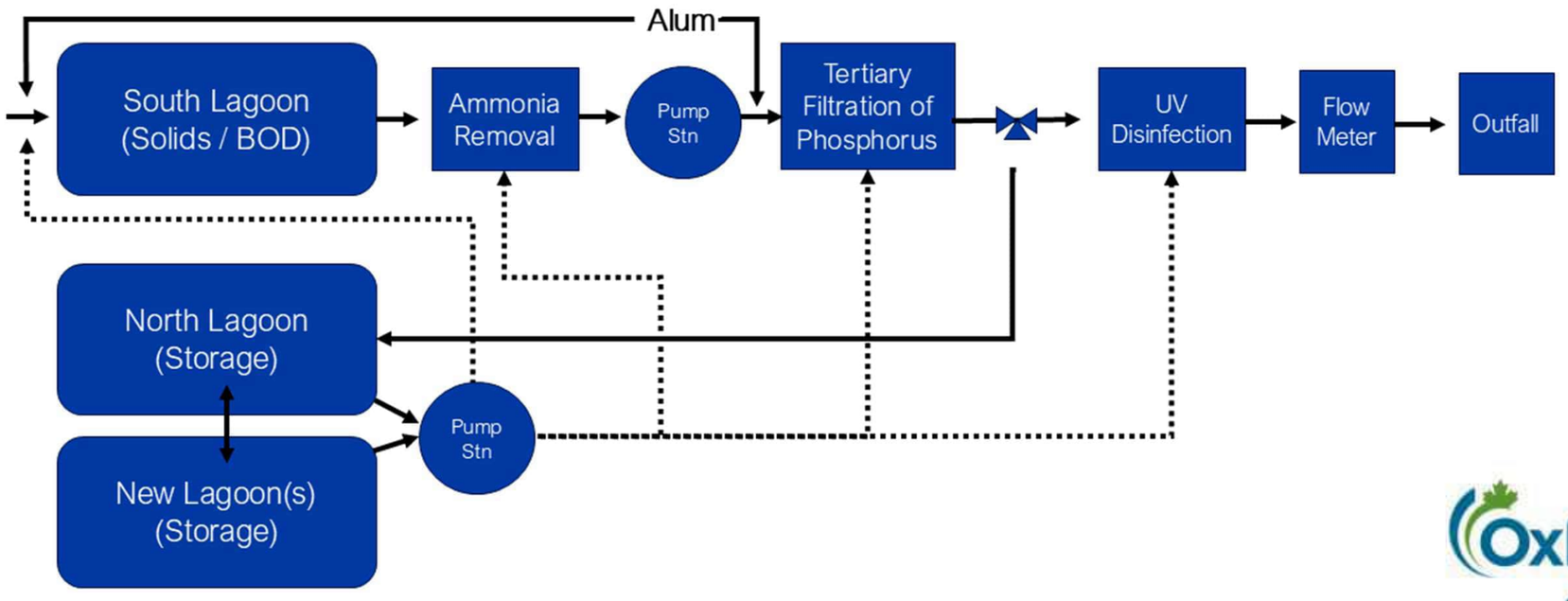
Conceptual Treatment Requirement

- Treatment is based on the following parameters:
  - Peak discharge rate: 6,912 m^3/d (maximum allowed discharge in April)
  - Peak daily flow into WWTP: 10,660 m^3/d (calculated)
  - Treatment of influent sewage to effluent limits
  - Consideration of recirculated stored effluent flows



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Design Alternatives – Ammonia Removal

- It was determined that the available technology alternatives primarily differ on the basis Total Ammonia (TAN) treatment
- Three alternatives design concepts were reviewed for TAN treatment:
  1. Fixed Film Attached Growth(FFAG)
  2. Moving Bed Bioreactor (MBBR)
  3. Submerged Attached Growth Reactor (SAGR)
- These three options are described in the following slides

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Design Alternatives – Ammonia Removal

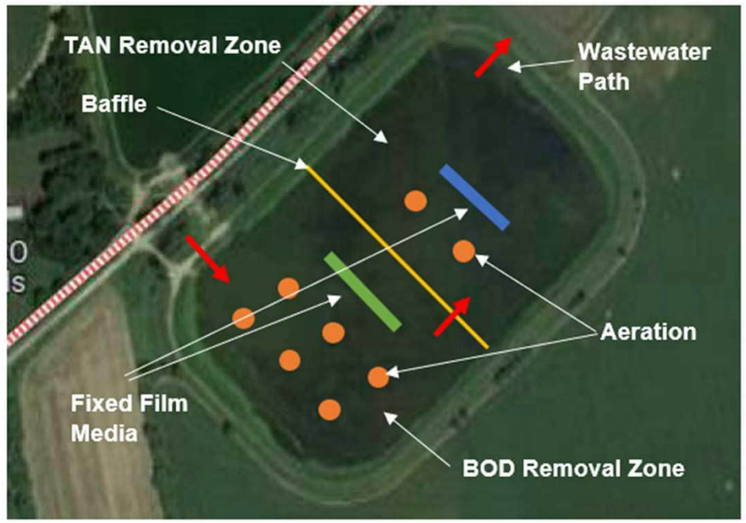
- Alternative 1 - Fixed Film Attached Growth – provide aeration and fixed film upgrade in the South Lagoon

Floating Fixed Film System
Media hangs below the water surface

WavTex Modules in Aeration Tank

EnTextile Media close up

Bottom Mounted Fixed Film System Viewed From Above (left) and Media Close-Up (right)



Fixed Film System Sample Layout in South Lagoon Cell (not to scale)

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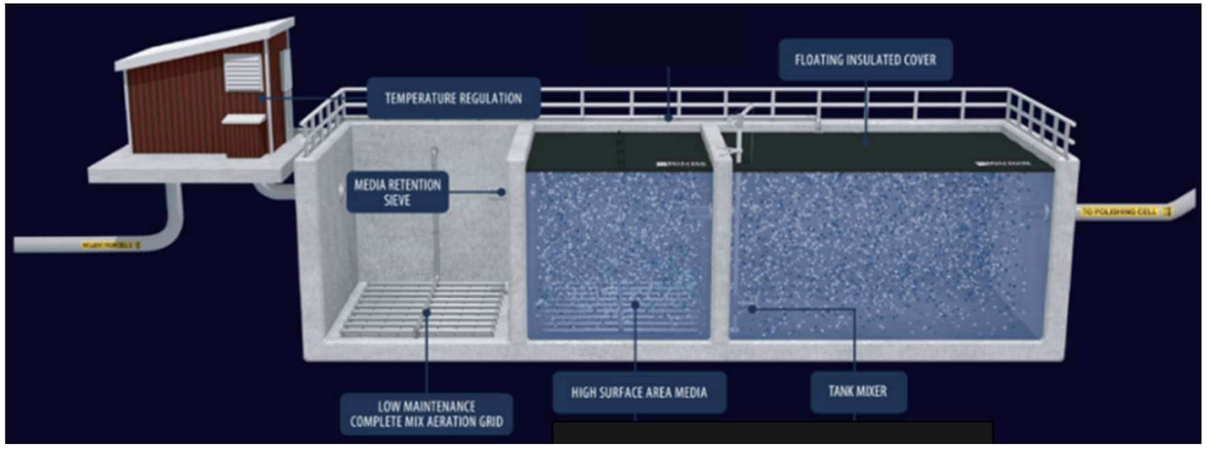
Design Alternatives – Ammonia Removal

- Alternative 2 - Moving Bed Bioreactor (MBBR) – provide aeration in the South Lagoon and construction of a MBBR tank downstream

MBBR Media

MBBR Reactor



NMBBR Layout downstream of South Lagoon (TriplePoint Environmental)

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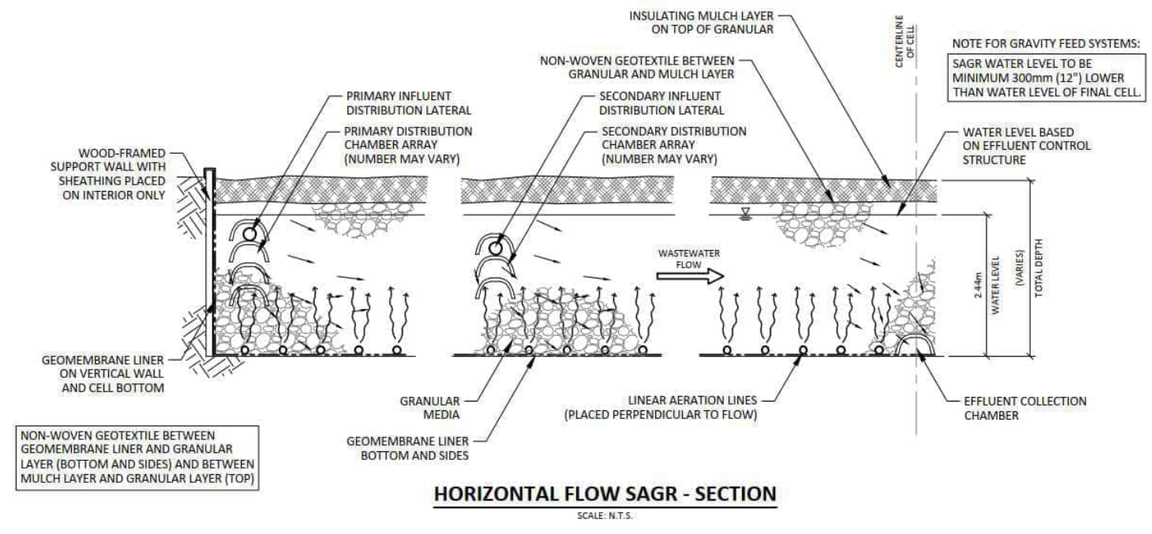
Design Alternatives – Ammonia Removal

- Alternative 3 - Submerged Attached Growth Reactor (SAGR) – provide aeration in the South Lagoon and construction of a below grade aerated system which uses clear stone to host biomass (proprietary design developed by Nexom)

SAGR beds in Brights Grove Ontario



SAGR system installation

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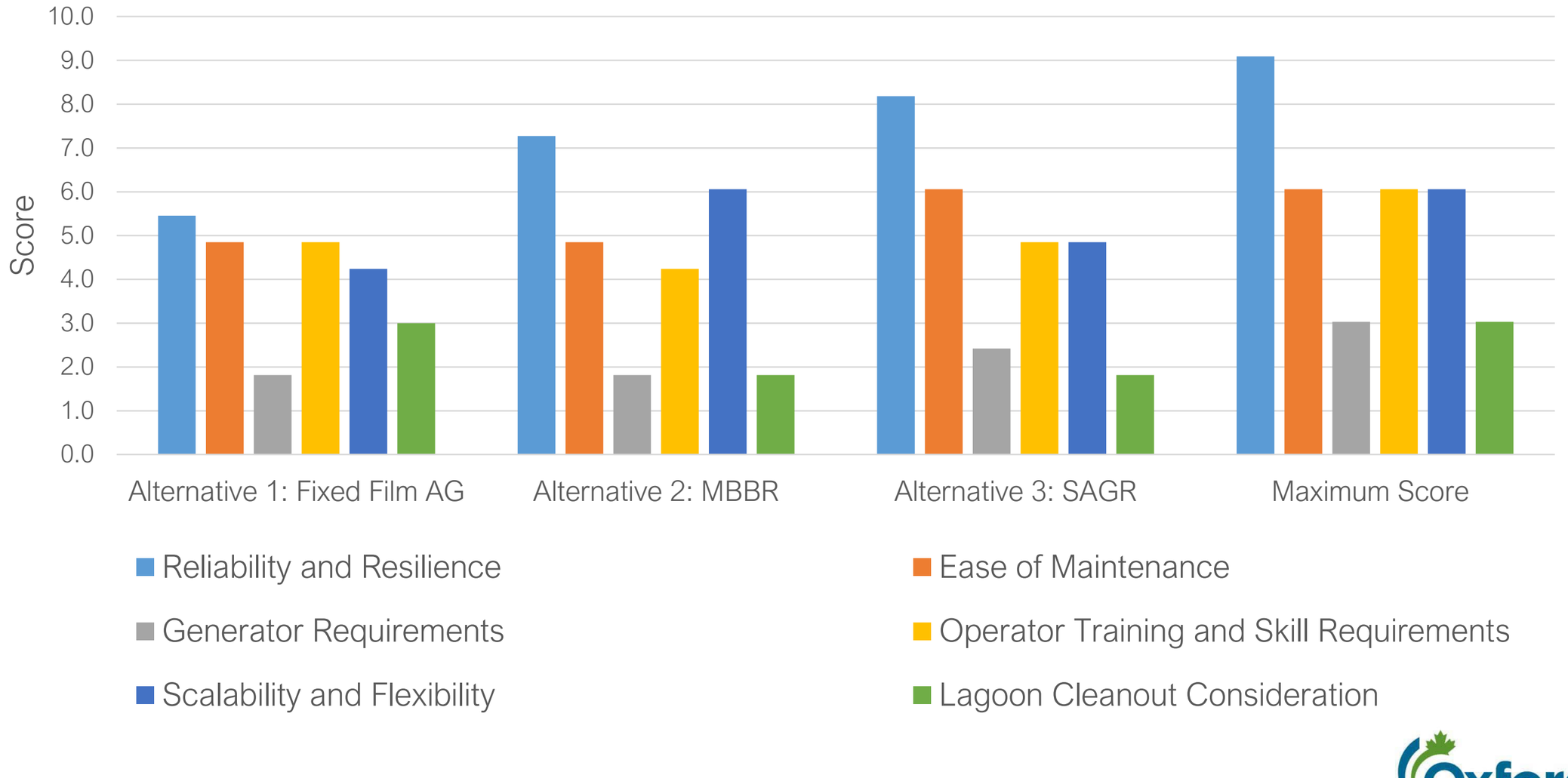
Design Alternative Review

- County Public Works staff were presented with the three design alternatives detailed and reviewed them based on their knowledge and experience in wastewater operations
- Design Alternatives were reviewed based upon the following criteria:
  - OPERATIONAL CONSIDERATIONS - Reliability and Resilience - System's ability to maintain performance under varying conditions and loads/Ease of Maintenance - Frequency and complexity required to maintain/Generator Requirements/Operator Training and Skill Requirements/Scalability and Flexibility for future expansion /Lagoon Cleanout
  - ECONOMIC CONSIDERATIONS - Capital Costs/Operational and Maintained (O&M) Cost/Funding Eligibility
  - ENVIRONMENTAL CONSIDERATIONS - Energy Efficiency/Footprint and Land Use/ Greenhouse Gas(GHG) Emissions/ Effluent Quality and Compliance/ Sludge Generation/Protection of Water Supply
  - SOCIAL & CULTURAL CONSIDERATIONS – Community acceptance/Noise and Odor Control /Health and Safety/Alignment with Community Values /Indigenous Considerations/Cultural Heritage and Aesthetic Impact/Economic Benefit to the County

Operational Considerations



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Design Alternative Costing

- Class 5 ASTM E 2516 Cost Estimate Classification System
  - 0-2% design completion stage
  - Anticipated accuracy is -30% to+50%

Component	ALTERNATIVES		
	1: Fixed Film Attached Growth	2: MBBR	3: SAGR
Process Equipment	$8,570,000	$9,100,000	$11,330,000
New Filter Building	$2,100,000	$2,100,000	$2,100,000
New Lagoon Construction	$4,000,000	$4,000,000	$4,000,000
Contractor Overhead (10%)	$1,470,000	$1,520,000	$1,743,000
Total Construction	$16,140,000	$16,720,000	$19,173,000
Engineering (9-14%)	$1,750,000	$1,750,000	$1,750,000
Total	$17,890,000	$18,470,000	$20,923,000

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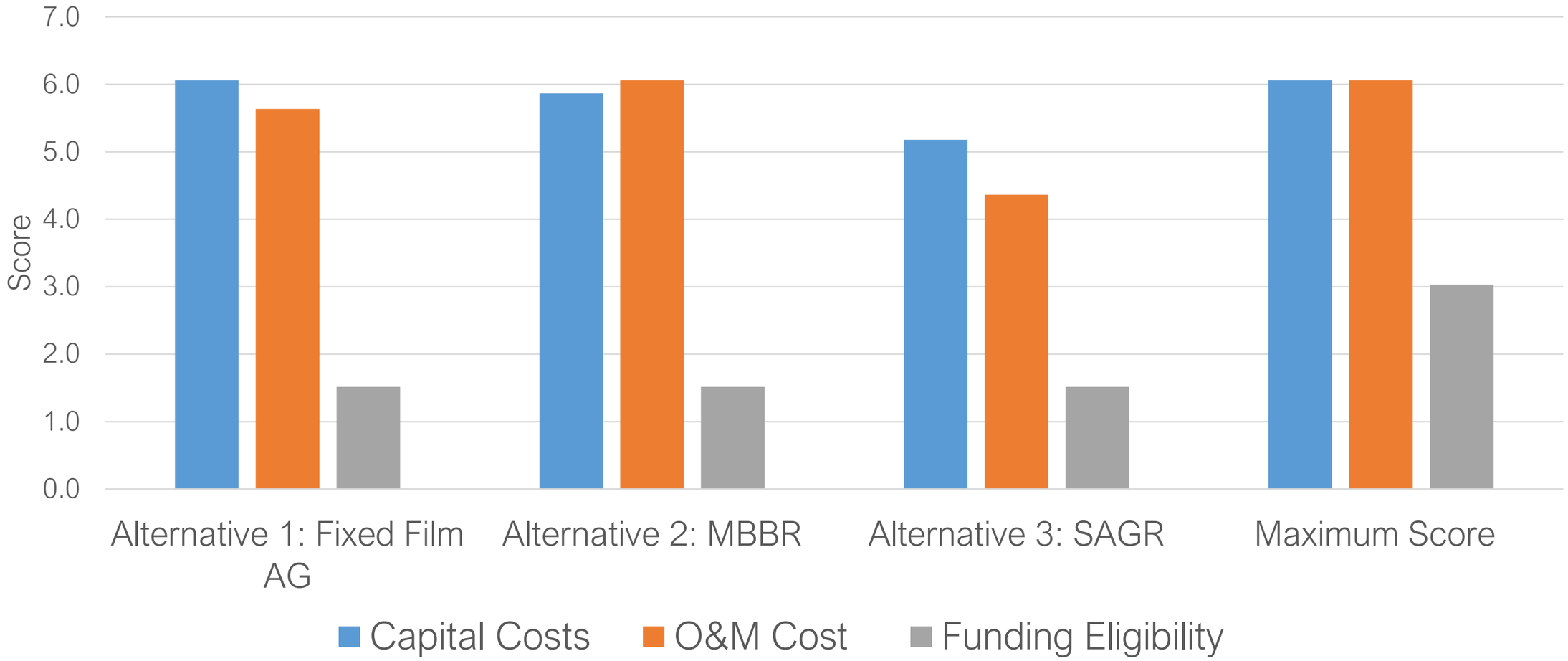
Economic Considerations



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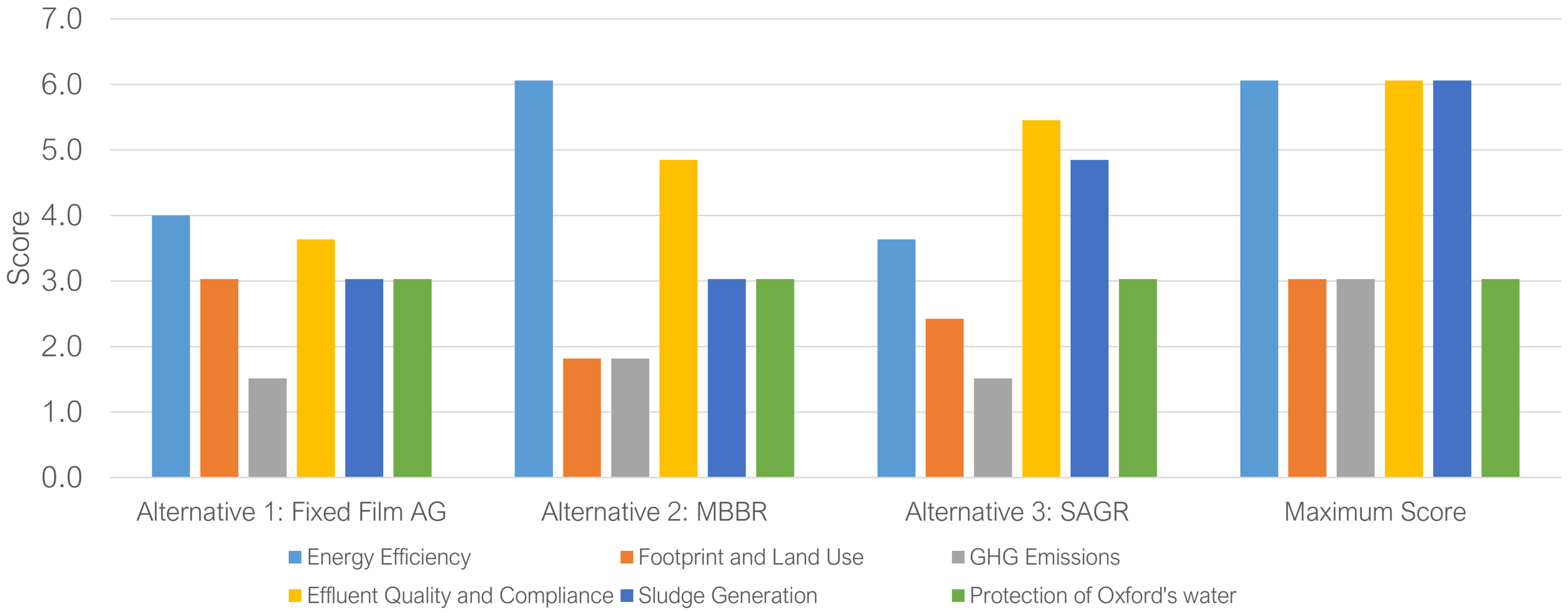
Environmental Considerations



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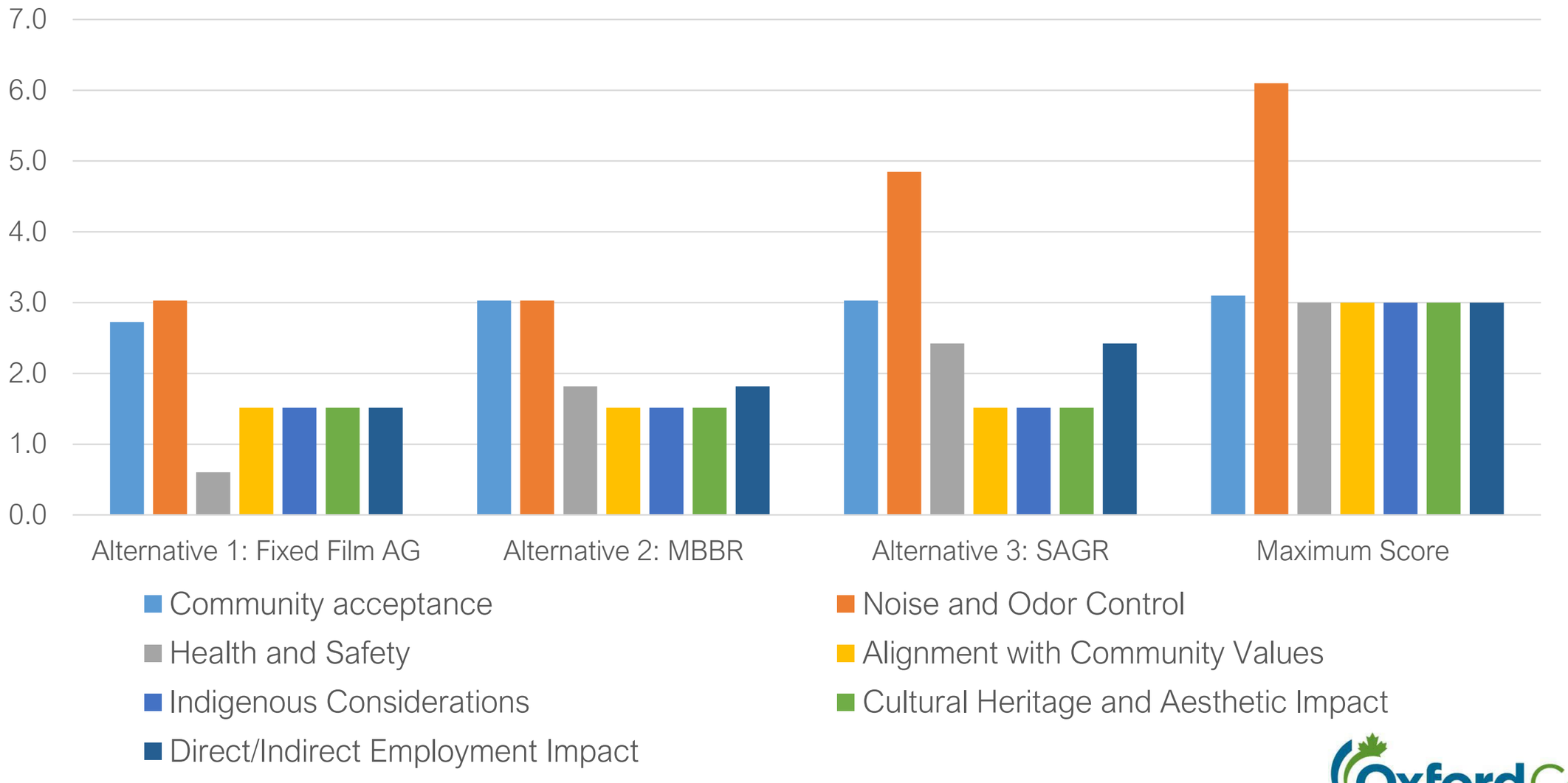
Social and Cultural Considerations



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Design Alternative Comparison

Parameter	Weighting	Alternative		
		1: Fixed Film Attached Growth	2: MBBR	3: SAGR
OPERATIONAL CONSIDERATIONS	33.3	24.2	26.1	28.2
ECONOMIC CONSIDERATIONS	15.2	13.2	13.4	11.1
ENVIRONMENTAL CONSIDERATIONS	27.3	18.2	20.6	20.9
SOCIAL & CULTURAL CONSIDERATIONS	24.2	12.4	14.2	17.3
TOTAL	100	68.1	74.4	77.4
RANKING		3	2	1

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Preliminary Selection of Design Alternative

- SAGR scored the best of the three options in the Operational, Environmental and Implementation Categories
- Based on the County review, the following is the preferred ranking of design alternatives for Ammonia removal:
    1. Alternative 3: SAGR
    2. Alternative 2: MBBR
    3. Alternative 1: Fixed Film AG
- Based on the analysis undertaken, SAGR technology has been selected as the ammonia removal technology for the expansion of the Norwich WWTP

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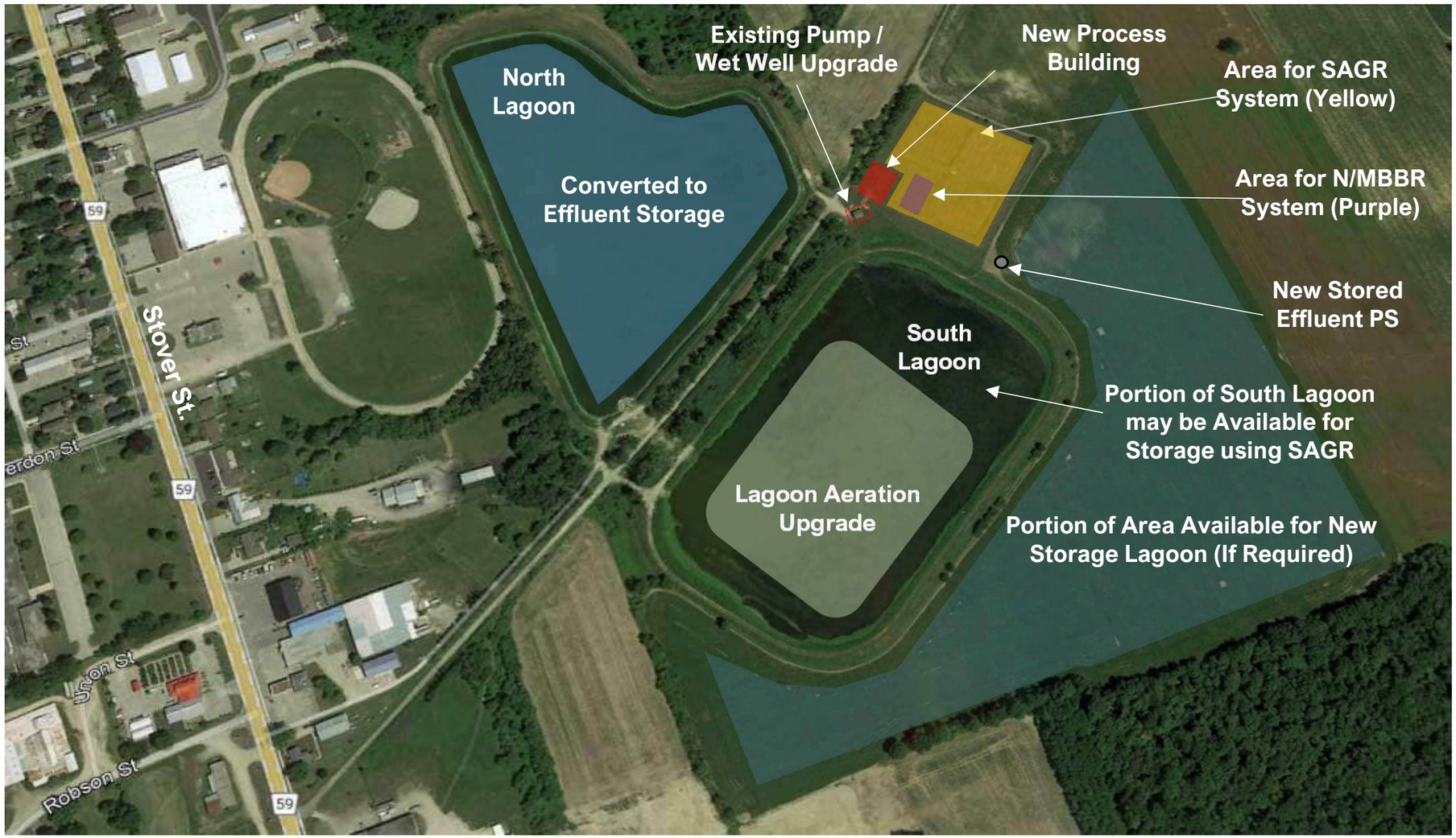
Proposed Design Concept



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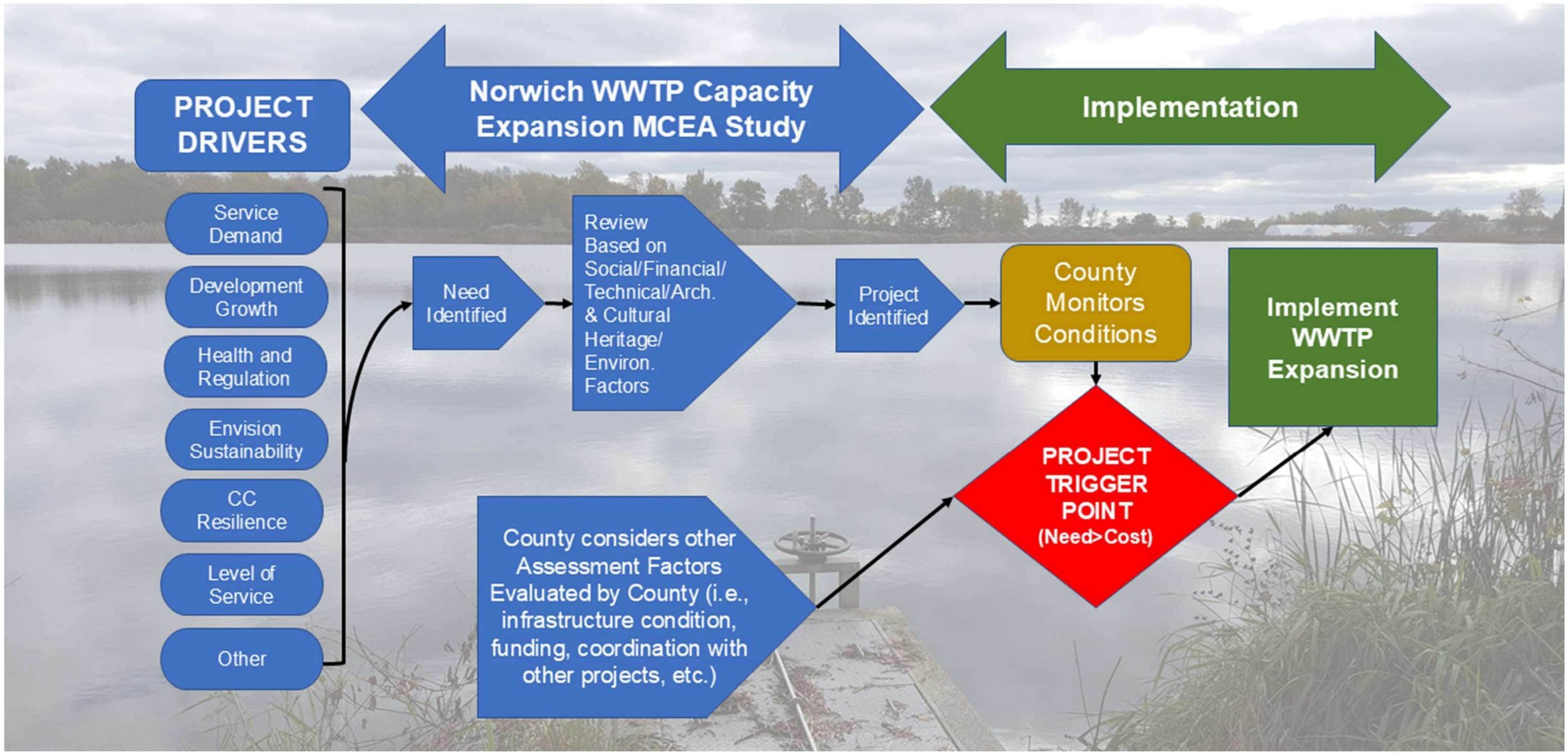
Project Implementation



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Next Steps

- RVA/County team will review feedback from PCC#2 and any public, agency and Aboriginal feedback received
- County will confirm Design Alternative, and an Environmental Study Report (ESR) will be prepared and filed (expected in January 2025)
- 30-day Review period for ESR will commence on filing
- RVA/County team will address comments received during ESR period
- Provided no Section 16 order request to the MECP is filed (to prevent, mitigate or remedy adverse impacts on the existing Aboriginal and treaty rights) during review period, the MCEA process is considered complete
- County can then implement project when an appropriate trigger point is reached

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Questions?

Thank you for attending!

We would appreciate feedback from PCC#2

by December 20, 2024

- Submit your comments via email or phone
- Leave a comment or question for the study team on Speak Up, Oxford

www.speakup.oxfordcounty.ca/norwich-wwtp

Harry Goossens, P.Eng.
Project Engineer
Oxford County
519-533-8161
hgoossens@oxfordcounty.ca

John Tyrrell, M.Sc.(Eng.), P.Eng.
Regional Manager
R.V. Anderson Associates Limited
519-681-9916 ext. 5038
jtyrrell@rvanderson.com

Oxford County
Growing stronger together

PCC # 2
Notes

R.V. Anderson Associates Limited
557 Southdale Road East, Suite 200
London ON N6E 1A2 Canada
T 519 681 9916 F 855 833 4022
rvanderson.com

MEMORANDUM

To:	File	**Date:**	December 12, 2024
From:	John Tyrrell	**Project No.:**	215673
Subject:	Notes from PCC # 2		

1. PCC#2 was held through Speak up Oxford on December 12, 2024, for the Norwich Wastewater Treatment Plant Capacity Expansion Municipal Class Environmental Assessment. The posted hours were from 6:00 PM to 8:00 PM.
2. In attendance for proponents were:

Oxford County	R.V. Anderson Associates Limited
Don Ford – Manager of Water and Wastewater Harry Goossens – Project Manager Jason Kreitzer - Supervisor, Wastewater Operations	Project Manager – John Tyrrell

3. Present at the meeting were:
   - Jim Palmer- Mayor of Norwich; and
   - Amy Hartley – Norwich Development Planner.
4. Participants were let into the meeting for 6 PM and the presentation began at approximately 6:05 PM. Harry Goossens commenced the meeting and John Tyrrell undertook the presentation (see attached). The presentation concluded at approximately 6:47 PM. The presentation was recorded by the County.
5. Questions from the Presentation
   a. Mayor Palmer

      Q1: Does the proposed treatment system reuse the ammonia and phosphorus.
      A1: Ammonia and phosphorus are captured by the bacteria which consume them and become part of the biosolids that reside in the lagoon. The biosolids are recovered from the lagoon periodically and through regulation are reused if suitable in land application as fertilizer.

      Q2: Is there are preferred location for the additional lagoon storage required.
      A2: The Class EA has determined that there should be sufficient room on site south of the South Lagoon for storage. The location and configuration of the additional lagoon storage will be determined during detailed design with the intent of minimizing its footprint and the need for pumping to outlet or to treatment.

6. The Presentation and Q&A session was an hour in length.
7. County and RVA staff remained available to respond to individual questions following the formal Presentation and Q&A session until 7:20 PM.
8. The meeting concluded at 7:20 PM.
9. Comments received via the electronic QR Code provided will be reviewed separately.

Memo Prepared by:

John Tyrrell, M.Sc.(Eng.), P.Eng.
Project Manager

Attachments:

#	Attachment
1	PIC Notice
2	PIC # 2 Presentation

PCC # 2 NOTICE

(previously attached)

APPENDIX 1-5

Responses Received

Agency Responses

John Tyrrell

From: Badali, Mark (MECP) <Mark.Badali1@ontario.ca>
Sent: April 23, 2021 10:32 AM
To: Jesse Keith
Cc: John Tyrrell; Don Ford; Melissa Abercrombie; Reuben Davis
Subject: RE: Municipal Class EA Study - Norwich WWTP Upgrades

Hi Jesse,

Based on our review of the draft Notice of Commencement and other information provided about the Norwich WWTP Upgrades Schedule C MCEA, the ministry recommends that the following communities be engaged as they may hold Aboriginal/Treaty rights in the area or have an interest in the project:

- Mississaugas of the Credit First Nation
- Six Nations (both Elected Council and Haudenosaunee Confederacy Chiefs Council)

We encourage the proponent to also reach out to any other Indigenous communities that may have an interest in the project. Please be aware that the above community list may change should new information on project impacts and/or communities' areas of interest become available.

We will reconfirm this list in a formal Letter of Acknowledgement upon receipt of the finalized Notice and Project Information Form (please send to eanotification.swregion@ontario.ca, as you had noted).

Please do not hesitate to contact me if there is any additional information I can provide or if you would like to discuss the above guidance.

Best regards,

Mark Badali (he/him)
Environmental Resource Planner & EA Coordinator – Southwest Region
Project Review Unit | Environmental Assessment Branch
Ontario Ministry of the Environment, Conservation and Parks
Mark.Badali1@ontario.ca | (416) 457-2155

From: Jesse Keith <jkeith@oxfordcounty.ca>
Sent: April 20, 2021 9:06 AM
To: Badali, Mark (MECP) <Mark.Badali1@ontario.ca>
Cc: John Tyrrell (jtyrrell@rvanderson.com) <jtyrrell@rvanderson.com>; Don Ford <dford@oxfordcounty.ca>; Melissa Abercrombie <mabercrombie@oxfordcounty.ca>; Reuben Davis <rdavis@oxfordcounty.ca>
Subject: FW: Municipal Class EA Study - Norwich WWTP Upgrades

Hi Mark,

I received Barb's auto reply stating that she has retired. It would be greatly appreciated if you can review the email to MECP below & associated attachments at your earliest availability.

Thanks Kindly,

JESSE KEITH, P. ENG. | **Project Engineer, Public Works**
OXFORD COUNTY | 21 Reeve St., PO Box 1614, Woodstock, ON, N4S 7Y3
WWW.OXFORDCOUNTY.CA | T 519.539.9800 / 1-800-755-0394, ext 3194
M 519.535.8473

From: Slattery, Barbara (MECP) [mailto:barbara.slattery@ontario.ca]
Sent: April-13-21 9:14 AM
To: Jesse Keith <jkeith@oxfordcounty.ca>
Subject: Automatic reply: Municipal Class EA Study - Norwich WWTP Upgrades

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.

Hello,

I have retired from the Ministry effective March 31, 2021. I hope that over the years I have been able to answer your questions and assist you with your work. It has been my pleasure to do my part in our shared commitment to environmental protection and stewardship.

If you have emailed me about a file in the ministry's SWR, please note that Mark Badali is the REAC for the next 18 months. If you have emailed me about a file in the ministry's WCR, please note that Joan Del Villar Cuicas is the REAC for the next 18 months.

I wish you and your loved ones good health, happiness and success in all your endeavours.

Barb Slattery

From: Jesse Keith
Sent: April-13-21 9:13 AM
To: Slattery, Barbara (MECP) <barbara.slattery@ontario.ca>
Cc: John Tyrrell (jtyrrell@rvanderson.com) <jtyrrell@rvanderson.com>; Don Ford <dford@oxfordcounty.ca>; Melissa Abercrombie <mabercrombie@oxfordcounty.ca>; Reuben Davis <rdavis@oxfordcounty.ca>
Subject: Municipal Class EA Study - Norwich WWTP Upgrades

Hello Barb,

I hope you are doing well. Oxford County is commencing a Schedule 'C' Municipal Class EA Study to determine the preferred approach for upgrading the Norwich WWTP to meet the wastewater treatment needs of the community within the 25-year planning horizon. As per our Oxford County protocol and attached enquiry letter I am asking that MECP reconfirm the appropriate Indigenous Communities which require interest-based consultation for this study, and whether you are aware of any asserted potential impacts to Aboriginal or treaty rights which might arise from this study project.

A Draft Notice of Study Commencement with brief backgrounder is also attached for your information and comment. Once we hear back from you, the Notice will be finalized and we will submit it along with the 'Project Information Form' to eanotification.swregion@ontario.ca

Your assistance with fulfilling this request at your earliest availability would be greatly appreciated.

Best Regards,

JESSE KEITH, P. ENG. | **Project Engineer, Public Works**
OXFORD COUNTY | 21 Reeve St., PO Box 1614, Woodstock, ON, N4S 7Y3
WWW.OXFORDCOUNTY.CA | T 519.539.9800 / 1-800-755-0394, ext 3194
M 519.535.8473

John Tyrrell

From: Environmental Permissions (MECP) <enviropermissions@ontario.ca>
Sent: May 18, 2021 4:31 PM
To: Connor MacIsaac
Cc: jkeith@oxfordcounty.ca; John Tyrrell; Tisha Doucette
Subject: RE: Norwich Wastewater Treatment Plant Capacity Expansion Municipal Class EA- Notice of Study Commencement

Hello Connor,

Thank you for your email to the Ministry of Environment, Conservation and Parks (MECP).

This email is to confirm receipt of your electronic submission.

If you have further questions or concerns, please respond to this email or contact us by phone at 416-314-8001 or 1-800-461-6290 (toll free).

Best regards,

Jean-Cyriel Butoyi (On behalf of enviropermissions)
Client Services Representative | Préposé aux services à la clientèle
Client Services and Permissions Branch (CSPB) | Direction des Services à la Clientèle et des Permissions (DSCP)
Ministry of the Environment, Conservation and Parks | Ministère de l'Environnement, de la Protection de la nature et des Parcs
135 St. Clair Avenue West, 1st Floor | 135 Avenue St. Clair Ouest, rez-de-chaussée
Toronto, ON M4V 1P5
Tel: | Tél: **416-314-8001**
Fax: | Télécopieur: **416-314-8452**
Email | Courriel: **Jean-cyriel.Butoyi@ontario.ca**

Ontario

If you have any accommodation needs or require communication supports or alternate formats, please let me know.
Si vous avez des besoins en matière d'adaptation, ou si vous nécessitez des aides à la communication ou des médias substituts, veuillez me le faire savoir.

From: Connor MacIsaac <cmacIsaac@rvanderson.com>
Sent: May 18, 2021 4:28 PM
Cc: jkeith@oxfordcounty.ca; John Tyrrell <JTyrrell@rvanderson.com>; Tisha Doucette <TDoucette@rvanderson.com>
Subject: Norwich Wastewater Treatment Plant Capacity Expansion Municipal Class EA- Notice of Study Commencement

Dear Sir/Madam,

Please disregard my previous message.

On behalf of Oxford County, please find attached the Notice of Study Commencement for the Norwich Wastewater Treatment Plant Capacity Expansion Schedule C Municipal Class EA. The study will investigate alternative wastewater treatment solutions and designs. A webpage for this Environmental Assessment has been set up and all relevant documents will be uploaded including the Notice of Commencement. This webpage can be found here: Norwich WWTP MCEA Study (oxfordcounty.ca).

The project team values the participation of all stakeholders and wishes to ensure that the community's interests and concerns are taken into consideration. Specifically, at this time in the study, we are seeking your input on:

- Contact information and the identification of individuals that represent your agency or group that we should include as a primary contact throughout the study process;
- Description of the existing conditions or sensitivities within the study area as they relate to your interests; and
- Specific issues, concerns and/or expectations that your agency or group may have.

Please contact the project team members listed on the attached notice for further information on this project.

Regards,

RVA IS GROWING!
Our NEW Halton and Halifax offices are now open.

Connor MacIsaac, EPt
Junior Environmental Planner, EA & Approvals
P: (905) 685-5049 ext. 4218
R.V. Anderson Associates Limited
43 Church Street, Suite 104, St. Catharines, ON L2R 7E1

rvanderson.com

John Tyrrell

From:	Badali, Mark (MECP) <Mark.Badali1@ontario.ca>
Sent:	May 18, 2021 4:58 PM
To:	Connor MacIsaac
Cc:	jkeith@oxfordcounty.ca; John Tyrrell; Tisha Doucette; EA Notices to SWRegion (MECP)
Subject:	RE: Norwich Wastewater Treatment Plant Capacity Expansion Municipal Class EA- Notice of Study Commencement
Attachments:	Instructions for Providing Class EA Notices to the Ministry of the Environment Conservation and Parks.pdf

Thank you for your email.

As of May 1, 2018, the MECP has a new mandatory notification procedure for providing Class EA notices to the MECP. Per our notification procedures: Notices of Commencement, Completion, Addendum and Statements of Completion when applicable are required to be sent to the appropriate MECP regional email address, and other notices such as notices of public information centres can either be sent to the regional email address or directly to the Regional Environmental Assessment Coordinator who is assigned to your project. Please review the attached document and re-submit your notice to the appropriate MECP Regional Email address. Instructions on how to determine the appropriate email address are included in the document.

Moving forward, please do not send notices to other MECP contacts besides the appropriate Regional Email address and the appropriate Regional Environmental Assessment Coordinator. The reason MECP implemented the regional email address notification procedure is to create certainty for proponents/consultants on where to send notices and to avoid situations where proponents send notices to multiple contacts in the MECP which complicates internal processes unnecessarily.

Thank you,

Mark Badali (he/him)
Environmental Resource Planner & EA Coordinator – Southwest Region
Project Review Unit | Environmental Assessment Branch
Ontario Ministry of the Environment, Conservation and Parks
Mark.Badali1@ontario.ca | (416) 457-2155

From: Connor MacIsaac <cmacIsaac@rvanderson.com>
Sent: May 18, 2021 4:28 PM
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Regards,

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R.V. Anderson Associates Limited
43 Church Street, Suite 104, St. Catharines, ON L2R 7E1
rvanderson.com

Ministry of the Environment, Conservation and Parks

Environmental Assessment Branch

1st Floor
135 St. Clair Avenue W
Toronto ON M4V 1P5
Tel.: 416 314-8001
Fax.: 416 314-8452

Ministère de l'Environnement, de la Protection de la nature et des Parcs

Direction des évaluations environnementales

Rez-de-chaussée
135, avenue St. Clair Ouest
Toronto ON M4V 1P5
Tél. : 416 314-8001
Téléc. : 416 314-8452

Ontario

Instructions for Providing Class EA Notices to the Ministry of the Environment, Conservation and Parks

The following protocol for providing Class EA notifications to the Ministry of the Environment, Conservation and Parks is in effect as of **May 1, 2018.** Important information is below. Please read carefully.

You must follow the process described below and submit an electronic version of the Notice and completed Project Information Form to the appropriate Regional EA Notification email address. These email addresses are provided below.

All Notices of Commencement and Completion are to follow this process. Please feel free to pass along this information to your colleagues. Thank you.

Notification Procedure:

The Ministry of the Environment, Conservation and Parks becomes aware of streamlined environmental assessments (e.g., class environmental assessment projects, electricity projects and waste management projects) through notifications by project owners. Notifying the ministry is an important step in the streamlined environmental assessment processes. As part of the ministry's ongoing efforts to improve processes and ensure the ministry has an opportunity to provide input on projects undergoing streamlined environmental assessments, the ministry has established dedicated email accounts in each regional office. These accounts will be used to receive notices as required in your class environmental assessment process along with a new "Project Information Form". As of May 1, 2018, proponents must use this new process.

4 Step Process for Submitting Notices for Streamlined EAs

To submit your notice, you must do the following:

1. **Download and complete the Project Information Form.** (The Form can be found here under "Streamlined EAs". It is an excel spreadsheet with columns that need to be filled out by the proponent. The form has been developed for ease of use (i.e. drop-down pick list for most fields). Instructions on filling out the form are contained in 2 tabs within the form itself).

2. **Create an email. The subject line of your email must include in this order: Project location, Type of streamlined EA, 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

3. **Attach the completed Project Information Form (in excel format) and a copy of your project notice (in PDF format) to the email.**

4. **Send by 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

Notes:

- The hyperlink to the MECP District Officer Locator website, can be used to assist with determining what ministry region your project is located.
- The minimum requirement is to send project initiation and completion notices (and where applicable, Revised Notice of Completion, Notice of Filing of Addendum, Statement of Completion). All other notices (e.g. Notice of PIC/OH) can be sent to the Regional email address but not required.
- If your project is located in more than one ministry region, you need to submit your notices to all appropriate regions.

John Tyrrell

From:	Connor MacIsaac
Sent:	May 18, 2021 7:35 PM
To:	Badali, Mark (MECP)
Cc:	jkeith@oxfordcounty.ca; John Tyrrell; Tisha Doucette; EA Notices to SWRegion (MECP)
Subject:	RE: Norwich Wastewater Treatment Plant Capacity Expansion Municipal Class EA- Notice of Study Commencement
Attachments:	FW: Township of Norwich, MEA Class EA, Norwich Wastewater Treatment Plant Capacity Expansion

Hi Mark,

Please accept my apologies for any confusion that including additional MECP staff in the Notice of Commencement distribution may have caused. Thank you for the clarification that other MECP staff are not to be distributed Municipal Class EA Notices. Please see attached the Notice of Commencement distributed to the Southwestern Regional MECP Notification email.

Going forward we will ensure that all other notices for the project will be sent to the regional email address only, or directly to the Regional Environmental Assessment Coordinator, should one be assigned to the project. All other MECP staff have been removed from our project stakeholder list and will not receive further notices to avoid any additional confusion.

Thanks,

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Our NEW Halton and Halifax offices are now open.

Connor MacIsaac, EPt
Junior Environmental Planner, EA & Approvals
P: (905) 685-5049 ext. 4218

R.V. Anderson Associates Limited
43 Church Street, Suite 104, St. Catharines, ON L2R 7E1
rvanderson.com

From: Badali, Mark (MECP) <Mark.Badali1@ontario.ca>
Sent: May 18, 2021 4:58 PM
To: Connor MacIsaac <cmacIsaac@rvanderson.com>
Cc: jkeith@oxfordcounty.ca; John Tyrrell <JTyrrell@rvanderson.com>; Tisha Doucette <TDoucette@rvanderson.com>; EA Notices to SWRegion (MECP) <eanotification.swregion@ontario.ca>
Subject: RE: Norwich Wastewater Treatment Plant Capacity Expansion Municipal Class EA- Notice of Study Commencement

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Email address. Instructions on how to determine the appropriate email address are included in the document.

Moving forward, please do not send notices to other MECP contacts besides the appropriate Regional Email address and the appropriate Regional Environmental Assessment Coordinator. The reason MECP implemented the regional email address notification procedure is to create certainty for proponents/consultants on where to send notices and to avoid situations where proponents send notices to multiple contacts in the MECP which complicates internal processes unnecessarily.

Thank you,

Mark Badali (he/him)
Environmental Resource Planner & EA Coordinator – Southwest Region
Project Review Unit | Environmental Assessment Branch
Ontario Ministry of the Environment, Conservation and Parks
Mark.Badali1@ontario.ca | (416) 457-2155

From: Connor MacIsaac <cmacIsaac@rvanderson.com>
Sent: May 18, 2021 4:28 PM
Cc: jkeith@oxfordcounty.ca; John Tyrrell <JTyrrell@rvanderson.com>; Tisha Doucette <TDoucette@rvanderson.com>
Subject: Norwich Wastewater Treatment Plant Capacity Expansion Municipal Class EA- Notice of Study Commencement

Dear Sir/Madam,

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The project team values the participation of all stakeholders and wishes to ensure that the community's interests and concerns are taken into consideration. Specifically, at this time in the study, we are seeking your input on:

- Contact information and the identification of individuals that represent your agency or group that we should include as a primary contact throughout the study process;
- Description of the existing conditions or sensitivities within the study area as they relate to your interests; and
- Specific issues, concerns and/or expectations that your agency or group may have.

Please contact the project team members listed on the attached notice for further information on this project.

Regards,

Connor MacIsaac, EPt
Junior Environmental Planner, EA & Approvals
P: (905) 685-5049 ext. 4218

R.V. Anderson Associates Limited
43 Church Street, Suite 104, St. Catharines, ON L2R 7E1
rvanderson.com

John Tyrrell

From:	Connor MacIsaac
Sent:	May 18, 2021 4:28 PM
Cc:	jkeith@oxfordcounty.ca; John Tyrrell; Tisha Doucette
Subject:	Norwich Wastewater Treatment Plant Capacity Expansion Municipal Class EA- Notice of Study Commencement
Attachments:	TechnicalAgency-NoticeofStudyCommencement-Combined-vf.pdf

Dear Sir/Madam,

Please disregard my previous message.

On behalf of Oxford County, please find attached the Notice of Study Commencement for the Norwich Wastewater Treatment Plant Capacity Expansion Schedule C Municipal Class EA. The study will investigate alternative wastewater treatment solutions and designs. A webpage for this Environmental Assessment has been set up and all relevant documents will be uploaded including the Notice of Commencement. This webpage can be found here: Norwich WWTP MCEA Study (oxfordcounty.ca).

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- Description of the existing conditions or sensitivities within the study area as they relate to your interests; and
- Specific issues, concerns and/or expectations that your agency or group may have.

Please contact the project team members listed on the attached notice for further information on this project.

Regards,

Connor MacIsaac, EPt
Junior Environmental Planner, EA & Approvals
P: (905) 685-5049 ext. 4218

R.V. Anderson Associates Limited
43 Church Street, Suite 104, St. Catharines, ON L2R 7E1
rvanderson.com

John Tyrrell

From:	MNRF Ayl Planners (MNRF) <MNRF.Ayl.Planners@ontario.ca>
Sent:	June 4, 2021 11:21 AM
To:	jkeith@oxfordcounty.ca; John Tyrrell
Cc:	Connor MacIsaac; Tisha Doucette
Subject:	RE: Norwich Wastewater Treatment Plant Capacity Expansion Municipal Class EA- Notice of Study Commencement
Attachments:	image005.wmz; TechnicalAgency-NoticeofStudyCommencement-Combined-vf.pdf; NHGuide_MNRF_2019-04-01.pdf
Categories:	Technical Agency Comments, Filed by Newforma

Ministry of Natural Resources and Forestry

Ministère des Richesses naturelles et des Forêts

Ontario

615 John Street North
Aylmer, ON N5H 2S8
Tel: 519-773-9241
Fax: 519-773-9014

615, rue John Nord
Aylmer ON N5H 2S8
Tél: 519-773-9241
Téléc: 519-773-9014

June 4, 2021

Jesse Keith, P.Eng., Project Manager
Oxford County Public Works
1-800-755-0394 ext.3194
jkeith@oxfordcounty.ca

John Tyrrell, M.Sc. (Eng.), P.Eng., Project Manager
R.V. Anderson Associates Limited
519-681-9916 ext. 5038
jtyrrell@rvanderson.com

Subject: Norwich Wastewater Treatment Plant Capacity Expansion Municipal Class EA- Notice of Study Commencement

The Ministry of Natural Resources and Forestry (MNRF) received the notice for the Norwich Wastewater Treatment Plant Capacity Expansion project. Thank you for circulating this information to our office, however, please note that we have not completed a screening of natural heritage or other resource values for the project at this time. Please also note that it is your responsibility to be aware of and comply with all relevant federal or provincial legislation, municipal by-laws or other agency approvals.

This response provides information to guide you in identifying and assessing natural features and resources as required by applicable policies and legislation, and engaging with the MNRF for advice as needed.

Natural Heritage & Endangered Species Act

In order to provide the most efficient service possible, the attached Natural Heritage Information Request Guide has been developed to assist you with accessing natural heritage data and values from convenient online sources.

It remains the proponent's responsibility to complete a preliminary screening for each project, to obtain available information from multiple sources, to conduct any necessary field studies, and to consider any potential environmental impacts that may result from an activity. We wish to emphasize the need for the proponents of development activities to complete screenings prior to contacting the Ministry or other agencies for more detailed technical information and advice.

The Ministry continues to work on updating data housed by Land Information Ontario and the Natural Heritage Information Centre, and ensuring this information is accessible through online resources. Species at risk data is regularly being updated. To ensure access to reliable and up to date information, please contact the Ministry of the Environment, Conservation and Parks at SAROntario@ontario.ca.

Petroleum Wells & Oil, Gas and Salt Resource Act

There may be petroleum wells within the proposed project area. Please consult the Ontario Oil, Gas and Salt Resources Library website (www.ogsrlibrary.com) for the best known data on any wells recorded by MNRF. Please reference the 'Definitions and Terminology Guide' listed in the publications on the Library website in order to better understand the well information available. Any oil and gas wells in your project area are regulated by the *Oil, Gas and Salt Resource Act*, and the supporting regulations and operating standards. If any unanticipated wells are encountered during development of the project, or if the proponent has questions regarding petroleum operations, the proponent should contact the Petroleum Operations Section at POSRecords@ontario.ca or 519-873-4634.

Public Lands Act & Lakes and Rivers Improvement Act

Some projects may be subject to the provisions of the *Public Lands Act* or the *Lakes and Rivers Improvement Act*. Please review the information on MNRF's web pages provided below regarding when an approval is required or not. Please note that many of the authorizations issued under the *Lakes and Rivers Improvement Act* are administered by the local Conservation Authority.

- For more information about the *Public Lands Act*: https://www.ontario.ca/page/crown-land-work-permits
- For more information about the *Lakes and Rivers Improvement Act*: https://www.ontario.ca/document/lakes-and-rivers-improvement-act-administrative-guide

After reviewing the information provided, if you have not identified any of MNRF's interests stated above, there is no need to circulate any subsequent notices to our office.

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

Sincerely,
Karina

Karina Černiavskaja, District Planner
Ministry of Natural Resources and Forestry
Email: MNRF.AyI.Planners@ontario.ca

Ontario

As part of providing accessible customer service, please let me know if you have any accommodation needs or require communication supports or alternate formats.

From: Connor MacIsaac <cmacIsaac@rvanderson.com>
Sent: May-18-21 4:28 PM
Cc: jkeith@oxfordcounty.ca; John Tyrrell <JTyrrell@rvanderson.com>; Tisha Doucette <TDoucette@rvanderson.com>
Subject: Norwich Wastewater Treatment Plant Capacity Expansion Municipal Class EA- Notice of Study Commencement

Dear Sir/Madam,

Please disregard my previous message.

On behalf of Oxford County, please find attached the Notice of Study Commencement for the Norwich Wastewater Treatment Plant Capacity Expansion Schedule C Municipal Class EA. The study will investigate alternative wastewater treatment solutions and designs. A webpage for this Environmental Assessment has been set up and all relevant documents will be uploaded including the Notice of Commencement. This webpage can be found here: Norwich WWTP MCEA Study (oxfordcounty.ca).

The project team values the participation of all stakeholders and wishes to ensure that the community's interests and concerns are taken into consideration. Specifically, at this time in the study, we are seeking your input on:

- Contact information and the identification of individuals that represent your agency or group that we should include as a primary contact throughout the study process;
- Description of the existing conditions or sensitivities within the study area as they relate to your interests; and
- Specific issues, concerns and/or expectations that your agency or group may have.

Please contact the project team members listed on the attached notice for further information on this project.

Regards,

RVA IS GROWING!
Our NEW Halton and Halifax offices are now open.

Connor MacIsaac, EPt
Junior Environmental Planner, EA & Approvals
P: (905) 685-5049 ext. 4218

R.V. Anderson Associates Limited
43 Church Street, Suite 104, St. Catharines, ON L2R 7E1
rvanderson.com

Ministry of Natural Resources and Forestry

Ontario

Natural Heritage Information Request Guide

Regional Operations Division, Ministry of Natural Resources & Forestry

Update – April 1, 2019

Table of Contents

1.0 Background, Purpose and Scope

1.1 Background

The Ministry of Natural Resources and Forestry (MNRF) maintains a substantial amount of natural heritage information. The Government of Ontario is committed to transparency, customer service, and making information more publicly accessible. Access to natural heritage information is critical to informing municipal planning processes, development activities, and other initiatives such as science and research. To make natural heritage information more accessible and better understood, this document consolidates available MNRF natural heritage information and outlines how this information can be accessed.

1.2 Purpose of this Guide

The purpose of this guide is three-fold:

1. To provide a directory of natural heritage information sources available from the MNRF;
2. To reduce wait times for users to access the data, especially considering that much of the information is open and accessible; and
3. To help users efficiently access available data.

It remains the proponent's responsibility to:

- Complete a preliminary screening for their projects,
- Obtain available information from multiple sources,
- Conduct any necessary field studies, and
- Consider any potential environmental impacts that may result from a proposed activity.

To provide the most efficient service possible, proponents should complete natural heritage screenings **prior** to contacting Government of Ontario Ministry offices or other agencies for more detailed technical information and advice. This guide provides detailed information on where and how to access information to screen a study area in advance of consulting with Ministries.

1.3 Scope

MNRF maintains and provides information related to its resource management and land use planning mandate, including natural heritage, fisheries, wildlife, mineral aggregate resources, crown lands, protected lands and more. This information is made available to organizations, private individuals, consultants, and developers through online sources and is often considered under various pieces of legislation or as part of regulatory

approvals and planning processes. This guide has been created to help users navigate the available natural heritage information to support various activities. This guide additionally provides a list of other sources of information beyond MNRF, although it is not intended to be an exhaustive list of available sources.

This guide does not replace the Natural Heritage Reference Manual but is intended to support it. This guide is not intended to circumvent any field studies that may be necessary to document features and assess impacts.

This guide is a resource for proponents during project planning. Reviewing the layers listed in the appendices will enable proponents to prepare for both proponent and government led Environmental Assessments. For projects proposed on crown land, MNRF is the permitting agency and there may be additional initial screening requirements. Further studies may be required depending on the nature and location of the project.

1.4 Audience

The intent of this public guide is to make it easier for the proponents and consultants to access relevant information. This guide will also help internal Ministry staff who are responding to information requests or site screenings.

1.5 Disclaimer

The information available from MNRF and the sources listed below in the appendices should **not be considered as a substitute for site visits and appropriate field surveys.** Generally, information available from MNRF can be regarded as a starting point from which to conduct further field studies, if needed. While this data represents MNRF's best available current information, it is important to note that a lack of information for a site does not mean that additional features and values are not present. There are many areas where MNRF does not currently have information. On-site assessments can better verify site conditions, identify natural features and values and confirm presence of species at risk and/or their habitats.

This guide will be updated from time to time. For a current version of this guide, please contact your local or regional Government of Ontario Ministry office. Up-to-date contact information for Ministry offices can be obtained through the Government of Ontario Employee and Organization Directory, Info-GO, available at http://www.infogo.gov.on.ca/infogo/home.html.

2.0 Data Resources

2.1 Make a Map: Natural Heritage Areas

The MNRF maintains the Make a Natural Heritage Area Map: http://www.gisapplication.lrc.gov.on.ca/mamnh/Index.html?site=MNR_NHLUPS_NaturalHeritage&viewer=NaturalHeritage&locale=en-US which provides public access to natural heritage information without the user needing to have Geographic Information System (GIS) capability. It allows users to view and identify natural heritage features, mark areas of interest, and create and print a custom map directly from the web application. The tool also shows topographic information such as roads, rivers, contours and municipal boundaries.

Make a Natural Heritage Area Map should be consulted as a first step in screening for natural heritage features. This tool does not provide access to all of the MNRF's natural heritage information and some layers may be incomplete.

Users are advised that sensitive information has been removed from the natural areas dataset and the occurrences of species at risk, rare plant communities and wildlife concentration areas has been generalized to a 1-kilometre grid.

The web-based mapping tool displays natural heritage data, including:

- Generalized Species at risk occurrence data (based on a 1-km square grid),
- provincial parks and conservation reserves,
- Areas of Natural and Scientific Interest,
- Wetlands,
- Woodlands, and
- Natural Heritage Information Centre data.

Data cannot be downloaded directly from this web map, however, information included in this application is available digitally through Land Information Ontario: https://www.ontario.ca/page/land-information-ontario (LIO).

2.2 Land Information Ontario (LIO)

Most natural heritage data is publicly available. This data is managed in a large corporate database called the LIO Warehouse and can be discovered through the LIO Metadata Management Tool: https://www.javacoeapp.lrc.gov.on.ca/geonetwork/srv/en/main.home. This tool provides descriptive information about the characteristics, quality and context of the data. Publicly available geospatial data can be downloaded directly from this site.

The LIO Metadata Management Tool helps users to find, assess and access GIS data and houses up to 350 data and information products. Geospatial data are available through this tool, including (but not limited to):

- **Aquatic Resource Area (ARA) data classes:** general fisheries spatial data including water body type, thermal regime and fish species
- **Spawning Area (fish)**
- **Nursery Area (fish)**
- **Nesting Site (birds)**
- **Areas of Natural and Scientific Interest (ANSIs)**
- **Wetlands**
- **Wintering Area (deer, moose, etc.)**
- **Fire (Potential Hazardous Forest Types for Wildland Fire**

Appendix A links MNRF's authoritative, relevant data sets to the location in the LIO Database where the data can be downloaded.

Note that while most data is publicly available, some data may be considered highly sensitive (i.e., Nursery Areas for fish, species at risk observations), and as such, restrictions are in place limiting access to this information.

2.3 Species at Risk

For detailed information on species at risk, please visit Make a Natural Heritage Areas Map or contact the Ministry of Environment, Conservation and Parks at SAROntario@ontario.ca.

2.4 Public Agencies

Ministries, Municipalities and Conservation Authorities may have proposed infrastructure work that requires screening. In these instances, these broader public sector organizations should contact the appropriate Ministry Office to explore more efficient ways to access information and make decisions. This could include entering into data sharing agreements. Please note that many public agencies already have ongoing data sharing agreements in place with LIO and the Natural Heritage Information Centre (NHIC).

2.5 For Additional Information

For information pertaining to corporate data, contact LIO for support by email at lio@ontario.ca or by telephone at 705-755-1878.

For further information pertaining to the NHIC, including data sharing agreements, please email NHICrequests@ontario.ca or call 705-755-2159.

There may be circumstances where a local Government of Ontario office should be consulted for additional information and/or technical advice. For instance, projects proposed on Crown Land should be discussed early in the project planning process with local MNRF District staff.

A listing of District offices can be found on this web page https://www.ontario.ca/page/ministry-natural-resources-and-forestry-regional-and-district-offices

Appendix A: Natural Heritage Mapping Resources

The table below provides users links to maps and GIS data depicting natural heritage. This list is intended to help guide a natural heritage screening exercise. Click in the *Information Source* column for hyperlinks.

Information Source	Theme	Instructions for using this information
Wetland	Significant Wetlands	Use field" WETLAND_SIGNIFICANCE = Evaluated-Provincial" for provincially significant wetlands.
	Coastal Weltands	Use field"COASTAL_IND=Yes" for Coastal Wetlands
	Fish & Wildlife, Wetlands	Support evaluation and identification of habitat and wetlands. Please consult user guide for details. Consult the User Guide for more information.
Make a Natural Heritage Areas Map	Endangered and Threatened Species	Turn on the NHIC 1 km Grid square and use the Find… tool to query for species intersecting the grid. Consult the User guide for more information.
	Fish & Wildlife Habitat	Turn on the NHIC 1 km Grid square and use the Find… tool to query for species intersecting the grid. Consult the User guide for more information.
Provincially Tracked Species 1KM Grid	Endangered and Threatened Species	Use field "SARO_STAUS= 'Endangered' or SARO_STATUS='Threatened'" for Endangered and Threatened species.
Wintering Area	Wildlife Habitat	Supports evaluation and identification of wildlife habitat.
Aquatic Feeding Area	Wildlife Habitat	Supports evaluation and identification of wildlife habitat.
Breeding Area	Wildlife Habitat	Supports evaluation and identification of wildlife habitat.
Calving Fawning Site	Wildlife Habitat	Supports evaluation and identification of wildlife habitat.

Information Source	Theme	Instructions for using this information
Den Site	Wildlife Habitat	Supports evaluation and identification of wildlife habitat.
Feeding Area, Wildlife	Wildlife Habitat	Supports evaluation and identification of wildlife habitat.
Habitat Planning Range	Wildlife Habitat	Supports evaluation and identification of wildlife habitat.
Mineral Lick	Wildlife Habitat	Supports evaluation and identification of wildlife habitat.
Nesting Site	Wildlife Habitat	Supports evaluation and identification of wildlife habitat.
Nursery Area, Wildlife	Wildlife Habitat	Supports evaluation and identification of wildlife habitat.
Resting Area	Wildlife Habitat	Supports evaluation and identification of wildlife habitat.
Staging Area, Wildlife	Wildlife Habitat	Supports evaluation and identification of wildlife habitat.
Travel Corridor, Wildlife	Wildlife Habitat	Supports evaluation and identification of wildlife habitat.
ANSI	Significant Areas of Natural and Scientific Interest	Use the field "ANSI_SIGNIFICANCE = Provincial" if you need to view only Provincially Significant ANSI. Consult the User Guide for more information.
Wooded Area	Woodlands	Supports evaluation and identification of significant woodlands and wildlife habitat
ARA Line Segment	Fish Species and Habitat	Supports evaluation and identification of fish habitat by indicating fish species present in the water feature. Consult the User Guide for more information.

Information Source	Theme	Instructions for using this information
ARA Polygon Segment	Fish Species and Habitat	Supports evaluation and identification of fish habitat by indicating fish species present in the water feature. Consult the User Guide for more information.
	At Capacity Lake Trout Lakes	Use field" AT_DEVELOPMENT_CAPACITY_IND = Yes" for designated at capacity lakes
Aquatic Resource Area (ARA) Survey Point	Fish Species	Supports evaluation and identification of fish habitat by indicating fish species present at that location. Consult the User Guide for more information.
Spawning Area	Fish Habitat	Supports evaluation and identification of fish habitat
Nursery Area, Fish	Fish Habitat	Supports evaluation and identification of fish habitat
Staging Area, Fish	Fish Habitat	Supports evaluation and identification of fish habitat
Feeding Area, Fish	Fish Habitat	Supports evaluation and identification of fish habitat
Travel Corridor Fish	Fish Habitat	Supports evaluation and identification of fish habitat
Ecoregion	Ecoregions	Used to determine what ecoregion covers your area
Natural heritage System Area	Natural Heritage System	Identifies Natural Heritage System Areas within the Greenbelt Plan, the Oak Ridges Moraine Conservation Plan, the Niagara Escarpment Plan and the Growth Plan for the Greater Golden Horseshoe. Consult this guide for more information.
Breeding Bird Atlas	Wildlife Habitat	Provides additional information on the location of Breeding Birds
eBird	Wildlife Habitat	Provides additional information on bird sightings

Information Source	Theme	Instructions for using this information
Ontario Reptile and Amphibian Atlas	Wildlife Habitat	Provides additional information on Reptile and Amphibian sightings
iNaturalist	Fish & Wildlife Habitat	Provides additional information on fish & wildlife sightings

Appendix B: Natural Heritage Information Resources

The table below provides users links to Natural Heritage policies and documentation that should be referenced when conducting a natural heritage screening exercise. Click in the *Information Source* column for hyperlinks

Information Source	Theme	Description
https://www.ontario.ca/document/water-work-timing-window-guidelines	Water Work Timing windows	An information source that can be used to determine in-water work timing windows
Inland Lakes designated for Lake Trout management	Fish Habitat	A list of lakes in Ontario that are managed as Lake Trout lakes
Significant wildlife habitat guide	Wildlife Habitat	Provides detailed information on the identification, description and prioritization of significant wildlife habitat.
Significant wildlife habitat ecoregional criteria schedules: Ecoregion 6E	Wildlife Habitat	Provides detailed information on the description, criteria, information sources and assessment methods for significant wildlife habitat in Ecoregion 6E
Significant wildlife habitat ecoregional criteria schedules: Ecoregion 7E	Wildlife Habitat	Provides detailed information on the description, criteria, information sources and assessment methods for significant wildlife habitat in Ecoregion 7E
Significant wildlife habitat ecoregional criteria schedules: Ecoregion 5E	Wildlife Habitat	Provides detailed information on the description, criteria, information sources and assessment methods for significant wildlife habitat in Ecoregion 5E
Significant wildlife habitat ecoregional criteria schedules: Ecoregion 3E	Wildlife Habitat	Provides detailed information on the description, criteria, information sources and assessment methods for significant wildlife habitat in Ecoregion 3E
Significant wildlife habitat ecoregional criteria schedules: Ecoregion 3W	Wildlife Habitat	Provides detailed information on the description, criteria, information sources and assessment methods for significant wildlife habitat in Ecoregion 3E
Significant wildlife habitat ecoregional criteria schedules: Ecoregion 4E	Wildlife Habitat	Provides detailed information on the description, criteria, information sources and assessment methods for significant wildlife habitat in Ecoregion 3E
Significant wildlife habitat mitigation support tool	Wildlife Habitat	Provides advice and recommendations on how to mitigate wildlife habitat during a development process
Natural heritage reference manual	Natural Heritage	Provides guidance for implementing the natural heritage policies of the Provincial policy Statement

Appendix C: Other information Sources

The table below provides users links to other data and resources that could be relevant when screening for development. Click in the *Information Source* column for hyperlinks

Information Source	Theme
Crown Land Use Policy Atlas	Crown Land
Make a Topographic Map	Base Data Mapping
Pits and Quarries	Aggregates
Aggregate resources policies and procedures	Aggregates
Aggregate resources study	Aggregates
Exploring for and extracting oil, natural gas and salt resources	Oil, Gas and Salt Resources
Petroleum wells	Oil, Gas and Salt Resources
Great Lakes – St. Lawrence River System and Large inland lakes: Technical Guides for flooding, erosion and dynamic beaches in support of natural hazards policies 3.1 of the provincial policy statement	Hazards
Adaptive Management of Stream Corridors in Ontario including Natural Hazards Technical Guides	Hazards
The Wildland Fire Risk Assessment and Mitigation Reference Manual	Hazards

Information Source	Theme
Public Lands Act	Crown Land
Crown land work permits	Crown Land
Aggregate resources	Aggregates
Lakes and Rivers Improvement Act	Crown Land
Licence to collect fish for scientific or education purposes	Fish
https://www.ontario.ca/search/data-catalogue	Base Data mapping
Fire - Potential Hazardous Forest Types for Wildland Fire	Hazards
MNR Region	Base Data mapping
MNR District	Base Data mapping
GeoBase	Base Data mapping
Mining Lands Administration System (MLAS) – Map Viewer	Mines
Geoconnections	Base Data mapping

Information Source	Theme
Ministry of Northern Development and Mines Mapping and link to Geology Ontario databases	Mines
Ministry of Environment, Conservation and Parks Data	Environment
National Air Photo Library	Aerial photos
Archives Ontario Aerial Photography	Aerial photos
GEOGratis	Base Data mapping
County Soils Maps	Base Data mapping
Forest Fire Info Map	Hazards
Agricultural Information Atlas	Agriculture
Crown Land Automated Internet Mapping System	Mines
COSINE	Base Data mapping
GEONAME	Base Data mapping
Government-wide data inventory	Base Data mapping

John Tyrrell

From:	Quinten Wilson <quinten.wilson@execulinktelecom.ca>
Sent:	May 19, 2021 11:30 AM
To:	Connor MacIsaac; 'planning@execulinktelecom.ca'
Cc:	'jkeith@oxfordcounty.ca'; John Tyrrell; Tisha Doucette
Subject:	Norwich Wastewater Treatment Plant Capacity Expansion Municipal Class EA- Notice of Study Commencement
Attachments:	GIS capture.PNG

Good Morning Conner
Execulink Telecom has a fibre cable and copper cables that run from Palmer St East to the south side of Phebe st . I have attached a pic of our GIS map for this location.
If you require anything please let me know.

Thank you,

Quinten

execulink
TELECOM

Quinten Wilson
Planning & Implementation Supervisor
619 Main St N, Burgessville
tel: 519.456.1097
cell: 519.532.0119
email: quinten.wilson@execulinktelecom.ca
www.execulink.ca

Hydro One Networks Inc
483 Bay St
Toronto, ON

May 27, 2021

Re: Norwich Wastewater Treatment Plant Capacity Expansion

Attention:
Jesse Keith, P.Eng.,
Project Manager
Oxford County Public Works

Thank you for sending us notification regarding (Norwich Wastewater Treatment Plant Capacity Expansion). In 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.

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.

Be advised that any changes to lot grading and/or drainage within proximity to Hydro One transmission corridor lands must be controlled and directed away from the transmission corridor.

Sent on behalf of,

Secondary Land Use
Asset Optimization
Strategy & Integrated Planning
Hydro One Networks Inc.

John Tyrrell

From:	Harvey, Joseph (MHSTCI) <Joseph.Harvey@ontario.ca>
Sent:	June 11, 2021 3:09 PM
To:	jkeith@oxfordcounty.ca
Cc:	Connor MacIsaac; John Tyrrell; Barboza, Karla (MHSTCI)
Subject:	File 0014272: Norwich Wastewater Treatment Plant Capacity Expansion Municipal Class EA-Notice of Study Commencement
Attachments:	2021-06-11_NorwichWastewaterTreatmentMHSTCI-Ltr.pdf
Categories:	Filed by Newforma

Jesse Keith,

Please find attached MHSTCI's comments on the above referenced undertaking. Do not hesitate to contact me with any further questions or concerns.

Regards,

Joseph Harvey | Heritage Planner (A)
Heritage, Tourism and Culture Division | Programs and Services Branch | Heritage Planning Unit
Ministry of Heritage, Sport, Tourism and Culture Industries
401 Bay Street
17th Floor, Suite 1700
Toronto, ON M7A 0A7
613.242.3743
Joseph.Harvey@ontario.ca

Ministry of Heritage, Sport, Tourism and Culture Industries

Programs and Services Branch
401 Bay Street, Suite 1700
Toronto, ON M7A 0A7
Tel: 613.242.3743

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: 613.242.3743

Ontario

June 11, 2021 EMAIL ONLY

Jesse Keith, P.Eng.
Project Engineer, Public Works
Oxford County
jkeith@oxfordcounty.ca

MHSTCI File	**:**	**0014272**
Proponent	**:**	**Oxford County**
Subject	**:**	**Notice of Study Commencement – MCEA Schedule C**
Project	**:**	**Norwich Wastewater Treatment Plant Capacity Expansion**
Location	**:**	**Oxford County**

Dear Jesse Keith:

Thank you for providing the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI) with the Notice of Study Commencement for the above-referenced project. MHSTCI's interest in this Environmental Assessment (EA) project relates to its mandate of conserving Ontario's cultural heritage.

Under the EA process, the proponent is required to determine a project's potential impact on cultural heritage resources.

Project Summary
Oxford County has retained R.V. Anderson Associates Limited to undertake a Municipal Class Environment Assessment (EA) Study to assess a range of capacity expansion alternatives to address wastewater treatment needs of the community for the 25-Year planning horizon. This Class EA Study is being carried out in accordance with the planning and design process for Schedule C projects as outlined in the Municipal Engineers Association Municipal Class Environmental Assessment (October 2000, as amended in 2015), which is approved under the Ontario Environmental Assessment Act.

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.

Cultural heritage resources are often of critical importance to Indigenous communities. 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 them.

Archaeological Resources

This EA project may impact archaeological resources and should be screened using the MHSTCI *Criteria for Evaluating Archaeological Potential* to determine if an archaeological assessment is needed. MHSTCI 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 MHSTCI for review.

Built Heritage Resources and Cultural Heritage Landscapes

A Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment will be undertaken for the entire study area during the planning phase and will be summarized in the EA Report. This study will:

1. Describe the existing baseline cultural heritage conditions within the study area by identifying all known or potential built heritage resources and cultural heritage landscapes, including a historical summary of the study area. MHSTCI has developed screening criteria that may assist with this exercise: *Criteria for Evaluating for Potential Built Heritage Resources and Cultural Heritage Landscapes*.

2. Identify preliminary potential project-specific impacts on the known and potential built heritage resources and cultural heritage landscapes that have been identified. The report should include a description of the anticipated impact to each known or potential built heritage resource or cultural heritage landscape that has been identified.

3. Recommend measures to avoid or mitigate potential negative impacts to known or potential built heritage resources and cultural heritage landscapes. The proposed mitigation measures are to inform the next steps of project planning and design.

Given that this project covers a large study area, MHSTCI recommends that the Cultural Heritage Report is carried out so that step 1 described above is undertaken early in the planning process. Then, steps 2 and 3 can be undertaken once the preferred alternatives have been selected.

Environmental Assessment Reporting

All technical cultural heritage studies and their recommendations are to be addressed and incorporated into EA projects. Please advise MHSTCI whether any technical cultural heritage studies will be completed for this EA project, and provide them to MHSTCI 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 MHSTCI 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,

Joseph Harvey
Heritage Planner
Joseph.harvey@Ontario.ca

Copied to: John Tyrrell, Project Manager, R.V. Anderson Associates Limited
Connor Maclsaac, Environmental Planner, R.V. Anderson Associates Limited

John Tyrrell

From:	Badali, Mark (MECP) <Mark.Badali1@ontario.ca>
Sent:	June 11, 2021 5:27 PM
To:	jkeith@oxfordcounty.ca
Cc:	Wrigley, Rob (MECP); Smith, Mark (MECP); John Tyrrell
Subject:	RE: Township of Norwich, MEA Class EA, Norwich Wastewater Treatment Plant Capacity Expansion
Attachments:	Letter of Acknowledgement - Notice of Commencement - MCEA - Norwich WWTP Capacity Expansion.pdf; Supporting Attachment - Species at Risk Proponents Guide to Preliminary Screening (Draft May 2019).pdf
Categories:	Filed by Newforma

Good afternoon,

Please find attached letter of acknowledgement and supporting attachments in response to the Notice of Commencement of this MCEA project (Schedule C) for the Norwich Wastewater Treatment Plant Capacity Expansion.

Best regards,

Mark Badali (he/him)
Environmental Resource Planner & EA Coordinator – Southwest Region
Project Review Unit | Environmental Assessment Branch
Ontario Ministry of the Environment, Conservation and Parks
Mark.Badali1@ontario.ca | (416) 457-2155

From: Jesse Keith <jkeith@oxfordcounty.ca>
Sent: May 13, 2021 10:17 AM
To: EA Notices to SWRegion (MECP) <eanotification.swregion@ontario.ca>
Cc: John Tyrrell (jtyrrell@rvanderson.com) <jtyrrell@rvanderson.com>; Tisha Doucette <TDoucette@rvanderson.com>; Reuben Davis <rdavis@oxfordcounty.ca>
Subject: Township of Norwich, MEA Class EA, Norwich Wastewater Treatment Plant Capacity Expansion

Good Morning,

Please find notification documents attached for the subject EA Study.

Best Regards,

JESSE KEITH, P. ENG. | **Project Engineer, Public Works**
OXFORD COUNTY | 21 Reeve St., PO Box 1614, Woodstock, ON, N4S 7Y3
WWW.OXFORDCOUNTY.CA | T 519.539.9800 / 1-800-755-0394, ext 3194
M 519.535.8473

Ministry of the Environment, Conservation and Parks

Environmental Assessment Branch

1st Floor
135 St. Clair Avenue W
Toronto ON M4V 1P5
Tel.: 416 314-8001
Fax.: 416 314-8452

Ministère de l'Environnement, de la Protection de la nature et des Parcs

Direction des évaluations environnementales

Rez-de-chaussée
135, avenue St. Clair Ouest
Toronto ON M4V 1P5
Tél. : 416 314-8001
Téléc. : 416 314-8452

June 11, 2021

Jesse Keith
Project Manager
Oxford County

Re: **Norwich Wastewater Treatment Plant Capacity Expansion**
Oxford County
Municipal Class EA
Response to Notice of Commencement

Dear Jesse Keith,

This letter is in response to the Notice of Commencement for the above noted project. The Ministry of the Environment, Conservation and Parks (MECP) acknowledges that the Oxford County (proponent) has indicated that the study is following the approved environmental planning process for a Schedule C project under the Municipal Class Environmental Assessment (Class EA).

The **updated (February 2021)** attached "Areas of Interest" document provides guidance regarding the ministry's interests with respect to the Class EA process. Please address all areas of interest in the EA documentation at an appropriate level for the EA study. Proponents who address all the applicable areas of interest can minimize potential delays to the project schedule. **Further information is provided at the end of the Areas of Interest document relating to recent changes to the Environmental Assessment Act through Bill 197, Covid-19 Economic Recovery Act 2020.**

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 authorizing 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 this duty to project proponents while retaining oversight of the consultation process.

The 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 proposed project**, the MECP is delegating the procedural aspects of rights-based consultation to the proponent 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 provided to date and the Crown`s preliminary assessment the proponent is required to consult with the following communities who have been identified as potentially affected by the proposed project:

- Mississaugas of the Credit First Nation
- Six Nations (both Elected Council and Haudenosaunee Confederacy Chiefs Council)

Please note that this guidance should not prevent the proponent from reaching out to other Indigenous communities that may have an interest in the project.

Steps that the proponent may need to take in relation to Aboriginal consultation for the proposed project are outlined in the "Code of Practice for Consultation in Ontario's Environmental Assessment Process". Additional information related to Ontario's Environmental Assessment Act is available online at: www.ontario.ca/environmentalassessments.

Please also refer to the attached document "A Proponent's Introduction to the Delegation of Procedural Aspects of consultation with Aboriginal Communities" for further information, including the MECP's expectations for EA report documentation related to consultation with communities.

The proponent must contact the Director of Environmental Assessment Branch (EABDirector@ontario.ca) under the following circumstances subsequent to initial discussions with the communities identified by MECP:

- 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 with Indigenous communities or other stakeholders has reached an impasse
- A Part II Order request is expected on the basis of impacts to Aboriginal or treaty rights

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 you will be asked to play should additional steps and activities be required.

A draft copy of the report should be sent directly to me prior to the filing of the final report, allowing a minimum of 30 days for the ministry's technical reviewers to provide comments.

Please also ensure a copy of the final notice is sent to the ministry's Southwest Region EA notification email account (eanotification.swregion@ontario.ca) after the draft report is reviewed and finalized.

Should you or any members of your project team have any questions regarding the material above, please contact me at mark.badali1@ontario.ca.

Yours truly,

Mark Badali
Regional Environmental Assessment Coordinator – Southwest Region

Cc: Rob Wrigley, Manager, London District Office, MECP
Mark Smith, Water Compliance Supervisor, London District Office, MECP
John Tyrrell, Project Manager, R.V. Anderson Associates Limited

Attach: Areas of Interest
A Proponent's Introduction to the Delegation of Procedural Aspects of Consultation with Aboriginal Communities

AREAS OF INTEREST (v. February 2021)

It is suggested that you check off each section after you have considered / addressed it.

☐ **Planning and Policy**

- Projects located in MECP Central Region are subject to **A Place to Grow: Growth Plan for the Greater Golden Horseshoe (2020).** Parts of the study area may also be subject to the Oak Ridges Moraine Conservation Plan (2017), Niagara Escarpment Plan (2017), Greenbelt Plan (2017) or Lake Simcoe Protection Plan (2014). Applicable plans and the applicable policies should be identified in the report, and the proponent should describe how the proposed project adheres to the relevant policies in these plans.

- The **Provincial Policy Statement (2020)** contains policies that protect Ontario's natural heritage and water resources. Applicable policies should be referenced in the report, and the proponent should describe how the proposed project is consistent with these policies.

- In addition to the provincial planning and policy level, the report should also discuss the planning context at the municipal and federal levels, as appropriate.

☐ **Source Water Protection**

The *Clean Water Act*, 2006 (CWA) aims to protect existing and future sources of drinking water. To achieve this, several types of vulnerable areas have been delineated around surface water intakes and wellheads for every municipal residential drinking water system that is located in a source protection area. These vulnerable areas are known as a Wellhead Protection Areas (WHPAs) and surface water Intake Protection Zones (IPZs). Other vulnerable areas that have been delineated under the CWA include Highly Vulnerable Aquifers (HVAs), Significant Groundwater Recharge Areas (SGRAs), Event-based modelling areas (EBAs), and Issues Contributing Areas (ICAs). Source protection plans have been developed that include policies to address existing and future risks to sources of municipal drinking water within these vulnerable areas.

Projects that are subject to the Environmental Assessment Act that fall under a Class EA, or one of the Regulations, have the potential to impact sources of drinking water if they occur in designated vulnerable areas or in the vicinity of other at-risk drinking water systems (i.e. systems that are not municipal residential systems). MEA Class EA projects may include activities that, if located in a vulnerable area, could be a threat to sources of drinking water (i.e. have the potential to adversely affect the quality or quantity of drinking water sources) and the activity could therefore be subject to policies in a source protection plan. Where an activity poses a risk to drinking water, policies in the local source protection plan may impact how or where that activity is undertaken. Policies may prohibit certain activities, or they may require risk management measures for these activities. Municipal Official Plans, planning decisions,

Class EA projects (where the project includes an activity that is a threat to drinking water) and prescribed instruments must conform with policies that address significant risks to drinking water and must have regard for policies that address moderate or low risks.

- In October 2015, the MEA Parent Class EA document was amended to include reference to the Clean Water Act (Section A.2.10.6) and indicates that proponents undertaking a Municipal Class EA project must identify early in their process whether a project is or could potentially be occurring with a vulnerable area. **Given this requirement, please include a section in the report on source water protection.**

    - The proponent should identify the source protection area and should clearly document how the proximity of the project to sources of drinking water (municipal or other) and any delineated vulnerable areas was considered and assessed. Specifically, the report should discuss whether or not the project is located in a vulnerable area and provide applicable details about the area.

    - If located in a vulnerable area, proponents should document whether any project activities are prescribed drinking water threats and thus pose a risk to drinking water (this should be consulted on with the appropriate Source Protection Authority). Where an activity poses a risk to drinking water, the proponent must document and discuss in the report how the project adheres to or has regard to applicable policies in the local source protection plan. This section should then be used to inform and 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.

- While most source protection plans focused on including policies for significant drinking water threats in the WHPAs and IPZs it should be noted that even though source protection plan policies may not apply in HVAs, these are areas where aquifers are sensitive and at risk to impacts and within these areas, activities may impact the quality of sources of drinking water for systems other than municipal residential systems.

- In order to determine if this project is occurring within a vulnerable area, proponents can use this mapping tool: http://www.applications.ene.gov.on.ca/swp/en/index.php. Note that various layers (including WHPAs, WHPA-Q1 and WHPA-Q2, IPZs, HVAs, SGRAs, EBAs, ICAs) can be turned on through the “Map Legend” bar on the left. The mapping tool will also provide a link to the appropriate source protection plan in order to identify what policies may be applicable in the vulnerable area.

- For further information on the maps or source protection plan policies which may relate to their project, proponents must contact the appropriate source protection authority. **Please consult with the local source protection authority to discuss potential impacts on drinking water. Please document the results of that consultation within the report and include all communication documents/correspondence.**

More Information

For more information on the *Clean Water Act*, source protection areas and plans, including specific information on the vulnerable areas and drinking water threats, please refer to Conservation Ontario's website where you will also find links to the local source protection plan/assessment report.

A list of the prescribed drinking water threats can be found in section 1.1 of Ontario Regulation 287/07 made under the *Clean Water Act*. In addition to prescribed drinking water threats, some source protection plans may include policies to address additional "local" threat activities, as approved by the MECP.

- **Climate Change**

The document "Considering Climate Change in the Environmental Assessment Process" (Guide) is now a part of the Environmental Assessment program's Guides and Codes of Practice. The Guide sets out the MECP's expectation for considering climate change in the preparation, execution and documentation of environmental assessment studies and processes. The guide provides examples, approaches, resources, and references to assist proponents with consideration of climate change in EA. Proponents should review this Guide in detail.

- **The MECP expects proponents of Class EA projects to:**

    1. Consider during the assessment of alternative solutions and alternative designs, the following:
        a. the project's expected production of greenhouse gas emissions and impacts on carbon sinks (climate change mitigation); and
        b. resilience or vulnerability of the undertaking to changing climatic conditions (climate change adaptation).
    2. Include a discrete section in the report detailing how climate change was considered in the EA.

How climate change is considered can be qualitative or quantitative in nature and should be scaled to the project's level of environmental effect. In all instances, both a project's impacts on climate change (mitigation) and impacts of climate change on a project (adaptation) should be considered.

- The MECP has also prepared another guide to support provincial land use planning direction related to the completion of energy and emission plans. The "Community Emissions Reduction Planning: A Guide for Municipalities" document is designed to educate stakeholders on the municipal opportunities to reduce energy and greenhouse gas emissions, and to provide guidance on methods and techniques to incorporate consideration of energy and greenhouse gas emissions into municipal activities of all types. We encourage you to review the Guide for information.

Air Quality, Dust and Noise

- If there are sensitive receptors in the surrounding area of this project, a quantitative air quality/odour impact assessment will be useful to evaluate alternatives, determine impacts and identify appropriate mitigation measures. The scope of the assessment can be determined based on the potential effects of the proposed alternatives, and typically includes source and receptor characterization and a quantification of local air quality impacts on the sensitive receptors and the environment in the study area. The assessment will compare to all applicable standards or guidelines for all contaminants of concern. **Please contact this office for further consultation on the level of Air Quality Impact Assessment required for this project if not already advised.**

- If a quantitative Air Quality Impact Assessment is not required for the project, the MECP expects that the report contain a qualitative assessment which includes:

    - A discussion of local air quality including existing activities/sources that significantly impact local air quality and how the project may impact existing conditions;
    - A discussion of the nearby sensitive receptors and the project's potential air quality impacts on present and future sensitive receptors;
    - A discussion of local air quality impacts that could arise from this project during both construction and operation; and
    - A discussion of potential mitigation measures.

- As a common practice, "air quality" should be used an evaluation criterion for all road projects.

- Dust and noise control measures should be addressed and included in the construction plans to ensure that nearby residential and other sensitive land uses within the study area are not adversely affected during construction activities.

- The MECP recommends that non-chloride dust-suppressants be applied. For a comprehensive list of fugitive dust prevention and control measures that could be applied, refer to *Cheminfo Services Inc. Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities* report prepared for Environment Canada. March 2005.

- The report should consider the potential impacts of increased noise levels during the operation of the completed project. The proponent should explore all potential measures to mitigate significant noise impacts during the assessment of alternatives.

Ecosystem Protection and Restoration

- Any impacts to ecosystem form and function must be avoided where possible. The report should describe any proposed mitigation measures and how project planning will protect and enhance the local ecosystem.

- Natural heritage and hydrologic features should be identified and described in detail to assess potential impacts and to develop appropriate mitigation measures. The following sensitive environmental features may be located within or adjacent to the study area:
  - Key Natural Heritage Features: Habitat of endangered species and threatened species, fish habitat, wetlands, areas of natural and scientific interest (ANSIs), significant valleylands, significant woodlands; significant wildlife habitat (including habitat of special concern species); sand barrens, savannahs, and tallgrass prairies; and alvars.
  - Key Hydrologic Features: Permanent streams, intermittent streams, inland lakes and their littoral zones, seepage areas and springs, and wetlands.
  - Other natural heritage features and areas such as: vegetation communities, rare species of flora or fauna, Environmentally Sensitive Areas, Environmentally Sensitive Policy Areas, federal and provincial parks and conservation reserves, Greenland systems etc.

We recommend consulting with the Ministry of Natural Resources and Forestry (MNRF), Fisheries and Oceans Canada (DFO) and your local conservation authority to determine if special measures or additional studies will be necessary to preserve and protect these sensitive features. In addition, you may consider the provisions of the Rouge Park Management Plan if applicable.

Species at Risk

- The Ministry of the Environment, Conservation and Parks has now assumed responsibility of Ontario's Species at Risk program. Information, standards, guidelines, reference materials and technical resources to assist you are found at https://www.ontario.ca/page/species-risk.

- The Client's Guide to Preliminary Screening for Species at Risk (Draft May 2019) has been attached to the covering email for your reference and use. Please review this document for next steps.

- For any questions related to subsequent permit requirements, please contact SAROntario@ontario.ca.

Surface Water

- The report must include enough information to demonstrate that there will be no negative impacts on the natural features or ecological functions of any watercourses within the study area. Measures should be included in the planning and design process to ensure that any impacts to watercourses from construction or operational activities (e.g. spills, erosion, pollution) are mitigated as part of the proposed undertaking.

- Additional stormwater runoff from new pavement can impact receiving watercourses and flood conditions. Quality and quantity control measures to treat stormwater runoff should be considered for all new impervious areas and, where possible, existing surfaces. The ministry's Stormwater Management Planning and Design Manual (2003) should be referenced in the report and utilized when designing stormwater control methods. **A Stormwater Management Plan should be prepared as part of the Class EA process** that includes:

    - Strategies to address potential water quantity and erosion impacts related to stormwater draining into streams or other sensitive environmental features, and to ensure that adequate (enhanced) water quality is maintained
    - Watershed information, drainage conditions, and other relevant background information
    - Future drainage conditions, stormwater management options, information on erosion and sediment control during construction, and other details of the proposed works
    - Information on maintenance and monitoring commitments.

- Ontario Regulation 60/08 under the *Ontario Water Resources Act* (OWRA) applies to the Lake Simcoe Basin, which encompasses Lake Simcoe and the lands from which surface water drains into Lake Simcoe. If the proposed sewage treatment plant is listed in Table 1 of the regulation, the report should describe how the proposed project and its mitigation measures are consistent with the requirements of this regulation and the OWRA.

- Any potential approval requirements for surface water taking or discharge should be identified in the report. A Permit to Take Water (PTTW) under the OWRA will be required for any water takings that exceed 50,000 L/day, except for certain water taking activities that have been prescribed by the Water Taking EASR Regulation – *O. Reg. 63/16*. These prescribed water-taking activities require registration in the EASR instead of a PTTW. Please review the Water Taking User Guide for EASR for more information. Additionally, an Environmental Compliance Approval under the OWRA is required for municipal stormwater management works.

Groundwater

- The status of, and potential impacts to any well water supplies should be addressed. If the project involves groundwater takings or changes to drainage patterns, the quantity and quality of groundwater may be affected due to drawdown effects or the redirection of existing contamination flows. In addition, project activities may infringe on existing wells such that they must be reconstructed or sealed and abandoned. Appropriate information to define existing groundwater conditions should be included in the report.

- If the potential construction or decommissioning of water wells is identified as an issue, the report should refer to Ontario Regulation 903, Wells, under the OWRA.

- Potential impacts to groundwater-dependent natural features should be addressed. Any changes to groundwater flow or quality from groundwater taking may interfere with the ecological processes of streams, wetlands or other surficial features. In addition, discharging contaminated or high volumes of groundwater to these features may have direct impacts on their function. Any potential effects should be identified, and appropriate mitigation measures should be recommended. The level of detail required will be dependent on the significance of the potential impacts.

- Any potential approval requirements for groundwater taking or discharge should be identified in the report. A Permit to Take Water (PTTW) under the OWRA will be required for any water takings that exceed 50,000 L/day, with the exception of certain water taking activities that have been prescribed by the Water Taking EASR Regulation – *O. Reg. 63/16*. These prescribed water-taking activities require registration in the EASR instead of a PTTW. Please review the Water Taking User Guide for EASR for more information.

- Consultation with the railroad authorities is necessary wherever there is a plan to use construction dewatering in the vicinity of railroad lines or where the zone of influence of the construction dewatering potentially intercepts railroad lines.

Excess Materials Management

- In December 2019, MECP released a new regulation under the Environmental Protection Act, titled "On-Site and Excess Soil Management" (O. Reg. 406/19) to support improved management of excess construction soil. This regulation is a key step to support proper management of excess soils, ensuring valuable resources don't go to waste and to provide clear rules on managing and reusing excess soil. New risk-based standards referenced by this regulation help to facilitate local beneficial reuse which in turn will reduce greenhouse gas emissions from soil transportation, while ensuring strong protection of human health and the environment. The new regulation is being phased in over time, with the first phase

in effect on January 1, 2021. For more information, please visit https://www.ontario.ca/page/handling-excess-soil.

- The report should reference that activities involving the management of excess soil should be completed in accordance with O. Reg. 406/19 and the MECP's current guidance document titled "Management of Excess Soil – A Guide for Best Management Practices" (2014).

- All waste generated during construction must be disposed of in accordance with ministry requirements

Contaminated Sites

- Any current or historical waste disposal sites should be identified in the report. The status of these sites should be determined to confirm whether approval pursuant to Section 46 of the EPA may be required for land uses on former disposal sites. We recommend referring to the MECP's D-4 guideline for land use considerations near landfills and dumps.
  - Resources available may include regional/local municipal official plans and data; provincial data on large landfill sites and small landfill sites; Environmental Compliance Approval information for waste disposal sites on Access Environment.

- Other known contaminated sites (local, provincial, federal) in the study area should also be identified in the report (Note – information on federal contaminated sites is found on the Government of Canada's website).

- The location of any underground storage tanks should be investigated in the report. Measures should be identified to ensure the integrity of these tanks and to ensure an appropriate response in the event of a spill. The ministry's Spills Action Centre must be contacted in such an event.

- Since the removal or movement of soils may be required, appropriate tests to determine contaminant levels from previous land uses or dumping should be undertaken. If the soils are contaminated, you must determine how and where they are to be disposed of, consistent with *Part XV.1 of the Environmental Protection Act* (EPA) and Ontario Regulation 153/04, Records of Site Condition, which details the new requirements related to site assessment and clean up. Please contact the appropriate MECP District Office for further consultation if contaminated sites are present.

Servicing, Utilities and Facilities

- The report should identify any above or underground utilities in the study area such as transmission lines, telephone/internet, oil/gas etc. The owners should be consulted to discuss impacts to this infrastructure, including potential spills.

- The report should identify any servicing infrastructure in the study area such as wastewater, water, stormwater that may potentially be impacted by the project.

- Any facility that releases emissions to the atmosphere, discharges contaminants to ground or surface water, provides potable water supplies, or stores, transports or disposes of waste must have an Environmental Compliance Approval (ECA) before it can operate lawfully. Please consult with MECP's Environmental Permissions Branch to determine whether a new or amended ECA will be required for any proposed infrastructure.

- We recommend referring to the ministry's environmental land use planning guides to ensure that any potential land use conflicts are considered when planning for any infrastructure or facilities related to wastewater, pipelines, landfills or industrial uses.

Mitigation and Monitoring

- Contractors must be made aware of all environmental considerations so that all environmental standards and commitments for both construction and operation are met. Mitigation measures should be clearly referenced in the report and regularly monitored during the construction stage of the project. In addition, we encourage proponents to conduct post-construction monitoring to ensure all mitigation measures have been effective and are functioning properly.

- Design and construction reports and plans should be based on a best management approach that centres on the prevention of impacts, protection of the existing environment, and opportunities for rehabilitation and enhancement of any impacted areas.

- The proponent's construction and post-construction monitoring plans must be documented in the report, as outlined in Section A.2.5 and A.4.1 of the MEA Class EA parent document.

Consultation

- The report must demonstrate how the consultation provisions of the Class EA have been fulfilled, including documentation of all stakeholder consultation efforts undertaken during the planning process. This includes a discussion in the report that identifies concerns that were raised and **describes how they have been addressed by the proponent** throughout

the planning process. The report should also include copies of comments submitted on the project by interested stakeholders, and the proponent's responses to these comments (as directed by the Class EA to include full documentation).

- Please include the full stakeholder distribution/consultation list in the documentation.

Class EA Process

- If this project is a Master Plan: there are several different approaches that can be used to conduct a Master Plan, examples of which are outlined in Appendix 4 of the Class EA. **The Master Plan should clearly indicate the selected approach for conducting the plan**, by identifying whether the levels of assessment, consultation and documentation are sufficient to fulfill the requirements for Schedule B or C projects. Please note that any Schedule B or C projects identified in the plan would be subject to Part II Order Requests under the Environmental Assessment Act, although the plan itself would not be. **Please include a description of the approach being undertaken (use Appendix 4 as a reference).**

- If this project is a Master Plan: Any identified projects should also include information on the MCEA schedule associated with the project.

- The report should provide clear and complete documentation of the planning process in order to allow for transparency in decision-making.

- The Class EA requires the consideration of the effects of each alternative on all aspects of the environment (including planning, natural, social, cultural, economic, technical). The report should include a level of detail (e.g. hydrogeological investigations, terrestrial and aquatic assessments, cultural heritage assessments) such that all potential impacts can be identified, and appropriate mitigation measures can be developed. Any supporting studies conducted during the Class EA process should be referenced and included as part of the report.

- Please include in the report a list of all subsequent permits or approvals that may be required for the implementation of the preferred alternative, including but not limited to, MECP's PTTW, EASR Registrations and ECAs, conservation authority permits, species at risk permits, MTO permits and approvals under the *Impact Assessment Act*, 2019.

- Ministry guidelines and other information related to the issues above are available at http://www.ontario.ca/environment-and-energy/environment-and-energy. We encourage you to review all the available guides and to reference any relevant information in the report.

Amendments to the EAA through the Covid-19 Economic Recovery Act, 2020
Once the EA Report is finalized, the proponent must issue a Notice of Completion providing a minimum 30-day period during which documentation may be reviewed and comment and input can be submitted to the proponent. The Notice of Completion must be sent to the appropriate MECP Regional Office email address (for projects in MECP Southwest Region, the email is eanotification.swregion@ontario.ca).

The public has the ability to request a higher level of assessment on a project if they are concerned about potential adverse impacts to constitutionally protected Aboriginal and treaty rights. In addition, the Minister may issue an order on his or her own initiative within a specified time period. The Director (of the Environmental Assessment Branch) will issue a Notice of Proposed Order to the proponent if the Minister is considering an order for the project within 30 days after the conclusion of the comment period on the Notice of Completion. At this time, the Director may request additional information from the proponent. Once the requested information has been received, the Minister will have 30 days within which to make a decision or impose conditions on your project.

Therefore, the proponent cannot proceed with the project until at least 30 days after the end of the comment period provided for in the Notice of Completion. Further, the proponent may not proceed after this time if:

- a Part II Order request has been submitted to the ministry regarding potential adverse impacts to constitutionally protected Aboriginal and treaty rights, or
- the Director has issued a Notice of Proposed order regarding the project.

Please ensure that the Notice of Completion advises that outstanding concerns are to be directed to the proponent for a response, and that in the event there are outstanding concerns regarding potential adverse impacts to constitutionally protected Aboriginal and treaty rights, Part II Order requests on those matters should be addressed in writing to:

Minister Jeff Yurek
Ministry of Environment, Conservation and Parks
777 Bay Street, 5th Floor
Toronto ON M7A 2J3
minister.mecp@ontario.ca

and

Director, Environmental Assessment Branch
Ministry of Environment, Conservation and Parks
135 St. Clair Ave. W, 1st Floor
Toronto ON, M4V 1P5
EABDirector@ontario.ca

A PROPONENT'S INTRODUCTION TO THE DELEGATION OF PROCEDURAL ASPECTS OF CONSULTATION WITH ABORIGINAL COMMUNITIES

DEFINITIONS

The following definitions are specific to this document and may not apply in other contexts:

Aboriginal communities – the First Nation or Métis communities identified by the Crown for the purpose of consultation.

Consultation – the Crown's legal obligation to consult when the Crown has knowledge of an established or asserted Aboriginal or treaty right and contemplates conduct that might adversely impact that right. This is the type of consultation required pursuant to s. 35 of the *Constitution Act, 1982*. Note that this definition does not include consultation with Aboriginal communities for other reasons, such as regulatory requirements.

Crown – the Ontario Crown, acting through a particular ministry or ministries.

Procedural aspects of consultation – those portions of consultation related to the process of consultation, such as notifying an Aboriginal community about a project, providing information about the potential impacts of a project, responding to concerns raised by an Aboriginal community and proposing changes to the project to avoid negative impacts.

Proponent – the person or entity that wants to undertake a project and requires an Ontario Crown decision or approval for the project.

I. PURPOSE

The Crown has a legal duty to consult Aboriginal communities when it has knowledge of an existing or asserted Aboriginal or treaty right and contemplates conduct that may adversely impact that right. In outlining a framework for the duty to consult, the Supreme Court of Canada has stated that the Crown may delegate procedural aspects of consultation to third parties. This document provides general information about the Ontario Crown's approach to delegation of the procedural aspects of consultation to proponents.

This document is not intended to instruct a proponent about an individual project, and it does not constitute legal advice.

II. WHY IS IT NECESSARY TO CONSULT WITH ABORIGINAL COMMUNITIES?

The objective of the modern law of Aboriginal and treaty rights is the *reconciliation* of Aboriginal peoples and non-Aboriginal peoples and their respective rights, claims and interests. Consultation is an important component of the reconciliation process.

The Crown has a legal duty to consult Aboriginal communities when it has knowledge of an existing or asserted Aboriginal or treaty right and contemplates conduct that might adversely impact that right. For example, the Crown's duty to consult is triggered when it considers

issuing a permit, authorization or approval for a project which has the potential to adversely impact an Aboriginal right, such as the right to hunt, fish, or trap in a particular area.

The scope of consultation required in particular circumstances ranges across a spectrum depending on both the nature of the asserted or established right and the seriousness of the potential adverse impacts on that right.

Depending on the particular circumstances, the Crown may also need to take steps to accommodate the potentially impacted Aboriginal or treaty right. For example, the Crown may be required to avoid or minimize the potential adverse impacts of the project.

III. THE CROWN'S ROLE AND RESPONSIBILITIES IN THE DELEGATED CONSULTATION PROCESS

The Crown has the responsibility for ensuring that the duty to consult, and accommodate where appropriate, is met. However, the Crown may delegate the procedural aspects of consultation to a proponent.

There are different ways in which the Crown may delegate the procedural aspects of consultation to a proponent, including through a letter, a memorandum of understanding, legislation, regulation, policy and codes of practice.

If the Crown decides to delegate procedural aspects of consultation, the Crown will generally:

- Ensure that the delegation of procedural aspects of consultation and the responsibilities of the proponent are clearly communicated to the proponent;
- Identify which Aboriginal communities must be consulted;
- Provide contact information for the Aboriginal communities;
- Revise, as necessary, the list of Aboriginal communities to be consulted as new information becomes available and is assessed by the Crown;
- Assess the scope of consultation owed to the Aboriginal communities;
- Maintain appropriate oversight of the actions taken by the proponent in fulfilling the procedural aspects of consultation;
- Assess the adequacy of consultation that is undertaken and any accommodation that may be required;
- Provide a contact within any responsible ministry in case issues arise that require direction from the Crown; and
- Participate in the consultation process as necessary and as determined by the Crown.

IV. THE PROPONENT'S ROLE AND RESPONSIBILITIES IN THE DELEGATED CONSULTATION PROCESS

Where aspects of the consultation process have been delegated to a proponent, the Crown, in meeting its duty to consult, will rely on the proponent's consultation activities and documentation of those activities. The consultation process informs the Crown's decision of whether or not to approve a proposed project or activity.

A proponent's role and responsibilities will vary depending on a variety of factors including the extent of consultation required in the circumstance and the procedural aspects of consultation the Crown has delegated to it. Proponents are often in a better position than the Crown to discuss a project and its potential impacts with Aboriginal communities and to determine ways to avoid or minimize the adverse impacts of a project.

A proponent can raise issues or questions with the Crown at any time during the consultation process. If issues or concerns arise during the consultation that cannot be addressed by the proponent, the proponent should contact the Crown.

a) What might a proponent be required to do in carrying out the procedural aspects of consultation?

Where the Crown delegates procedural aspects of consultation, it is often the proponent's responsibility to provide notice of the proposed project to the identified Aboriginal communities. The notice should indicate that the Crown has delegated the procedural aspects of consultation to the proponent and should include the following information:

- a description of the proposed project or activity;
- mapping;
- proposed timelines;
- details regarding anticipated environmental and other impacts;
- details regarding opportunities to comment; and
- any changes to the proposed project that have been made for seasonal conditions or other factors, where relevant.

Proponents should provide enough information and time to allow Aboriginal communities to provide meaningful feedback regarding the potential impacts of the project. Depending on the nature of consultation required for a project, a proponent also may be required to:

- provide the Crown with copies of any consultation plans prepared and an opportunity to review and comment;
- ensure that any necessary follow-up discussions with Aboriginal communities take place in a timely manner, including to confirm receipt of information, share and update information and to address questions or concerns that may arise;

- as appropriate, discuss with Aboriginal communities potential mitigation measures and/or changes to the project in response to concerns raised by Aboriginal communities;
- use language that is accessible and not overly technical, and translate material into Aboriginal languages where requested or appropriate;
- bear the reasonable costs associated with the consultation process such as, but not limited to, meeting hall rental, meal costs, document translation(s), or to address technical & capacity issues;
- provide the Crown with all the details about potential impacts on established or asserted Aboriginal or treaty rights, how these concerns have been considered and addressed by the proponent and the Aboriginal communities and any steps taken to mitigate the potential impacts;
- provide the Crown with complete and accurate documentation from these meetings and communications; and
- notify the Crown immediately if an Aboriginal community not identified by the Crown approaches the proponent seeking consultation opportunities.

b) What documentation and reporting does the Crown need from the proponent?

Proponents should keep records of all communications with the Aboriginal communities involved in the consultation process and any information provided to these Aboriginal communities.

As the Crown is required to assess the adequacy of consultation, it needs documentation to satisfy itself that the proponent has fulfilled the procedural aspects of consultation delegated to it. The documentation required would typically include:

- the date of meetings, the agendas, any materials distributed, those in attendance and copies of any minutes prepared;
- the description of the proposed project that was shared at the meeting;
- any and all concerns or other feedback provided by the communities;
- any information that was shared by a community in relation to its asserted or established Aboriginal or treaty rights and any potential adverse impacts of the proposed activity, approval or disposition on such rights;
- any proposed project changes or mitigation measures that were discussed, and feedback from Aboriginal communities about the proposed changes and measures;
- any commitments made by the proponent in response to any concerns raised, and feedback from Aboriginal communities on those commitments;
- copies of correspondence to or from Aboriginal communities, and any materials distributed electronically or by mail;

- information regarding any financial assistance provided by the proponent to enable participation by Aboriginal communities in the consultation;
- periodic consultation progress reports or copies of meeting notes if requested by the Crown;
- a summary of how the delegated aspects of consultation were carried out and the results; and
- a summary of issues raised by the Aboriginal communities, how the issues were addressed and any outstanding issues.

In certain circumstances, the Crown may share and discuss the proponent's consultation record with an Aboriginal community to ensure that it is an accurate reflection of the consultation process.

c) Will the Crown require a proponent to provide information about its commercial arrangements with Aboriginal communities?

The Crown may require a proponent to share information about aspects of commercial arrangements between the proponent and Aboriginal communities where the arrangements:

- include elements that are directed at mitigating or otherwise addressing impacts of the project;
- include securing an Aboriginal community's support for the project; or
- may potentially affect the obligations of the Crown to the Aboriginal communities.

The proponent should make every reasonable effort to exempt the Crown from confidentiality provisions in commercial arrangements with Aboriginal communities to the extent necessary to allow this information to be shared with the Crown.

The Crown cannot guarantee that information shared with the Crown will remain confidential. Confidential commercial information should not be provided to the Crown as part of the consultation record if it is not relevant to the duty to consult or otherwise required to be submitted to the Crown as part of the regulatory process.

V. WHAT ARE THE ROLES AND RESPONSIBILITIES OF ABORIGINAL COMMUNITIES' IN THE CONSULTATION PROCESS?

Like the Crown, Aboriginal communities are expected to engage in consultation in good faith. This includes:

- responding to the consultation notice;
- engaging in the proposed consultation process;
- providing relevant documentation;

- clearly articulating the potential impacts of the proposed project on Aboriginal or treaty rights; and
- discussing ways to mitigates any adverse impacts.

Some Aboriginal communities have developed tools, such as consultation protocols, policies or processes that provide guidance on how they would prefer to be consulted. Although not legally binding, proponents are encouraged to respect these community processes where it is reasonable to do so. Please note that there is no obligation for a proponent to pay a fee to an Aboriginal community in order to enter into a consultation process.

To ensure that the Crown is aware of existing community consultation protocols, proponents should contact the relevant Crown ministry when presented with a consultation protocol by an Aboriginal community or anyone purporting to be a representative of an Aboriginal community.

VI. WHAT IF MORE THAN ONE PROVINCIAL CROWN MINISTRY IS INVOLVED IN APPROVING A PROPONENT'S PROJECT?

Depending on the project and the required permits or approvals, one or more ministries may delegate procedural aspects of the Crown's duty to consult to the proponent. The proponent may contact individual ministries for guidance related to the delegation of procedural aspects of consultation for ministry-specific permits/approvals required for the project in question. Proponents are encouraged to seek input from all involved Crown ministries sooner rather than later.

Client's Guide to Preliminary Screening for Species at Risk

Ministry of the Environment, Conservation and Parks

Species at Risk Branch, Permissions and Compliance

DRAFT - May 2019

Table of Contents

1.0 Purpose, Scope, Background and Context

1.1 Purpose of this Guide

This guide has been created to:

- help clients better understand their obligation to gather information and complete a preliminary screening for species at risk before contacting the ministry,
- outline guidance and advice clients can expect to receive from the ministry at the preliminary screening stage,
- help clients understand how they can gather information about species at risk by accessing publicly available information housed by the Government of Ontario, and
- provide a list of other potential sources of species at risk information that exist outside the Government of Ontario.

It remains the client's responsibility to:

- carry out a preliminary screening for their projects,
- obtain best available information from all applicable information sources,
- conduct any necessary field studies or inventories to identify and confirm the presence or absence of species at risk or their habitat,
- consider any potential impacts to species at risk that a proposed activity might cause, and
- comply with the *Endangered Species Act* (ESA).

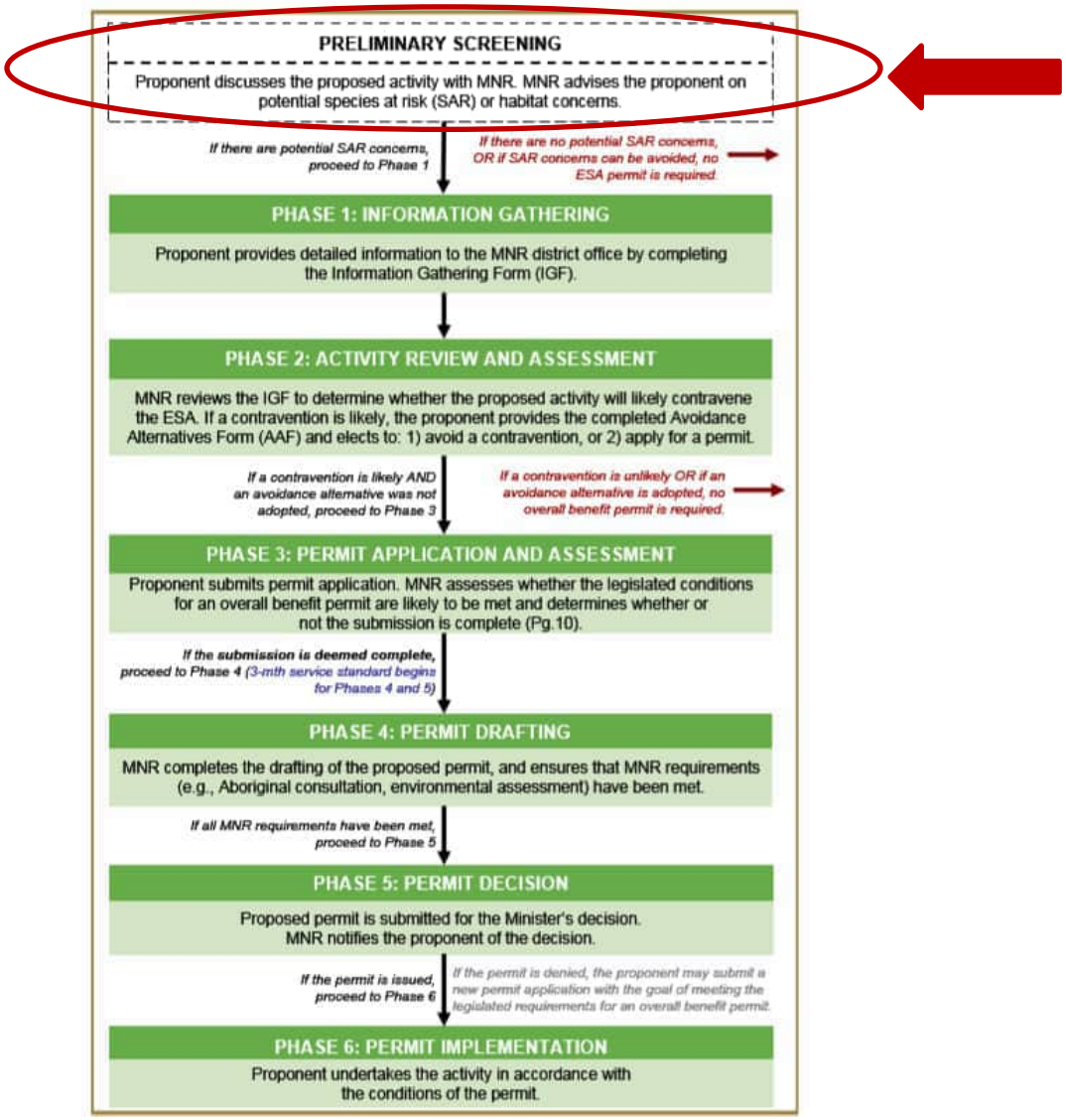
To provide the most efficient service, clients should initiate species at risk screenings and seek information from all applicable information sources identified in this guide, at a minimum, prior to contacting Government of Ontario ministry offices for further information or advice.

1.2 Scope

This guide is a resource for clients seeking to understand if their activity is likely to impact species at risk or if they are likely to trigger the need for an authorization under the ESA. It is not intended to circumvent any detailed site surveys that may be necessary to document species at risk or their habitat nor to circumvent the need to assess the impacts of a proposed activity on species at risk or their habitat. This guide is not an exhaustive list of available information sources for any given area as the availability of information on species at risk and their habitat varies across the province. This guide is intended to support projects and activities carried out on Crown and private land, by private landowners, businesses, other provincial ministries and agencies, or municipal government.

1.3 Background and Context

To receive advice on their proposed activity, clients must first 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 ESA. Once this step is complete, clients may contact the ministry at SAROntario@ontario.ca to discuss the main purpose, general methods, timing and location of their proposed activity as well as information obtained about species at risk and their habitat at, or near, the site. At this stage, the ministry can provide advice and guidance to the client about potential species at risk or habitat concerns, measures that the client is considering to avoid adverse effects on species at risk or their habitat and whether additional field surveys are advisable. This is referred to as the "Preliminary Screening" stage. For more information on additional phases in the diagram below, please refer to the *Endangered Species Act Submission Standards for Activity Review and 17(2)(c) Overall Benefit Permits* policy available online at https://www.ontario.ca/page/species-risk-overall-benefit-permits



2.0 Roles and Responsibilities

To provide the most efficient service, clients should initiate species at risk screenings and seek information from all applicable information sources identified in this guide prior to contacting Government of Ontario ministry offices for further information or advice.

Step 1: Client seeks information regarding species at risk or their habitat that exist, or are likely to exist, at or near their proposed activity by referring to all applicable information sources identified in this guide.

Step 2: Client reviews and consider guidance on whether their proposed activity is likely to contravene the ESA (see section 3.4 of this guide for guidance on what to consider).

Step 3: Client gathers information identified in the checklist in section 4 of this guide.

Step 4: Client contacts the ministry at SAROntario@ontario.ca to discuss their preliminary screening. Ministry staff will ask the client questions about the main purpose, general methods, timing and location of their proposed activity as well as information obtained about species at risk and their habitat at, or near, the site. Ministry staff will also ask the client for their interpretation of the impacts of their activity on species at risk or their habitat as well as measures the client has considered to avoid any adverse impacts.

Step 5: Ministry staff will provide advice on next steps.

Option A: Ministry staff may advise the client they can proceed with their activity without an authorization under the ESA where the ministry is confident that:

- no protected species at risk or habitats are likely to be present at or near the proposed location of the activity; or
- protected species at risk or habitats are known to be present but the activity is not likely to contravene the ESA; or
- through the adoption of avoidance measures, the modified activity is not likely to contravene the ESA.

Option B: Ministry staff may advise the client to proceed to Phase 1 of the overall benefit permitting process (i.e. Information Gathering in the previous diagram), where:

- there is uncertainty as to whether any protected species at risk or habitats are present at or near the proposed location of the activity; or
- the potential impacts of the proposed activity are uncertain; or
- ministry staff anticipate the proposed activity is likely to contravene the ESA.

3.0 Information Sources

Land Information Ontario (LIO) and the Natural Heritage Information Centre (NHIC) maintain and provide information about species at risk, as well as related information about fisheries, wildlife, crown lands, protected lands and more. This information is made available to organizations, private individuals, consultants, and developers through online sources and is often considered under various pieces of legislation or as part of regulatory approvals and planning processes.

The information available from LIO or NHIC and the sources listed in this guide should not be considered as a substitute for site visits and appropriate field surveys. Generally, this information can be regarded as a starting point from which to conduct further field surveys, if needed. While this data represents best available current information, it is important to note that a lack of information for a site does not mean that species at risk or their habitat are not present. There are many areas where the Government of Ontario does not currently have information, especially in more remote parts of the province. The absence of species at risk location data at or near your site does not necessarily mean no species at risk are present at that location. On-site assessments can better verify site conditions, identify and confirm presence of species at risk and/or their habitats.

Information on the location (i.e. observations and occurrences) of species at risk is considered sensitive and therefore publicly available only on a 1km square grid as opposed to as a detailed point on a map. This generalized information can help you understand which species at risk are in the general vicinity of your proposed activity and can help inform field level studies you may want to undertake to confirm the presence, or absence of species at risk at or near your site.

Should you require specific and detailed information pertaining to species at risk observations and occurrences at or near your site on a finer geographic scale; you will be required to demonstrate your need to access this information, to complete data sensitivity training and to obtain a Sensitive Data Use License from the NHIC. Information on how to obtain a license can be found online at https://www.ontario.ca/page/get-natural-heritage-information.

Many organizations (e.g. other Ontario ministries, municipalities, conservation authorities) have ongoing licensing to access this data so be sure to check if your organization has this access and consult this data as part of your preliminary screening if your organization already has a license.

3.1 Make a Map: Natural Heritage Areas

The Make a Natural Heritage Area Map (available online at http://www.gisapplication.lrc.gov.on.ca/mamnh/Index.html?site=MNR_NHLUPS_NaturalHeritage&viewer=NaturalHeritage&locale=en-US provides public access to natural heritage information, including species at risk, without the user needing to have Geographic Information System (GIS) capability. It allows users to view and identify generalized species at risk information, mark areas of interest, and create and print a custom map directly from the web application. The tool also shows topographic information such as roads, rivers, contours and municipal boundaries.

Users are advised that sensitive information has been removed from the natural areas dataset and the occurrences of species at risk has been generalized to a 1-kilometre grid to mitigate the risks to the species (e.g. illegal harvest, habitat disturbance, poaching).

The web-based mapping tool displays natural heritage data, including:

- Generalized Species at risk occurrence data (based on a 1-km square grid),
- Natural Heritage Information Centre data.

Data cannot be downloaded directly from this web map; however, information included in this application is available digitally through Land Information Ontario (LIO) at https://www.ontario.ca/page/land-information-ontario.

3.2 Land Information Ontario (LIO)

Most natural heritage data is publicly available. This data is managed in a large provincial corporate database called the LIO Warehouse and can be accessed online through the LIO Metadata Management Tool at https://www.javacoeapp.lrc.gov.on.ca/geonetwork/srv/en/main.home. This tool provides descriptive information about the characteristics, quality and context of the data. Publicly available geospatial data can be downloaded directly from this site.

While most data are publicly available, some data may be considered highly sensitive (i.e. nursery areas for fish, species at risk observations) and as such, access to some data maybe restricted.

3.3 Additional Species at Risk Information Sources

- The Breeding Bird Atlas can be accessed online at http://www.birdsontario.org/atlas/index.jsp?lang=en
- eBird can be accessed online at https://ebird.org/home
- iNaturalist can be accessed online at https://www.inaturalist.org/
- The Ontario Reptile and Amphibian Atlas can be accessed online at https://ontarionature.org/programs/citizen-science/reptile-amphibian-atlas
- Your local Conservation Authority. Information to help you find your local Conservation Authority can be accessed online at https://conservationontario.ca/conservation-authorities/find-a-conservation-authority/

  Local naturalist groups or other similar community-based organizations
- Local Indigenous communities
- Local land trusts or other similar Environmental Non-Government Organizations
- Field level studies to identify if species at risk, or their habitat, are likely present or absent at or near the site.
- When an activity is proposed within one of the continuous caribou ranges, please be sure to consider the caribou Range Management Policy. This policy includes figures and maps of the continuous caribou range, can be found online at https://www.ontario.ca/page/range-management-policy-support-woodland-caribou-conservation-and-recovery

3.4 Information Sources to Support Impact Assessments

- Guidance to help you understand if your activity is likely to adversely impact species at risk or their habitat can be found online at https://www.ontario.ca/page/policy-guidance-harm-and-harass-under-endangered-species-act and https://www.ontario.ca/page/categorizing-and-protecting-habitat-under-endangered-species-act
- A list of species at risk in Ontario is available online at https://www.ontario.ca/page/species-risk-ontario. On this webpage, you can find out more about each species, including where is lives, what threatens it and any specific habitat protections that apply to it by clicking on the photo of the species.

4.0 Check-List

Please feel free to use the check list below to help you confirm you have explored all applicable information sources and to support your discussion with Ministry staff at the preliminary screening stage.

- ✓ Land Information Ontario (LIO)
- ✓ Natural Heritage Information Centre (NHIC)
- ✓ The Breeding Bird Atlas
- ✓ eBird
- ✓ iNaturalist
- ✓ Ontario Reptile and Amphibian Atlas
- ✓ List Conservation Authorities you contacted:_____

  _____
- ✓ List local naturalist groups you contacted:_____

  _____
- ✓ List local Indigenous communities you contacted:_____

  _____
- ✓ List any other local land trusts or Environmental Non-Government Organizations you contacted:_____

  _____
- ✓ List and field studies that were conducted to identify species at risk, or their habitat, likely to be present or absent at or near the site: _____

  _____
- ✓ List what you think the likely impacts of your activity are on species at risk and their habitat (e.g. damage or destruction of habitat, killing, harming or harassing species at risk):_____

  _____

John Tyrrell

From: Species at Risk (MECP) <SAROntario@ontario.ca>
Sent: July 4, 2022 9:29 AM
To: Samya Chams
Cc: Jesse Keith; John Tyrrell
Subject: RE: PCC#1 Notice Circulation - Norwich WWTP Class EA Study

Hello Samya,

RE: Norwich Wastewater Treatment Plant Expansion, Township of Norwich, Oxford County and the *Endangered Species Act, 2007*

The Ministry of the Environment, Conservation and Parks (MECP) understands that R.V. Anderson Associates Ltd. is completing a Municipal Class EA study for the Township's proposed expansion project, as identified in the information provided. The study area has also been altered / expanded since MECP was previously contacted in 2021.

As requested, an initial species at risk (SAR) information screening has been completed under the *Endangered Species Act, 2007* (ESA 2007) for the above-noted project location with respect to endangered and threated species in Ontario. In addition to the SAR mentioned in your list from April 1, 2021, and the SAR provided by MECP on August 31, 2021, there are known occurrences of the following SAR in the general area with potential to also occur at the project location:

- American Chestnut (endangered, species and general habitat protection)
- SAR bats (endangered, species and general habitat protection)

Please note that this is an initial screening for endangered and threatened SAR and the absence of an element occurrence does not indicate the absence of species. The province has not been surveyed comprehensively for the presence or absence of SAR and Ontario's data relies on observers to report sightings of SAR. Field assessments by a qualified professional may be necessary if there is a high likelihood for SAR species and/or habitat to occur within the project footprint and potentially be impacted.

The ministry's position is based on the information that has been provided by you on behalf of the proponent. Should information not have been made available and considered in our review, or new information comes to light, or if on-site conditions and circumstances change, please contact Species at Risk Branch as soon as possible (SAROntario@ontario.ca) to discuss next steps.

Regards,

Catherine Stewart
Management Biologist
Permissions Section, Species at Risk Branch
Ministry of the Environment, Conservation and Parks

From: Samya Chams <schams@rvanderson.com>
Sent: June 9, 2022 9:57 AM
To: Samya Chams <schams@rvanderson.com>
Cc: Jesse Keith <jkeith@oxfordcounty.ca>; John Tyrrell <JTyrrell@rvanderson.com>; Harpreet Rai <hrai@rvanderson.com>; Tisha Doucette <TDoucette@rvanderson.com>
Subject: PCC#1 Notice Circulation - Norwich WWTP Class EA Study

John Tyrrell

From: Species at Risk (MECP) <SAROntario@ontario.ca>
Sent: August 31, 2021 10:28 AM
To: Paul Mikoda
Cc: John Tyrrell; Tisha Doucette; Courtney Beneteau
Subject: RE: 215673 - Natural Heritage Information Request - County of Oxford Municipal Class EA for Norwich WWTP

Categories: Filed by Newforma

Hello Paul,

RE: Species at Risk Data Request – Municipal Class Environmental Assessment for the Township of Norwich Waste Water Treatment Plant, Oxford County

I sincerely apologize for the delay in response. The Ministry of the Environment, Conservation and Parks (MECP) understands that R.V. Anderson Associates (RVA) is conducting natural heritage studies for the Municipal Class Environmental Assessment to evaluate upgrades to the Township of Norwich Waste Water Treatment Plant (WWTP), Oxford County, as identified in the information provided.

An initial species at risk (SAR) information screening has been completed under the *Endangered Species Act, 2007* (ESA) by MECP's Species at Risk Branch (SARB) for the above-noted project location with respect to endangered and threatened species in Ontario. The following species at risk, in addition to the species identified in the RVA memo, are known to occur in the general area of the project and should be considered in any assessment of potential impacts to SAR and/or habitat:

- American Badger (endangered) – receives species and regulated habitat protection
- Red-headed Woodpecker – this species is currently listed as special concern but will be up-listed to endangered in 2022, which will trigger species and habitat protection.

Please note that this is an initial screening for endangered and threatened SAR and the absence of an element occurrence does not indicate the absence of species. The province has not been surveyed comprehensively for the presence or absence of SAR and Ontario's data relies on observers to report sightings of SAR. Field assessments by a qualified professional may be necessary if there is a high likelihood for SAR species and/or habitat to occur within the project footprint and potentially be impacted.

The position of SARB is based on the information that has been provided by you on behalf of the proponent. Should information not have been made available and considered in our review, or new information comes to light, or if on-site conditions and circumstances change, please contact SARB as soon as possible (SAROntario@ontario.ca) to discuss next steps.

Regards,

Kathryn Markham
Management Biologist
Permissions and Compliance Section, Species at Risk Branch
Ministry of the Environment, Conservation and Parks

From: Paul Mikoda <pmikoda@rvanderson.com>
Sent: April 1, 2021 6:44 PM
To: Species at Risk (MECP) <SAROntario@ontario.ca>
Cc: John Tyrrell <JTyrrell@rvanderson.com>; Tisha Doucette <TDoucette@rvanderson.com>; Courtney Beneteau

<cbeneteau@rvanderson.com>
Subject: 215673 - Natural Heritage Information Request - County of Oxford Municipal Class EA for Norwich WWTP

To whom it may concern,

R.V. Anderson Associates (RVA) has been retained by the County of Oxford to undertake a Municipal Class Environmental Assessment to evaluate upgrades to the Township of Norwich Waste Water Treatment Plant (WWTP). The focused Study Area is attached (Study Area Map). The project falls within the jurisdiction of Long Point Region Conservation Authority (LPRCA) as well as the Ministry of the Environment, Conservation and Parks (MECP) London District, and the Ministry of Natural Resources and Forestry (MNRF) Aylmer District. Otter Creek is present within the Study Area.

RVA has undertaken a desktop review of the following information sources as pertains to the Study Area, as per the Client's Guide to Preliminary Screening for SAR (MECP, May 2019) including:

- Natural Heritage Information Center database (accessed via MNRF's Make-a-Map: Natural Heritage Areas application (NAD83 Atlas 1km squares within the focused Study Area: 17NH3258, 17NH3259, 17NH3358, 17NH3359);
- Ontario Breeding Bird Atlas (OBBA) Archives (Atlas square: 17NH35);
- Ontario Reptile and Amphibian Atlas (ORAA) (Atlas square: 17NH35);
- Ontario Butterfly Atlas; Moth Atlas (Atlas square: 17NH35); and
- Aquatic resource area (ARA) polygons, segments and points (Ontario GeoHub)
- Department of Fisheries and Oceans Aquatic Species at Risk Map
- eBird (Norwich Lagoons Hotspot, 2011-present)
- iNaturalist.

Details regarding the records of Species at Risk (SAR) and rare species noted in the vicinity of the Study Area, including their associated S-ranks and status under the Endangered Species Act, are shown in Table 1 (attached).

At this time, we would like to request any additional/supplemental SAR information that may be available in addition to the noted sources, as well as any concerns with the proposed project as pertains to SAR and their habitats.

Please feel free to contact me if you have any questions or concerns with this request. A response to acknowledge your receipt of this email would be greatly appreciated.

Best regards,

Paul

RVA IS GROWING!
Our NEW Halton and Halifax offices are now open.

Paul Mikoda, B.Sc., CAN-CISEC
Terrestrial Ecologist

P: (519) 681-9916 ext. 5040
C: (905) 516-3132

R.V. Anderson Associates Limited
557 Southdale Road East, Suite 200, London, ON N6E 1A2

rvanderson.com

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Dear Sir/Madam,

On behalf of the County of Oxford, please find attached the Notice of Public Consultation Centre (PCC) #1 for the Norwich Wastewater Treatment Plant Capacity Expansion Municipal Class Environmental Assessment (MCEA) Study. A webpage for this Environmental Assessment has been created and all relevant documents will be uploaded including the Notice of Study Commencement. This webpage can be found here: Norwich WWTP MCEA Study (oxfordcounty.ca).

The project team values the participation of all stakeholders and wishes to ensure that the community's interests and concerns are taken into consideration. Please contact the project team members listed on the attached notice should you require further information on this project.

Thank you,

Samya

Samya Chams, B.A (she/her)

ADMINISTRATIVE ASSISTANT/ PROJECT SUPPORT COORDINATOR

t 519 681 9916 ext. 5021

a 557 Southdale Road East, Suite 200, London, ON N6E 1A2

rvanderson.com

Hydro One Networks Inc.

483 Bay Street
8th Floor South Tower
Toronto, Ontario M5G 2P5

HydroOne.com

July 04, 2022

Re: Norwich Wastewater Treatment Plant Capacity Expansion

Attention:
Jesse Keith, P.Eng.,
Project Manager
Oxford County Public Works

Thank you for sending us notification regarding (Norwich Wastewater Treatment Plant Capacity Expansion). In 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.

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.

Be advised that any changes to lot grading and/or drainage within proximity to Hydro One transmission corridor lands must be controlled and directed away from the transmission corridor.

Sent on behalf of,

Secondary Land Use
Asset Optimization
Strategy & Integrated Planning
Hydro One Networks Inc.

ROGERS

Rogers Communications
Outside Plant Engineering
800 York St
London, ON
N6A 5B1

Markup Response Form

Application Date	June 9, 2022	**Applicant:**	R.V. Anderson Associates Limited
Date Returned:	August 23, 2022		
Rogers Ref. No.:	G223701	**Applicant Ref. No.:**	N/A
Location / Municipality:	Stover St S/Norwich		

Rogers Communications has reviewed your drawing(s) as requested.
Our comments follow below with an "X" indicating Rogers' stance on your proposed plan.

Please inform Rogers Communications a minimum of 6 - 12 months in advance of the proposed construction schedule in order to coordinate our plant relocation.

Contact Ontario One Call at 1-800-400-2255 or www.on1call.com at least 5 business days before beginning work to obtain utility locates.
Hand dig / Vac truck when crossing, or within 1.0m of existing Rogers plant.
Plant is to approximation.

Comments:

☐	**Markup Only**	Not for PUCC Approval
☐	**For your Reference**	Rogers Communications currently has existing plant as marked on your drawing. Our standard depth in this municipality is: 1m. Please ensure you maintain clearances of 0.3m vertically and 0.6m horizontally.
☒	**No Conflict**	Rogers Communications currently does not possess existing plant in the area indicated on your attached plans.
☐	**CONFLICT**	Your proposed construction appears to encroach within existing Rogers Communications plant. Please ensure you maintain clearances of 0.3 m vertically and 1 m horizontally. For hand dig maintain 0.6 m and for directional bore maintain 1.0 m horizontally. Please relocate your proposed construction to allow adequate clearance.

CAUTION NOTES:

☐	Use vactruck and expose ducts, maintain minimum of 0.6m clearance.
☐	Rogers Communications has aerial plant in this area, as it is indicated on the attached plans.
☐	Fiber Optic Cable is present in the area of your proposed construction. Please obtain locates and maintain minimum 1.0m/1.0m clearance.
☐	Proposed Fiber Optic Cable in a joint use duct structure .
☐	Plant currently under construction.

Jayashree Maharana

August 23, 2022
DATE

Rogers.MOC@telecon.ca

John Tyrrell

From: John Tyrrell
Sent: December 4, 2024 3:01 PM
To: Harry Goossens
Cc: Austin Bender; Samya Chams
Subject: RE: Norwich Wastewater Treatment Plant - Notice of Public Consultation #2
Attachments: Norwich WWTP Natural Envir Assess DFT.pdf

Hi Harry

In contacting this MECP contact, we were essentially told to do what we have already done. See attached Natural Environment Assessment Memo. The field work for this memo was undertaken in 2021 and the assessment used the current MECP terms of reference indicated in this email.

Depending upon when the County is looking to initiate the design and construction of this project, we would recommend that the consultant undertaking this work review and confirm if there is evidence of SAR or SAR habitat located on or adjacent to the WWTP site as this may change depending upon the time lapse from the 2021 review.

We will note this in the Project File for this project.

John Tyrrell, M.Sc.(Eng.), P.Eng.
Associate, Regional Manager London

R.V. Anderson Associates Limited
557 Southdale Road East, Suite 200
London ON N6E 1A2
t 519 681 9916 x5038

LinkedIn | Facebook | Website

From: Species at Risk (MECP) <SAROntario@ontario.ca>
Sent: December 4, 2024 2:36 PM
To: Samya Chams <schams@rvanderson.com>
Cc: hgoossens@oxfordcounty.ca; John Tyrrell <JTyrrell@rvanderson.com>; Austin Bender <abender@rvanderson.com>
Subject: RE: Norwich Wastewater Treatment Plant - Notice of Public Consultation #2

Hello Samya,

Thank you for contacting the Ministry of the Environment, Conservation and Parks (MECP) Species at Risk Branch (SARB).

MECP is responsible for the administration of the *Endangered Species Act, 2007* (ESA) (Endangered Species Act, 2007, S.O. 2007, c. 6 (ontario.ca)). The ESA provides for the protection and recovery of species on the Species at Risk in Ontario (SARO) List (O. Reg. 230/08: SPECIES AT RISK IN ONTARIO

LIST). The ESA includes prohibitions against killing, harming, harassing, capturing, or taking a living member of a species listed as extirpated, endangered, or threatened on the SARO List (section 9) and against damaging or destroying the habitat of a species listed as endangered or threatened on the SARO List (section 10), without an exemption or authorization.

Seeking an ESA authorization or exemption is a proponent-led process. **This means that the person carrying out an activity is responsible for determining whether SAR and their habitat are present on or around the site of the activity, and ultimately ensuring their actions do not contravene the ESA**.

For information about assessing which SAR may be present on or in the area of your site, please refer to the MECP's draft "Client's Guide to Screening for Species at Risk" (attached).

Although it is the responsibility of the client to conduct their own screening for SAR, we have taken the time to do a quick review of the reported sightings of SAR in the area of the proposed activities to better help you plan your surveys. This list is not comprehensive and does not include all SAR that have the potential to be at or near the site, or the potential to be impacted by activities.

SAR that are likely to be at the site based on Natural Heritage Information include:

- Blanding's Turtle
- Eastern Hognose Snake
- Butternut
- Kentucky Coffee Tree
- Red-headed Woodpecker
- Lesser Yellowlegs
- Bank Swallow

Efforts should be made to survey for aquatic SAR in and around the area of activities.

MECP would also like to note that in water works have the possibility of causing harm to aquatic SAR both at the site, downstream, and in areas of the connected water table. Proper due diligence should be taken to determine is aquatic SAR are located in these adjoining habitats, and that they will not be impacted by activities. Possible impacts include, but are not limited to, the releasing contaminants into the water, changes in water temperature, the deposit of silt and other material that affect water clarity, and any other changes to water chemistry or aquatic habitats that may occur.

You may proceed with the screening on your own or you may wish to consider hiring a qualified professional to perform a screening on your behalf. MECP recommends that the services of a professional environmental consultant be retained to assist in the completion of a screening, field assessments and surveys. An environmental consultant will be able to provide advice and direction on the type of surveys that should be performed and will be able to interpret the results of any surveys carried out.

If after carrying out a thorough SAR screening, including any field assessments and surveys that might be necessary, there is **no evidence of SAR or SAR habitat located on or adjacent to the site of your activity** and your activity will therefore not cause any prohibited impacts, an exemption or authorization under the ESA would not be necessary to proceed. The ministry strongly recommends that you document your SAR screening and assessment and rationale for avoiding prohibited impacts for future reference if needed. Proponents are responsible for ensuring their actions do not contravene the ESA.

If there IS evidence of species a risk and/or habitat on or around the location of your activity, the ministry recommends that you carry out the work necessary to prepare an Information Gathering Form (IGF). This includes consideration of all the elements in your SAR screening data collection and further levels of assessment of impacts and potential to minimize adverse effects.

After considering all the data and information in the IGF, if you have determined that the activity can be carried out in such a way that you WILL NOT have adverse impacts prohibited by sections 9 and/or 10 of

the ESA, an exemption or authorization under the ESA would not be necessary to proceed if the activity is carried out in that way. Again, proponents are responsible for ensuring their actions do not contravene the ESA.

If after considering all the data and information in the IGF you have determined that the proposed activities COULD POTENTIALLY have adverse impacts prohibited by sections 9 and/or 10 of the ESA, an exemption or authorization may likely be required before you proceed. If there is no applicable exemption in regulations under the ESA, submit the IGF to the ministry at SAROntario@ontario.ca to seek a permit or agreement. Please visit How to get an Endangered Species Act permit or authorization | ontario.ca to obtain information on how to get an ESA permit or authorization.

Please consider in your project planning that it takes an average of 12-15 months from the submission of a complete IGF to a decision about a permit, if one is needed. This considers the time required to conduct the technical review of the application as well as to carry out public and Indigenous consultation, along with factors such as project complexity, seasonal nature of field survey and data collection required, volume of applications and quality of submissions. It is recommended that proponents submit a complete IGF well in advance of the activity's proposed start date. Failure to submit a complete and accurate IGF with supporting rationale and not allowing adequate time for review and the issuance of any required authorizations could result in delays to the activity's anticipated start date.

Thank you,
Species at Risk Branch

From: Samya Chams <schams@rvanderson.com>
Sent: Monday, November 25, 2024 11:25 AM
To: Samya Chams <schams@rvanderson.com>
Cc: hgoossens@oxfordcounty.ca; John Tyrrell <JTyrrell@rvanderson.com>; Austin Bender <abender@rvanderson.com>
Subject: Norwich Wastewater Treatment Plant - Notice of Public Consultation #2

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Thank you,

Samya

Samya Chams, B.A. (she/her)
Administrative Assistant

R.V. Anderson Associates Limited
557 Southdale Road East, Suite 200, London ON N6E 1A2
t 519 681 9916 ext. 5021
LinkedIn | Facebook | Website

John Tyrrell

From: Harvey, Joseph (MCM) <Joseph.Harvey@ontario.ca>
Sent: December 16, 2024 11:23 AM
To: John Tyrrell
Cc: 'hgoossens@oxfordcounty.ca'; Austin Bender; Samya Chams
Subject: FW: File 0014272: Norwich Wastewater Treatment Plant - Notice of Public Consultation #2
Attachments: Norwich WWTP Notice of PIC2.pdf

Categories: Filed by Newforma

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Joseph Harvey
Heritage Planner | Heritage Branch | Citizenship Inclusion and Heritage Division
Ministry of Citizenship and Multiculturalism | Ontario Public Service
613.242.3743 | Joseph.Harvey@ontario.ca

Ontario

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Sent: Monday, November 25, 2024 11:25 AM
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Attachment Referred to in
RVA Email to Oxford County

Title Page &
Table of Contents

Norwich WWTP Upgrades Municipal Class Environmental Assessment

Natural Environment Assessment Memo

Prepared for: County of Oxford

Prepared by:

Paul Mikoda, B.Sc. – Terrestrial Ecologist

Reviewed by:

Tisha Doucette, B.Sc., EP, ENV SP. –
Senior Planning Ecologist

RVA 215673

November 29, 2021

Table of Contents

Tables

Figures

Appendices

Attachment Referred to in
MECP Email to RVA

Client's Guide to Preliminary Screening for Species at Risk

Ministry of the Environment, Conservation and Parks

Species at Risk Branch, Permissions and Compliance

DRAFT - May 2019

Table of Contents

1.0 Purpose, Scope, Background and Context

1.1 Purpose of this Guide

This guide has been created to:

- help clients better understand their obligation to gather information and complete a preliminary screening for species at risk before contacting the ministry,
- outline guidance and advice clients can expect to receive from the ministry at the preliminary screening stage,
- help clients understand how they can gather information about species at risk by accessing publicly available information housed by the Government of Ontario, and
- provide a list of other potential sources of species at risk information that exist outside the Government of Ontario.

It remains the client's responsibility to:

- carry out a preliminary screening for their projects,
- obtain best available information from all applicable information sources,
- conduct any necessary field studies or inventories to identify and confirm the presence or absence of species at risk or their habitat,
- consider any potential impacts to species at risk that a proposed activity might cause, and
- comply with the *Endangered Species Act* (ESA).

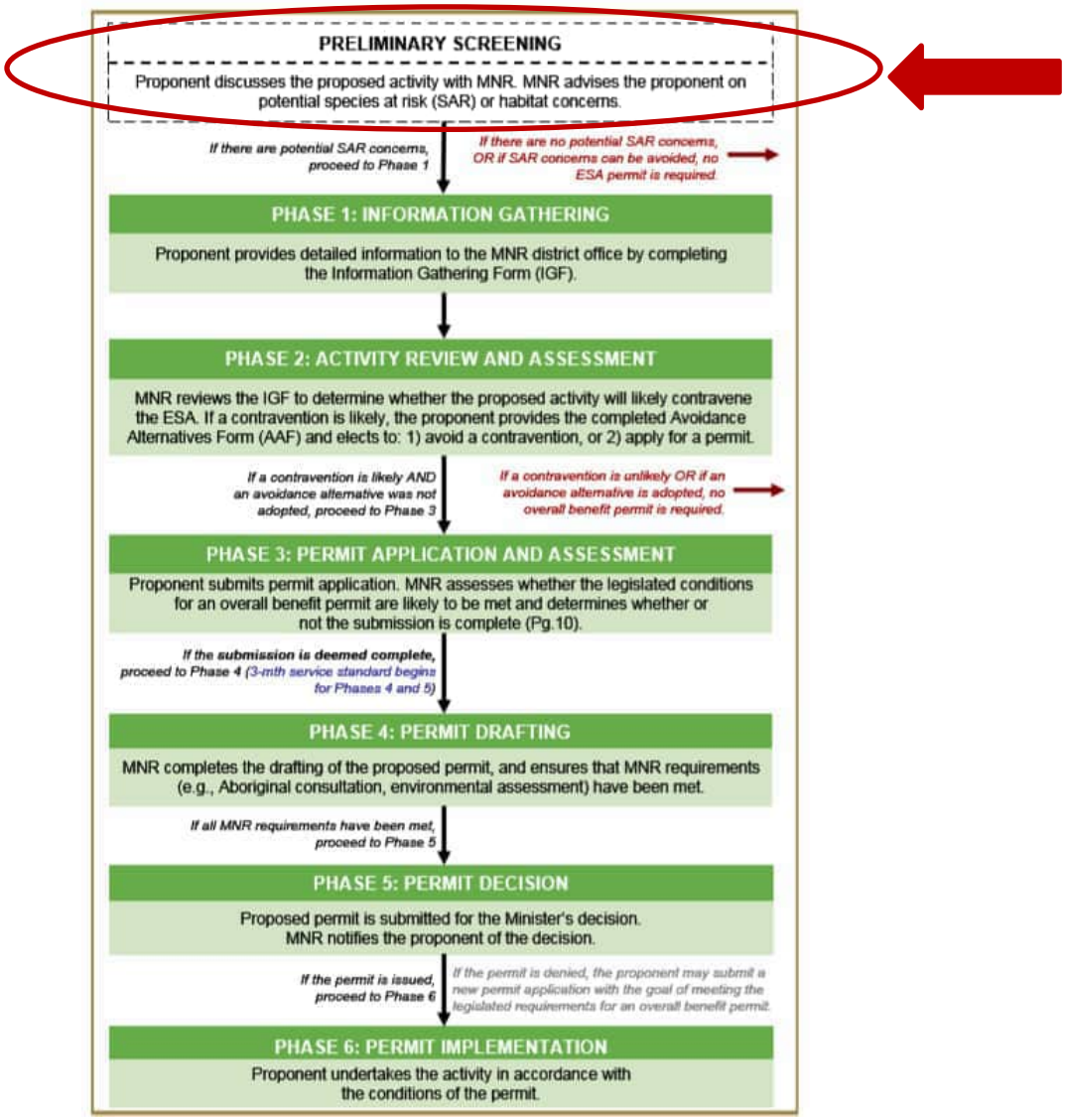
To provide the most efficient service, clients should initiate species at risk screenings and seek information from all applicable information sources identified in this guide, at a minimum, prior to contacting Government of Ontario ministry offices for further information or advice.

1.2 Scope

This guide is a resource for clients seeking to understand if their activity is likely to impact species at risk or if they are likely to trigger the need for an authorization under the ESA. It is not intended to circumvent any detailed site surveys that may be necessary to document species at risk or their habitat nor to circumvent the need to assess the impacts of a proposed activity on species at risk or their habitat. This guide is not an exhaustive list of available information sources for any given area as the availability of information on species at risk and their habitat varies across the province. This guide is intended to support projects and activities carried out on Crown and private land, by private landowners, businesses, other provincial ministries and agencies, or municipal government.

1.3 Background and Context

To receive advice on their proposed activity, clients must first 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 ESA. Once this step is complete, clients may contact the ministry at SAROntario@ontario.ca to discuss the main purpose, general methods, timing and location of their proposed activity as well as information obtained about species at risk and their habitat at, or near, the site. At this stage, the ministry can provide advice and guidance to the client about potential species at risk or habitat concerns, measures that the client is considering to avoid adverse effects on species at risk or their habitat and whether additional field surveys are advisable. This is referred to as the "Preliminary Screening" stage. For more information on additional phases in the diagram below, please refer to the *Endangered Species Act Submission Standards for Activity Review and 17(2)(c) Overall Benefit Permits* policy available online at https://www.ontario.ca/page/species-risk-overall-benefit-permits. Please note: any reference to MNR in the diagram is replaced by MECP.



2.0 Roles and Responsibilities

To provide the most efficient service, clients should initiate species at risk screenings and seek information from all applicable information sources identified in this guide prior to contacting Government of Ontario ministry offices for further information or advice.

Step 1: Client seeks information regarding species at risk or their habitat that exist, or are likely to exist, at or near their proposed activity by referring to all applicable information sources identified in this guide.

Step 2: Client reviews and consider guidance on whether their proposed activity is likely to contravene the ESA (see section 3.4 of this guide for guidance on what to consider).

Step 3: Client gathers information identified in the checklist in section 4 of this guide.

Step 4: Client contacts the ministry at SAROntario@ontario.ca to discuss their preliminary screening. Ministry staff will ask the client questions about the main purpose, general methods, timing and location of their proposed activity as well as information obtained about species at risk and their habitat at, or near, the site. Ministry staff will also ask the client for their interpretation of the impacts of their activity on species at risk or their habitat as well as measures the client has considered to avoid any adverse impacts.

Step 5: Ministry staff will provide advice on next steps.

Option A: Ministry staff may advise the client they can proceed with their activity without an authorization under the ESA where the ministry is confident that:

- no protected species at risk or habitats are likely to be present at or near the proposed location of the activity; or
- protected species at risk or habitats are known to be present but the activity is not likely to contravene the ESA; or
- through the adoption of avoidance measures, the modified activity is not likely to contravene the ESA.

Option B: Ministry staff may advise the client to proceed to Phase 1 of the overall benefit permitting process (i.e. Information Gathering in the previous diagram), where:

- there is uncertainty as to whether any protected species at risk or habitats are present at or near the proposed location of the activity; or
- the potential impacts of the proposed activity are uncertain; or
- ministry staff anticipate the proposed activity is likely to contravene the ESA.

3.0 Information Sources

Land Information Ontario (LIO) and the Natural Heritage Information Centre (NHIC) maintain and provide information about species at risk, as well as related information about fisheries, wildlife, crown lands, protected lands and more. This information is made available to organizations, private individuals, consultants, and developers through online sources and is often considered under various pieces of legislation or as part of regulatory approvals and planning processes.

The information available from LIO or NHIC and the sources listed in this guide should not be considered as a substitute for site visits and appropriate field surveys. Generally, this information can be regarded as a starting point from which to conduct further field surveys, if needed. While this data represents best available current information, it is important to note that a lack of information for a site does not mean that species at risk or their habitat are not present. There are many areas where the Government of Ontario does not currently have information, especially in more remote parts of the province. The absence of species at risk location data at or near your site does not necessarily mean no species at risk are present at that location. On-site assessments can better verify site conditions, identify and confirm presence of species at risk and/or their habitats.

Information on the location (i.e. observations and occurrences) of species at risk is considered sensitive and therefore publicly available only on a 1km square grid as opposed to as a detailed point on a map. This generalized information can help you understand which species at risk are in the general vicinity of your proposed activity and can help inform field level studies you may want to undertake to confirm the presence, or absence of species at risk at or near your site.

Should you require specific and detailed information pertaining to species at risk observations and occurrences at or near your site on a finer geographic scale; you will be required to demonstrate your need to access this information, to complete data sensitivity training and to obtain a Sensitive Data Use License from the NHIC. Information on how to obtain a license can be found online at https://www.ontario.ca/page/get-natural-heritage-information.

Many organizations (e.g. other Ontario ministries, municipalities, conservation authorities) have ongoing licensing to access this data so be sure to check if your organization has this access and consult this data as part of your preliminary screening if your organization already has a license.

3.1 Make a Map: Natural Heritage Areas

The Make a Natural Heritage Area Map (available online at https://www.ontario.ca/page/make-natural-heritage-area-map provides public access to natural heritage information, including species at risk, without the user needing to have Geographic Information System (GIS) capability. It allows users to view and identify generalized species at risk information, mark areas of interest, and create and print a custom map directly from the web application. The tool also shows topographic information such as roads, rivers, contours and municipal boundaries.

Users are advised that sensitive information has been removed from the natural areas dataset and the occurrences of species at risk has been generalized to a 1-kilometre grid to mitigate the risks to the species (e.g. illegal harvest, habitat disturbance, poaching).

The web-based mapping tool displays natural heritage data, including:

- Generalized Species at risk occurrence data (based on a 1-km square grid),
- Natural Heritage Information Centre data.

Data cannot be downloaded directly from this web map; however, information included in this application is available digitally through Land Information Ontario (LIO) at https://www.ontario.ca/page/land-information-ontario.

3.2 Land Information Ontario (LIO)

Most natural heritage data is publicly available. This data is managed in a large provincial corporate database called the LIO Warehouse and can be accessed online through the LIO Metadata Management Tool at https://www.javacoeapp.lrc.gov.on.ca/geonetwork/srv/en/main.home. This tool provides descriptive information about the characteristics, quality and context of the data. Publicly available geospatial data can be downloaded directly from this site.

While most data are publicly available, some data may be considered highly sensitive (i.e. nursery areas for fish, species at risk observations) and as such, access to some data maybe restricted.

3.3 Additional Species at Risk Information Sources

- The Breeding Bird Atlas can be accessed online at http://www.birdsontario.org/atlas/index.jsp?lang=en
- eBird can be accessed online at https://ebird.org/home
- iNaturalist can be accessed online at https://www.inaturalist.org/
- The Ontario Reptile and Amphibian Atlas can be accessed online at https://ontarionature.org/programs/citizen-science/reptile-amphibian-atlas
- Your local Conservation Authority. Information to help you find your local Conservation Authority can be accessed online at https://conservationontario.ca/conservation-authorities/find-a-conservation-authority/

  Local naturalist groups or other similar community-based organizations
- Local Indigenous communities
- Local land trusts or other similar Environmental Non-Government Organizations
- Field level studies to identify if species at risk, or their habitat, are likely present or absent at or near the site.
- When an activity is proposed within one of the continuous caribou ranges, please be sure to consider the caribou Range Management Policy. This policy includes figures and maps of the continuous caribou range, can be found online at https://www.ontario.ca/page/range-management-policy-support-woodland-caribou-conservation-and-recovery

3.4 Information Sources to Support Impact Assessments

- Guidance to help you understand if your activity is likely to adversely impact species at risk or their habitat can be found online at https://www.ontario.ca/page/policy-guidance-harm-and-harass-under-endangered-species-act and https://www.ontario.ca/page/categorizing-and-protecting-habitat-under-endangered-species-act
- A list of species at risk in Ontario is available online at https://www.ontario.ca/page/species-risk-ontario. On this webpage, you can find out more about each species, including where is lives, what threatens it and any specific habitat protections that apply to it by clicking on the photo of the species.

4.0 Check-List

Please feel free to use the check list below to help you confirm you have explored all applicable information sources and to support your discussion with Ministry staff at the preliminary screening stage.

- ✓ Land Information Ontario (LIO)
- ✓ Natural Heritage Information Centre (NHIC)
- ✓ The Breeding Bird Atlas
- ✓ eBird
- ✓ iNaturalist
- ✓ Ontario Reptile and Amphibian Atlas
- ✓ List Conservation Authorities you contacted:_____

  _____
- ✓ List local naturalist groups you contacted:_____

  _____
- ✓ List local Indigenous communities you contacted:_____

  _____
- ✓ List any other local land trusts or Environmental Non-Government Organizations you contacted:_____

  _____
- ✓ List and field studies that were conducted to identify species at risk, or their habitat, likely to be present or absent at or near the site: _____

  _____
- ✓ List what you think the likely impacts of your activity are on species at risk and their habitat (e.g. damage or destruction of habitat, killing, harming or harassing species at risk):_____

  _____

John Tyrrell

From: Harvey, Joseph (MCM) <Joseph.Harvey@ontario.ca>
Sent: December 16, 2024 11:23 AM
To: John Tyrrell
Cc: 'hgoossens@oxfordcounty.ca'; Austin Bender; Samya Chams
Subject: FW: File 0014272: Norwich Wastewater Treatment Plant - Notice of Public Consultation #2
Attachments: Norwich WWTP Notice of PIC2.pdf

Categories: Filed by Newforma

John Tyrrell,

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Please let us know if the project has been screened for impacts to known (previously recognized) or potential built heritage resources and cultural heritage landscapes. We continue to recommend that a *Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment* be undertake for the project study area. Technical cultural heritage studies (e.g., Cultural Heritage Reports, Cultural Heritage Evaluation Reports, Heritage Impact Assessments etc.) should be sent for our review as part of the environmental assessment process.

Thanks,

Joseph Harvey
Heritage Planner | Heritage Branch | Citizenship Inclusion and Heritage Division
Ministry of Citizenship and Multiculturalism | Ontario Public Service
613.242.3743 | Joseph.Harvey@ontario.ca

Ontario

From: Samya Chams <schams@rvanderson.com>
Sent: Monday, November 25, 2024 11:25 AM
To: Samya Chams <schams@rvanderson.com>
Cc: hgoossens@oxfordcounty.ca; John Tyrrell <JTyrrell@rvanderson.com>; Austin Bender <abender@rvanderson.com>
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Thank you,

Samya

Samya Chams, B.A. (she/her)

Administrative Assistant

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t 519 681 9916 ext. 5021
LinkedIn | Facebook | Website

John Tyrrell

From: Harvey, Joseph (MCM) <Joseph.Harvey@ontario.ca>
Sent: January 23, 2025 11:13 AM
To: John Tyrrell
Cc: Harry Goossens; Barboza, Karla (She/Her) (MCM)
Subject: RE: File 0014272: Norwich Wastewater Treatment Plant - Notice of Public Consultation #2

Hi John,

Thanks for providing us with the additional information.

We review and provide our response by the end of the coming week.

Thanks,

Joseph Harvey
Heritage Planner | Heritage Branch | Citizenship Inclusion and Heritage Division
Ministry of Citizenship and Multiculturalism | Ontario Public Service
613.242.3743 | Joseph.Harvey@ontario.ca

Ontario

From: John Tyrrell <JTyrrell@rvanderson.com>
Sent: Tuesday, January 14, 2025 11:01 AM
To: Harvey, Joseph (MCM) <Joseph.Harvey@ontario.ca>
Cc: Harry Goossens <hgoossens@oxfordcounty.ca>
Subject: RE: File 0014272: Norwich Wastewater Treatment Plant - Notice of Public Consultation #2

Hello Joesph,

Thank you for your December 16, 2024, response to the County's PCC # 2 Notice. Attached to this email is a copy of the presentation.

As part of undertaking this study we have reviewed the Oxford County Official Plan, Appendix Heritage Resources Inventory (https://www.oxfordcounty.ca/en/services-for-you/resources/Community-Planning/OP/appendix4.pdf). This document indicates that there are no known cultural resources adjacent to or within the property limits of the Norwich WWTP.

We have completed Ontario Form 0478e *Criteria for Evaluating Archaeological Potential A Checklist for the Non-Specialist*. As the property is within 300 m the Otter Creek, the undisturbed portions of the property do have archaeological potential. This form is attached.

The undisturbed areas which may be disturbed by the expansion of the WWTP would be the agricultural fields to the south of the south lagoon cell. To confirm the extent of the area of disturbance required for additional storage the County will need to proceed to the preliminary design phase of this project which is not expected to occur for several years depending on the rate of growth within the community. Potential disturbance to a portion of the agricultural field will include the new storage area, berms and construction access. This area is shown in the PCC # 2 slide deck.

The County will commit in the ESR document to undertake a Phase 1/2 Archaeological Assessment (and any required subsequent assessments) of the previously undisturbed areas of its property which will be disturbed by the defined expansion of lagoon storage prior to construction impacting these areas.

Take care,

John Tyrrell, M.Sc.(Eng.), P.Eng.
Principal, Regional Manager London

R.V. Anderson Associates Limited
557 Southdale Road East, Suite 200
London ON N6E 1A2
t 519 681 9916 x5038
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Samya Chams, B.A. (she/her)

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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

Norwich Wastewater Treatment Plant Capacity Expansion

Project or Property Location (upper and lower or single tier municipality)

Lot 7, Conc. 5, Norwich Township, Ontario

Proponent Name

Oxford County

Proponent Contact Information

Harry Goossens, Project Engineer, e: hgoossens@oxfordcounty.ca, t: 519.539.9800 Ext 3028

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

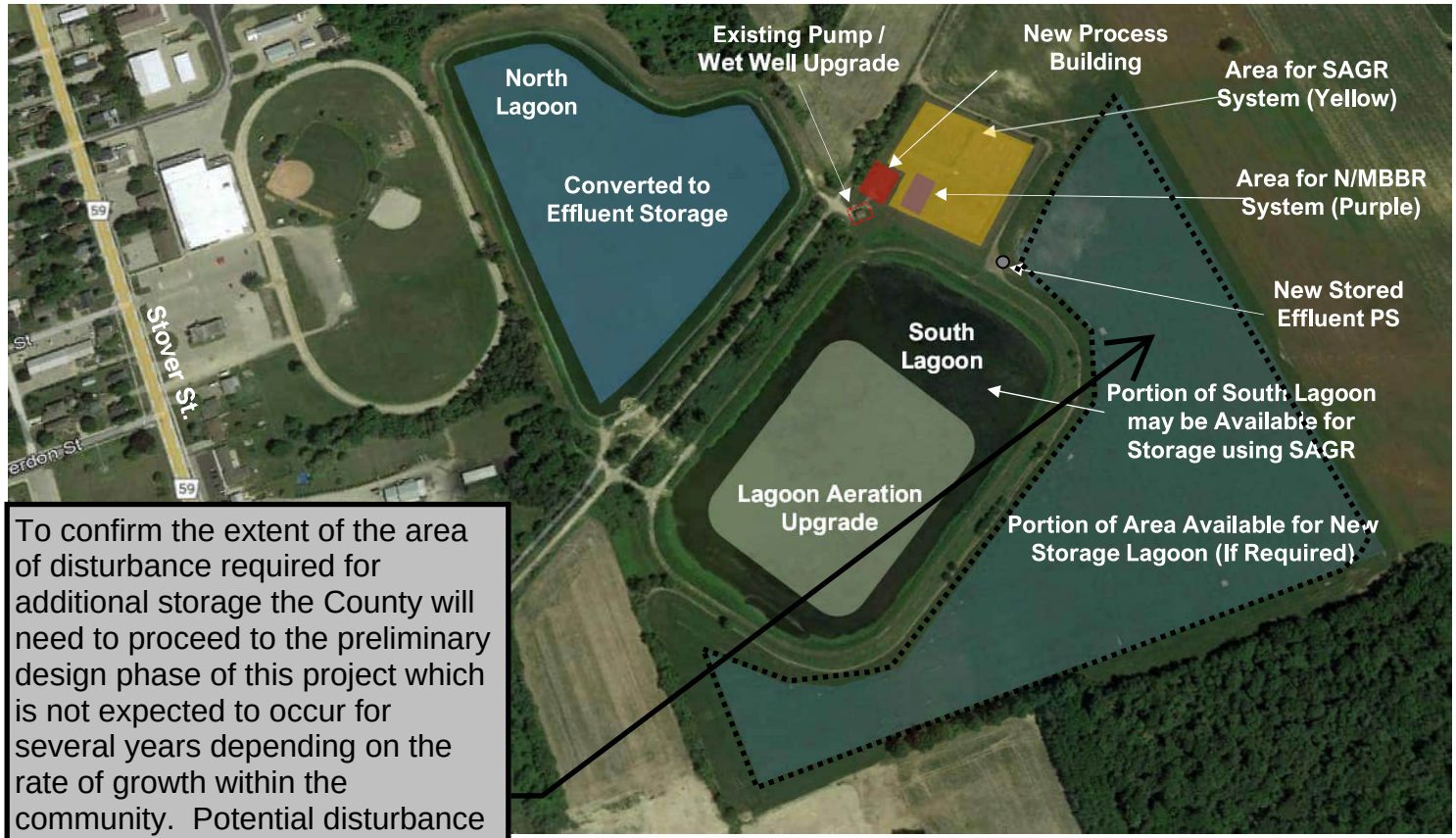
  For more information, see below – under the early historic transportation routes.

- **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

Proposed Design Concept



To confirm the extent of the area of disturbance required for additional storage the County will need to proceed to the preliminary design phase of this project which is not expected to occur for several years depending on the rate of growth within the community. Potential disturbance to a portion of the agricultural field will include the new storage area, berms and construction access. Once the area that will be disturbed is confirmed the County will proceed with undertaking a Phase 1/2 Archaeological

Oxford County
Growing stronger together

NOTE ON MCM 31JAN25 EMAIL:

The Norwich Class EA requires that the design concept be confirmed for the expansion and not for a preliminary design to be completed. The highlighted yellow section states that the archaeological work can be deferred to the preliminary design stage. The highlighted green section states that the archaeological work should inform the selection of the preferred alternative of the ESR. However, the chosen fixed strategy requires additional storage in the existing agricultural field which will trigger archaeological work. The final extent of this can only be determined during the work on the preliminary design. In the ESR, the County has made a commitment to undertaking the required archaeological/heritage studies and abide by their findings when the project is triggered due to growth which is scheduled for 2029 per the County's current capital plan.

John Tyrrell, Project Manager
RVA
30Apr25

John Tyrrell

From: Harvey, Joseph (MCM) <Joseph.Harvey@ontario.ca>
Sent: January 31, 2025 3:51 PM
To: John Tyrrell
Cc: Harry Goossens; Barboza, Karla (She/Her) (MCM)
Subject: FW: File 0014272: Norwich Wastewater Treatment Plant - Notice of Public Consultation #2
Attachments: PCC#2 Presentation 12Dec24.pdf; Arch Pot'l Form 0478e (10jan25).pdf

Hi John,

Thanks again for providing us with your response.

We have the following comments and recommendations:

Archaeological Resources
Thank you for providing us with a copy of the completed checklist: *Criteria for Evaluating Archaeological Potential* which indicates that the proposed undertaking meets the provincial criteria for archaeological potential as it is within 300m of a waterbody (Otter Creek). Therefore, a Stage 1 archaeological assessment, undertaken by an archaeologist licensed under the OHA, is required as part of preliminary design for the entire project study area. The findings and recommendations of the Stage 1 AA or a combined Stage 1 and 2 AA should be included in the final EA document and be used to inform the selection of the preferred alternative.

MCM recommends that any further recommended archaeological assessments (e.g., Stage 2,3 and 4) be undertaken by a licensed archaeologist as early as possible during detailed design and prior to any ground disturbing activities.

Please note that archaeological concerns have not been addressed until reports have been entered into the Ontario Public Register of Archaeological Reports where those reports recommend that:

1. the archaeological assessment of the project area is complete and
2. all archaeological sites identified by the assessment are either of no further cultural heritage value or interest (as per Section 48(3) of the *Ontario Heritage Act*) or that mitigation of impacts has been accomplished through excavation or an avoidance and protection strategy.

Approval authorities and/or proponents should wait to receive the MCM's written confirmation that the archaeological assessment report(s) has been entered into the Register before issuing a decision or proceeding with any ground disturbing activities. The letter will also indicate either that there are no further concerns for impacts to archaeological resources or articulate next steps to mitigate those concerns.

Built Heritage Resources and Cultural Heritage Landscapes
Please note that the this project will need to consider impacts to both known (previously recognized) and potential built heritage resources and/or cultural heritage landscapes (BHR/CHL). We recommend using the terms BHR or CHL instead of "*cultural resource*". This is because the term "*Cultural heritage resource*" refers to "*archaeological resources*", "*built heritage resources*" and "*cultural heritage landscapes".*

We have reviewed the *Oxford County Official Plan, Appendix Heritage Resources Inventory* provided in the link below and note the document was last updated in 2006. Given the lapse of time, we recommend that the Ministry checklist *Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes* be completed to help determine whether this EA project could impact known or potential BHR/CHL. Please see the instructions on page 4 to assist in completing the checklist.

If there is potential for built heritage resources and/or cultural heritage landscapes on the property or within the project area, a Cultural Heritage Evaluation Report (CHER) should be undertaken by a qualified person to determine the CHVI of the property (or project area). If the property (or project area) is determined to be of CHVI and alterations or development is proposed, MCM recommends that a Heritage Impact Assessment (HIA), prepared by a qualified consultant, be completed to assess potential project impacts. Please send the HIA to MCM (and the local municipality as appropriate) for review and comment and make it available to local organizations or individuals who have expressed interest in review.

We hope this is of assistance. Should you have any further questions, please contact me or Karla Barboza, Team Lead, Heritage Planning Unit.

Regards,

Joseph Harvey
Heritage Planner | Heritage Branch | Citizenship Inclusion and Heritage Division
Ministry of Citizenship and Multiculturalism | Ontario Public Service
613.242.3743 | Joseph.Harvey@ontario.ca

Ontario

From: John Tyrrell <JTyrrell@rvanderson.com>
Sent: Tuesday, January 14, 2025 11:01 AM
To: Harvey, Joseph (MCM) <Joseph.Harvey@ontario.ca>
Cc: Harry Goossens <hgoossens@oxfordcounty.ca>
Subject: RE: File 0014272: Norwich Wastewater Treatment Plant - Notice of Public Consultation #2

Hello Joesph,

Thank you for your December 16, 2024, response to the County's PCC # 2 Notice. Attached to this email is a copy of the presentation.

As part of undertaking this study we have reviewed the Oxford County Official Plan, Appendix Heritage Resources Inventory (https://www.oxfordcounty.ca/en/services-for-you/resources/Community-Planning/OP/appendix4.pdf). This document indicates that there are no known cultural resources adjacent to or within the property limits of the Norwich WWTP.

We have completed Ontario Form 0478e *Criteria for Evaluating Archaeological Potential A Checklist for the Non-Specialist*. As the property is within 300 m the Otter Creek, the undisturbed portions of the property do have archaeological potential. This form is attached.

The undisturbed areas which may be disturbed by the expansion of the WWTP would be the agricultural fields to the south of the south lagoon cell. To confirm the extent of the area of disturbance required for additional storage the County will need to proceed to the preliminary design phase of this project which is not expected to occur for several years depending on the rate of growth within the community. Potential disturbance to a portion of the agricultural field will include the new storage area, berms and construction access. This area is shown in the PCC # 2 slide deck.

The County will commit in the ESR document to undertake a Phase 1/2 Archaeological Assessment (and any required subsequent assessments) of the previously undisturbed areas of its property which will be disturbed by the defined expansion of lagoon storage prior to construction impacting these areas.

Take care,

John Tyrrell, M.Sc.(Eng.), P.Eng.
Principal, Regional Manager London

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557 Southdale Road East, Suite 200
London ON N6E 1A2
t 519 681 9916 x5038
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From: Harvey, Joseph (MCM) <Joseph.Harvey@ontario.ca>
Sent: December 16, 2024 11:23 AM
To: John Tyrrell <JTyrrell@rvanderson.com>
Cc: 'hgoossens@oxfordcounty.ca' <hgoossens@oxfordcounty.ca>; Austin Bender <abender@rvanderson.com>; Samya Chams <schams@rvanderson.com>
Subject: FW: File 0014272: Norwich Wastewater Treatment Plant - Notice of Public Consultation #2

John Tyrrell,

Thanks for providing us with the attached notice.

To assist us in tracking archaeological assessment reports, please provide us with the Project Information Form (PIF) number(s) of any archaeological assessments being prepared for this project.

Please let us know if the project has been screened for impacts to known (previously recognized) or potential built heritage resources and cultural heritage landscapes. We continue to recommend that a *Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment* be undertake for the project study area. Technical cultural heritage studies (e.g., Cultural Heritage Reports, Cultural Heritage Evaluation Reports, Heritage Impact Assessments etc.) should be sent for our review as part of the environmental assessment process.

Thanks,

Joseph Harvey
Heritage Planner | Heritage Branch | Citizenship Inclusion and Heritage Division
Ministry of Citizenship and Multiculturalism | Ontario Public Service
613.242.3743 | Joseph.Harvey@ontario.ca

Ontario

From: Samya Chams <schams@rvanderson.com>
Sent: Monday, November 25, 2024 11:25 AM
To: Samya Chams <schams@rvanderson.com>
Cc: hgoossens@oxfordcounty.ca; John Tyrrell <JTyrrell@rvanderson.com>; Austin Bender <abender@rvanderson.com>
Subject: Norwich Wastewater Treatment Plant - Notice of Public Consultation #2

Good morning,

On behalf of Oxford County, please find attached the Notice of Public Information Session (PIC) #2 for the Norwich Wastewater Treatment Plant Capacity Expansion – MCEA Study. A webpage has been created and all relevant documents have been uploaded. This webpage can be found here: https://speakup.oxfordcounty.ca/norwich-wwtp

The project team values the participation of all stakeholders and wishes to ensure that the community's interests and concerns are taken into consideration. Please contact the project team members listed on the attached notice should you require further information on this project.

Thank you,

Samya

Samya Chams, B.A. (she/her)

Administrative Assistant

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NOTE ON MECP 29APR25 EMAIL:

A Section “Socio-Economic Environment” has been added to Section 1.9 “Existing Conditions of Study Area” of the ESR to address MECP comments.

John Tyrrell, Project Manager
RVA
30Apr25

John Tyrrell

From: Macki, Monika (MECP) <Monika.MacKi@ontario.ca>
Sent: April 29, 2025 12:20 PM
To: John Tyrrell
Cc: Reuben Davis; Harry Goossens; 215673@projects.rvanderson.com
Subject: RE: Oxford County Norwich WWTP Class EA - MECP Comments

Hi John,

Thank you for the response. I will look forward to the revised ESR that includes the additions as described below.

Regarding Q2, the MCEA parent document (2023), Part C.3.1 (Water and Wastewater Projects) Description of the Environment , includes social and economic environment. Section A.2.3: Phase 2: Alternative Solutions involves " *Preparation of a physical description of the area where the project is to occur, and a* ***general inventory*** *of the natural, social, built and economic environments".*

I can see that the ESR section 7.2.2 already has socio-economic environment as consideration for mitigation measures. Social and economic considerations were also part of the alternative solutions evaluation criteria in the ESR.

A description / general inventory of the social and economic environment of the project area would address Part C.3.1 and A.2.3 of the MCEA. It would also provide a description / context to the mitigation measures and considerations to socio-economic environment that is already in the ESR. It doesn't have to be long ; a general description in a paragraph or two would be fine.

Thank you,

Monika Macki
Environmental Resource Planner/Environmental Assessment Coordinator
Environmental Assessment Branch
Ministry of the Environment, Conservation and Parks
monika.macki@ontario.ca

From: John Tyrrell <JTyrrell@rvanderson.com>
Sent: Tuesday, April 29, 2025 10:02 AM
To: Macki, Monika (MECP) <Monika.MacKi@ontario.ca>
Cc: Reuben Davis <rdavis@oxfordcounty.ca>; Harry Goossens <hgoossens@oxfordcounty.ca>; 215673@projects.rvanderson.com
Subject: Oxford County Norwich WWTP Class EA - MECP Comments

Hi Monika,

On behalf of Oxford County, the County and RVA have reviewed your letter and April 11th letter and offers the following responses to MECP's queries:

Q1 "Please include an estimated timeline for the project to be implemented."

> R1 Subsection 7.1 of the ESR details the implementation steps for this project noting that it needs to be within 10 years of the finalization of the Class EA. The intention is for the County to monitor the Norwich WWTP and its projected demands and other drivers and to confirm when to trigger this expansion. For the purposes of financial planning, the 2025 Oxford County budget projects this project to start in 2029.

Q2 "A physical description of the study area and a general inventory of the natural, social and economic components of the environment are missing from the Report. This information is necessary for traceability of decision-making during the evaluation alternative solutions and their potential impacts on the environment. Please revise the Report to include a study area description and general environmental inventory in order to best meet Class EA requirements."

> R2 Section 1 and specifically subsection 1.9 of the ESR "Existing Conditions of Study Area" and Appendix 2.1 "Natural Environment Existing Conditions Report" provides the required descriptions from "Part C – Municipal Water and Wastewater Project" of the MECP document. The MECP reviewer is using the physical description of the study area and a general inventory from "Part D – Municipal Transit Projects of the MECP document."

Q3 "The ministry recommends that proponents include a summary of questions, comments and concerns raised by communities, and how they have been or will be addressed. If none were received, then this should be documented in the Report."

> R3 To date, no significant comments or concerns have been raised by communities. Updated ESR will note this.

Q4 "Section 2.3 lists the indigenous communities that were consulted with during this class EA. Mississaugas of the Credit First Nation was identified as one that was consulted. Appendix 1-3 contains the notifications that were sent out to the communities, however the notification to Mississaugas of the Credit First Nation is missing. Please include their notification and correspondence."

> R4 Notification included First Nations as noted below. ESR has been updated to include correspondence with Credit First Nation.

Agency	Contact	Title	Email	Address	Phone	*Notes*	Date Added to List
Indigenous Groups							
Oneida Nation of the Thames		Environment and Consultation Coordinator	environment@oneida.on.ca	2212 Elm Avenue Southwold, ON N0L 2G0	519-652-6922		
Mississaugas of the Credit First Nation	Fawn Sault	Consultation Manager	Fawn.Sault@mncfn.ca	Mississauga of the Credit First Nation 4065 Hwy. 6, Hagersville,	(905)768-1133		
Mississaugas of the Credit First Nation		Department of Consultation &	doca@mncfn.ca				
Mississaugas of the Credit First Nation	Megan DeVries	Archaeological Operations Supervisor Department of Consultation and	Megan.DeVries@mncfn.ca	4065 Highway 6 North, Hagersville, ON N0A 1H0	P: 905-768-4260 | M: 289-527-2763		
Six Nations of the Grand River	Lonny Bomberry	Lands & Resource Director		Six Nations of the Grand River Consultation and Accommodations Team			
Six Nations of the Grand River	Robbin Vanstone	Land Use Office, Lands and Research	rvanstone@sixnations.ca	Six Nations of the Grand River Consultation and Accommodations Team			
Six Nations of the Grand River	Tanya Hill-Mountour	Archaelogy Coordinator	tanyahill-montour@sixnations.ca	Six Nations of the Grand River Consultation and Accommodations Team			
Metis Nation of Ontario		Consultation Office	consultations@metisnation.org				
Haudenosaunee Confederacy Chiefs Council		Consultation Office	hdi2@bellnet.ca	Haudenosaunee Development Institute 16 Sunrise Court – Suite 600 P.O. Box 714	519-445-4222	***Undeliverable***	

Q5 “It is noted that the proponent has been in communication with the SAR branch, as noted in the ESR. MECP encourages the proponent to continue engaging with MECP’s SAR branch for matters related to SAR.

If after carrying out a thorough SAR screening, including any field assessments and surveys that might be necessary, there is no evidence of SAR or SAR habitat located on or around the site of your activity and your activity will therefore not cause any prohibited impacts, an exemption or authorization under the ESA would not be necessary to proceed. The ministry strongly recommends that you document your SAR screening and assessment and rationale for avoiding prohibited impacts for future reference if needed.

If there IS evidence of species a risk and/or habitat on or around the location of your activity, and there is no applicable exemption in regulations under the ESA, the ministry recommends that you carry out the work necessary to prepare an Information Gathering Form (IGF) and submit it to SAROntario@ontario.ca. This form considers all elements in your SAR screening data collection and further levels of assessment of impacts and potential to minimize adverse effects. Please visit How to get an Endangered Species Act permit or authorization | ontario.ca to obtain more information on how to get an ESA permit or authorization.”

R5 This has been addressed in the ESR as noted in Appendix 2.1.

We hope that the above is satisfactory.

John Tyrrell, M.Sc.(Eng.), P.Eng.
Principal, Regional Manager London

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PROUDLY 100% CANADIAN

From: Macki, Monika (MECP) <Monika.MacKi@ontario.ca>
Sent: Friday, 11 April 2025 3:01 pm
To: Harry Goossens <hgoossens@oxfordcounty.ca>; Jesse Keith <jkeith@oxfordcounty.ca>
Cc: Reuben Davis <rdavis@oxfordcounty.ca>
Subject: RE: Oxford County Norwich WWTP Class EA -ACS Review Meeting Questions and Request to Approve Effluent Criteria for Norwich WWTP Expansion

Hello,

Thank you for providing MECP the opportunity to review the draft ESR for Oxford County’s Norwich WWTP Expansion EA. Please find attached MECP comments.
I look forward to your response.

Thank you,

Monika Macki
Environmental Resource Planner/Environmental Assessment Coordinator
Environmental Assessment Branch
Ministry of the Environment, Conservation and Parks
monika.macki@ontario.ca

From: Macki, Monika (MECP)
Sent: Monday, March 24, 2025 10:43 AM
To: Harry Goossens <hgoossens@oxfordcounty.ca>
Cc: Reuben Davis <rdavis@oxfordcounty.ca>
Subject: RE: Oxford County Norwich WWTP Class EA -ACS Review Meeting Questions and Request to Approve Effluent Criteria for Norwich WWTP Expansion

Hi Harry,

Thanks for providing the draft ESR.

Typically MECP requests minimum 30 days to review a draft report, as per our acknowledgement letter. We will do our best but I cannot guarantee timelines.

Thanks

Monika Macki
Environmental Resource Planner/Environmental Assessment Coordinator
Environmental Assessment Branch
Ministry of the Environment, Conservation and Parks
monika.macki@ontario.ca

From: Harry Goossens <hgoossens@oxfordcounty.ca>
Sent: Friday, March 21, 2025 11:22 AM
To: Macki, Monika (MECP) <Monika.MacKi@ontario.ca>
Cc: Reuben Davis <rdavis@oxfordcounty.ca>
Subject: RE: Oxford County Norwich WWTP Class EA -ACS Review Meeting Questions and Request to Approve Effluent Criteria for Norwich WWTP Expansion

Good morning Monika,
I hope this message finds you well.
As part of Oxford County's consultation and communication plan, we are submitting the draft Environmental Study Report (ESR) to the Ministry of the Environment, Conservation and Parks (MECP) for your review. Our aim is to address any concerns or feedback prior to the approval of the Notice of Completion by the Council.
For your reference, I have attached the draft ESR document to this email. If possible, we would appreciate receiving any comments or feedback from the MECP by April 9, 2025, to ensure we can incorporate them into the final document before proceeding.
Please do not hesitate to reach out if you require any further information or clarification.
Thank you for your time and attention to this matter. We look forward to your valuable input.

Harry Goossens, P.Eng.
Project Engineer
OXFORD COUNTY | 21 Reeve St., PO Box 1614, Woodstock, ON, N4S 7Y3

Ministry of the Environment, Conservation and Parks

Environmental Assessment Branch

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Ministère de l'Environnement, de la Protection de la nature et des Parcs

Direction des évaluations environnementales

Rez-de-chaussée
135, avenue St. Clair Ouest
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Tél. : 416 314-8001
Téléc. : 416 314-8452

Via E-mail Only

April 11, 2025

Jesse Keith
jkeith@oxfordcounty.ca
Oxford County

Re: Norwich Wastewater Treatment Plant Capacity Expansion
Oxford County
Municipal Class Environmental Assessment – Schedule C
Project Review Unit Comments – Draft Environmental Study Report

Dear Jesse,

Thank you for providing the ministry with an opportunity to comment on the draft Study Report (Report/ESR) for the above noted Class Environmental Assessment (EA) project. The Ministry of the Environment, Conservation and Parks (ministry) provides the following comments for your consideration.

General

1) Please include an estimated timeline for the project to be implemented.

Class EA Process & Master Plan Approach

2) A physical description of the study area and a general inventory of the natural, social and economic components of the environment are missing from the Report. This information is necessary for traceability of decision-making during the evaluation alternative solutions and their potential impacts on the environment. Please revise the Report to include a study area description and general environmental inventory in order to best meet Class EA requirements.

Indigenous Engagement

3) The ministry recommends that proponents include a summary of questions, comments and concerns raised by communities, and how they have been or will be addressed. If none were received, then this should be documented in the Report.

4) Section 2.3 lists the indigenous communities that were consulted with during this class EA. Mississaugas of the Credit First Nation was identified as one that was consulted. Appendix 1-3 contains the notifications that were sent out to the communities, however the notification to Mississaugas of the Credit First Nation is missing. Please include their notification and correspondence.

Species At Risk

5) It is noted that the proponent has been in communication with the SAR branch, as noted in the ESR. MECP encourages the proponent to continue engaging with MECP's SAR branch for matters related to SAR.

   If after carrying out a thorough SAR screening, including any field assessments and surveys that might be necessary, there is no evidence of SAR or SAR habitat located on or around the site of your activity and your activity will therefore not cause any prohibited impacts, an exemption or authorization under the ESA would not be necessary to proceed. The ministry strongly recommends that you document your SAR screening and assessment and rationale for avoiding prohibited impacts for future reference if needed.

   If there IS evidence of species a risk and/or habitat on or around the location of your activity, and there is no applicable exemption in regulations under the ESA, the ministry recommends that you carry out the work necessary to prepare an **Information Gathering Form (IGF)** and submit it to SAROntario@ontario.ca. This form considers all elements in your SAR screening data collection and further levels of assessment of impacts and potential to minimize adverse effects. Please visit How to get an Endangered Species Act permit or authorization | ontario.ca to obtain more information on how to get an ESA permit or authorization.

Thank you for circulating this draft Report for the ministry's consideration. Please document the provision of the draft Report to the ministry as well as this Project Review Unit Comments letter

in the final report, and please provide an accompanying response letter to support our review of the final report. A copy of the final Notice should be sent to the ministry's Southwest Region EA notification email account (eanotification.swregion@ontario.ca).

Should you or any members of your project team have any questions regarding the material above, please contact me at monika.macki@ontario.ca.

Sincerely,

Monika Macki

Monika Macki
Environmental Resource Planner / EA Coordinator
Environmental Assessment Program Support, Environmental Assessment Branch
Ontario Ministry of the Environment, Conservation and Parks

Responses from Others

John Tyrrell

From: John Tyrrell
Sent: October 20, 2022 7:56 AM
To: Samya Chams
Subject: FW: 54 Main Street E, Norwich - Requesting Access for Sampling of Otter Creek

Please file with the Class EA documentation for project 215673.

Thanks

John Tyrrell, M.Sc.(Eng.), P.Eng.
SENIOR PROJECT MANAGER/REGIONAL MANAGER

t 519 681 9916 ext. 5038 | m 519-878-7903
a 557 Southdale Road East, Suite 200, London, ON N6E 1A2

rvanderson.com

From: Albert Meyer <albertm@stubbes.org>
Sent: October 20, 2022 7:29 AM
To: Jesse Keith <jkeith@oxfordcounty.ca>
Cc: John Tyrrell <JTyrrell@rvanderson.com>
Subject: RE: 54 Main Street E, Norwich - Requesting Access for Sampling of Otter Creek

Jesse,

I just wanted to touch base with you on the progress of the Class EA Study to identify solutions to develop a preferred WWTP capacity expansion.

Has a preferred option been decided on?

Thanks

Albert Meyer
VP of Projects

To help protect your privacy, Microsoft Office prevented automatic download of this picture from the Internet.
Stubbe's Logo

P: 519-424-2183 x275
C: 519-536-3294
F: 519-424-9058
E: albertm@stubbes.org
44 Muir Line, Harley, ON N0E 1E0 | www.stubbes.org

From: Jesse Keith <jkeith@oxfordcounty.ca>
Sent: March 25, 2022 9:02 AM
To: Albert Meyer <albertm@stubbes.org>
Cc: John Tyrrell (jtyrrell@rvanderson.com) <jtyrrell@rvanderson.com>
Subject: RE: 54 Main Street E, Norwich - Requesting Access for Sampling of Otter Creek

Hi Albert,

Apologies for my delayed response. We have identified some planning level solution alternatives including expansion of the lagoon based system or mechanical plant. A preferred option has not been decided on; we will conduct a Public Consultation Centre in the coming months to review/present project background, study processes, evaluation of alternative solutions, etc.

Regards,

JESSE KEITH, P. ENG. (HE / HIM) | **Project Engineer, Public Works**
OXFORD COUNTY | 21 Reeve St., PO Box 1614, Woodstock, ON, N4S 7Y3
WWW.OXFORDCOUNTY.CA | T 519.539.9800 / 1-800-755-0394, ext 3194

From: Albert Meyer <albertm@stubbes.org>
Sent: March 17, 2022 8:41 AM
To: Jesse Keith <jkeith@oxfordcounty.ca>
Subject: RE: 54 Main Street E, Norwich - Requesting Access for Sampling of Otter Creek

Jesse,

I just wanted to touch base with you on the progress of the Class EA Study to identify solutions to develop a preferred WWTP capacity expansion.

Has a preferred option been decided on? If not which options are being considered?

Thanks

Albert Meyer
P: 519-424-2183 x275 | C: 519-536-3294 | E: albertm@stubbes.org

From: Jesse Keith <jkeith@oxfordcounty.ca>
Sent: January 31, 2022 9:39 PM
To: Albert Meyer <albertm@stubbes.org>
Cc: Mike Goor <mikeg@stubbes.org>
Subject: 54 Main Street E, Norwich - Requesting Access for Sampling of Otter Creek

Hi Albert,

I hope you and your colleagues at Stubbe's are doing well. I'm reaching out to you as Oxford County's Project Manager for the Municipal Class Environmental Assessment (MCEA) Study that is underway for capacity expansion of the Norwich WWTP; I hope that you received our Notice of Study Commencement circulated last year (copy attached).

In conjunction with the MCEA Study, we are required to complete an Assimilative Capacity Study (ACS) of Otter Creek, the receiver of treated discharge from the Norwich WWTP. We are currently developing an ACS work plan, which includes a creek

water quality sampling/testing program, for MECP's acceptance. As shown on the "Proposed Sampling Locations" sketch attached, the preferred sampling location downstream (D/S) of the WWTP is located on Stubbe's Property Development Inc. owned property at 54 Main Street E.

Would Stubbe's allow the County permission to use 54 Main Street E (from Main Street) to gain access to the proposed D/S sampling location? Tentatively, a 12 month program is required, with sampling proposed either once or twice per month. We are looking to start immediately (Feb, 2022). Hope to hear from you at your earliest convenience.

Best Regards,

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WWW.OXFORDCOUNTY.CA | T 519.539.9800 / 1-800-755-0394, ext 3194
M 519.535.8473

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John Tyrrell

From: Harry Goossens <hgoossens@oxfordcounty.ca>
Sent: October 3, 2024 1:46 PM
To: Albert Meyer
Cc: Jesse Keith; John Tyrrell
Subject: RE: 54 Main Street E, Norwich - WWTP Upgrades

Good afternoon Albert,

The discharge approach has been finalized and a meeting with MECP has been completed to review this approach, we are currently working towards PCC #2 to be completed some time in November an exact date has not been set yet. We are working on the notice for this meeting and you will receive it once its completed as your on the stakeholder list. In regards to a start date and completion date of the actual work I don't have that information at this time.

Regards

Harry Goossens, P.Eng.
Project Engineer
OXFORD COUNTY | 21 Reeve St., PO Box 1614, Woodstock, ON, N4S 7Y3
WWW.OXFORDCOUNTY.CA | 519.539.9800 EXT 3028

From: Albert Meyer <albertm@stubbes.org>
Sent: Thursday, 3 October 2024 9:40 am
To: Harry Goossens <hgoossens@oxfordcounty.ca>
Cc: Jesse Keith <jkeith@oxfordcounty.ca>; John Tyrrell <JTyrrell@rvanderson.com>
Subject: RE: 54 Main Street E, Norwich - WWTP Upgrades

Harry,

I just wanted to check in on the status of the WWTP upgrades?

Have you hit any major road blocks? Is the discharge approach finalized?

Is there a planned start date? Estimated completion date?

Thanks

Albert Meyer
VP of Projects

P: 519-424-2183 x275
C: 519-536-3294
F: 519-424-9058
E: albertm@stubbes.org
44 Muir Line, Harley, ON N0E 1E0 | www.stubbes.org

From: Harry Goossens <hgoossens@oxfordcounty.ca>
Sent: Tuesday, March 19, 2024 9:21 AM
To: Albert Meyer <albertm@stubbes.org>
Cc: Jesse Keith <jkeith@oxfordcounty.ca>; John Tyrrell <JTyrrell@rvanderson.com>
Subject: RE: 54 Main Street E, Norwich - WWTP Upgrades

> You don't often get email from hgoossens@oxfordcounty.ca. Learn why this is important

Hello Albert,

Jesse has taken on a new role and so I have taken over this project and will be your new point of contact. We are currently in the process of getting the discharge approach finalised with RVA. Once we get this completed we can move to the second PCC and finalize the EA. Once the EA is complete, design and construction would be completed based on Oxford County's review of required capacity. I hope this answers your questions.

Regards

Harry Goossens, P.Eng.
Project Engineer
OXFORD COUNTY | 21 Reeve St., PO Box 1614, Woodstock, ON, N4S 7Y3
WWW.OXFORDCOUNTY.CA | T 519-533-8161 / 519.539.9800 EXT 3028

From: Albert Meyer <albertm@stubbes.org>
Sent: March 14, 2024 2:28 PM
To: Jesse Keith <jkeith@oxfordcounty.ca>
Cc: John Tyrrell (jtyrrell@rvanderson.com) <jtyrrell@rvanderson.com>
Subject: RE: 54 Main Street E, Norwich - WWTP Upgrades

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Jesse,

I just wanted to check in on the status of the WWTP upgrades?

Have you hit any major road blocks? Have you decided which solution the county will proceed with?

Is there a planned start date? Estimated completion date?

Thanks

Albert Meyer
VP of Projects

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Subject: RE: 54 Main Street E, Norwich - Requesting Access for Sampling of Otter Creek

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P: 519-424-2183 x275 | C: 519-536-3294 | E: albertm@stubbes.org

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APPENDIX 1-6

Oxford County Council Endorsement of Class EA

OXFORD COUNTY COUNCIL

MINUTES

April 9, 2025

Council Present	Warden Marcus Ryan Deputy Warden Brian Petrie Councillor Jerry Acchione Councillor Deb Gilvesy Councillor Bernia Martin Councillor David Mayberry Councillor Jim Palmer Councillor Mark Peterson Councillor Phil Schaefer Councillor Deborah Tait
Council Absent	N/A
Staff Present	B. Addley, Chief Administrative Officer M. Abercrombie, Director of Public Works L. Buchner, Director of Corporate Services M. Dager, Director of Long-Term Care R. Hall, Director of Paramedic Services L. Mansbridge, Clerk P. Michiels, Director of Community Planning R. Smith, Acting Director of Human Services

1. CALL TO ORDER

Oxford County Council meets in regular session this ninth day of April, 2025, in the Council Chamber, County Administration Building, Woodstock at 9:30 a.m. with Warden Ryan in the chair.

2. APPROVAL OF AGENDA

RESOLUTION NO. 1

Moved By: Brian Petrie
Seconded By: Mark Peterson

Resolved that the Agenda be approved as amended:

[redacted]

8.3.5 PW 2025-26 Norwich Wastewater Treatment Plant Capacity Expansion Municipal Class Environmental Assessment Study

RECOMMENDATIONS:

1. That County Council authorize staff to proceed with Alternative 3 - Upgrade the Existing Lagoon-Based System - Submerged Attached Growth Reactor, as the preferred solution for the Norwich Wastewater Treatment Plant Capacity Expansion Class Environmental Assessment Study, as summarized in Report PW 2025-26;

2. And further, that County Council authorize staff to issue a Notice of Completion and post the Schedule C Environmental Study Report for the Norwich Wastewater Treatment Plant Capacity Expansion in the public record for 30 days in accordance with the requirements of the Municipal Class Environmental Assessment process.

RESOLUTION NO. 15

Moved By: Jim Palmer
Seconded By: Mark Peterson

Resolved that the recommendations contained in Report PW 2025-26 titled "Norwich Wastewater Treatment Plant Capacity Expansion Municipal Class Environmental Assessment Study", be adopted.

DISPOSITION: Motion Carried

[redacted]

Oxford County

Norwich Wastewater Treatment Plant Capacity Expansion

Appendix 2 – Background Information and Planning Level Solutions

May 1, 2025

R.V. Anderson Associates Limited
557 Southdale Road East, Suite 200
London, ON N6E 1A2

Norwich Wastewater Treatment Plant Capacity Expansion

Review of Background Information and Planning Level Solutions

TABLE OF CONTENTS

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APPENDICES

1.0 Background

1.1 Introduction

R.V. Anderson Associates Limited (RVA) was retained by the County of Oxford to undertake a Municipal Class Environmental Assessment to evaluate upgrades to the Township of Norwich Wastewater Treatment Plant (WWTP). The Class Environmental Assessment Municipal Engineers Association, 2023 (MCEA) is an approved planning and design process under the Ontario Environmental Assessment Act (EAA). The project falls within the jurisdiction of Long Point Region Conservation Authority (LPRCA) as well as the Ministry of the Environment, Conservation and Parks (MECP) London District, and the Ministry of Natural Resources and forestry (MNRF) Aylmer District. The study area is shown in Figure 1.1. The purpose of this technical memorandum is to evaluate different wastewater design concepts to satisfy the current and future needs of the Community of Norwich.

1.2 Existing Norwich WWTP

The Norwich WWTP is owned by Oxford County and is operated by the County under the Ministry of the Environment, Conservation, and Parks (MECP) Environmental Compliance Approval (ECA) No. 1680-6F6QR5 issued August 31, 2005. The Norwich WWTP has an average daily flow (ADF) capacity of 1,530 m^3/d and ECA rated peak flow (PF) of 5,160 m^3/d. The Norwich WWTP provides treatment for wastewater generated in the village of Norwich, which is located approximately 20 kilometres south of Woodstock, Ontario.

The Norwich WWTP consists of two facultative lagoon cells followed by four intermittent sand filter cells. The system was originally constructed in 1972. The sanitary sewer system was expanded, and a second lagoon cell was added in 1977. Intermittent sand filters were added in 1996 along with other upgrades to the sewage treatment system and pumping station. The height of the berms in the South lagoon was increased in 1998 and the North lagoon in 2009 providing additional storage capacity in the lagoons. Sewage collection in the Village of Norwich is provided by a combination of gravity sewers and three sewage pumping stations (SPS): Sutton Street SPS, Dufferin Street SPS, and Lossing Drive SPS.

Flows delivered to the distribution chamber are directed to either the North or South lagoon cell. The South cell has a surface area of 60,705 m^2 and the North cell has a surface area of 58,276 m^2. There is flexibility in the design to operate the lagoon cells in parallel or in series. The effluent from the lagoon cells is pumped to a filter inlet valve chamber which directs flow to the intermittent sand filter (ISF). The ISF consist of four cells, each with a surface area of 1,600 m^2 for a total filter surface area of 6,400 m^2. Each filter contains 760 mm of sand (0.13 mm effective size), 75 mm of crushed stone (5 mm), 75 mm crushed stone (13.2 mm), and 77 mm crushed stone (19 mm). The filter cell underdrains consist of 100 mm perforated PVC pipe. Effluent from the ISF is discharged to a wetland area which then flow to Otter Creek. The ECA allows for discharge during all times of year; however, discharge is limited to 236 days per year; however, operation of the filter is limited during the cold winter months due to freezing. Alum addition for phosphorus removal is provided at the Sutton Street SPS.

1.3 Level of Cost Opinions in this MCEA Study

ASTM E 2516 (Standard Classification for Cost Estimate Classification System) provides a five-level classification system based on several characteristics, with the primary characteristic being the level of project definition (i.e., percentage of design completion). The ASTM standard, shown in Table 7.1, illustrates the typical accuracy ranges that may be associated with the general building industries.

Table 1.1 – ASTM E2516 Accuracy Range of Cost Opinions for General Building Industries

Cost Estimate Class	Expressed as % of Design Completion	Anticipated Accuracy Range as % of Actual Cost
5	0-2	-30 to +50
4	1-15	-20 to +30
3	10-40	-15 to +20
2	30-70	-10 to +15
1	50-100	-5 to +10

The cost estimates developed in this report would be best described as a Class 5 Cost Estimate which is typically used for high level study project.

In some cases, project cost estimates were supplied with greater levels of accuracy based on MCEA Study conceptual design, detailed designs, etc.

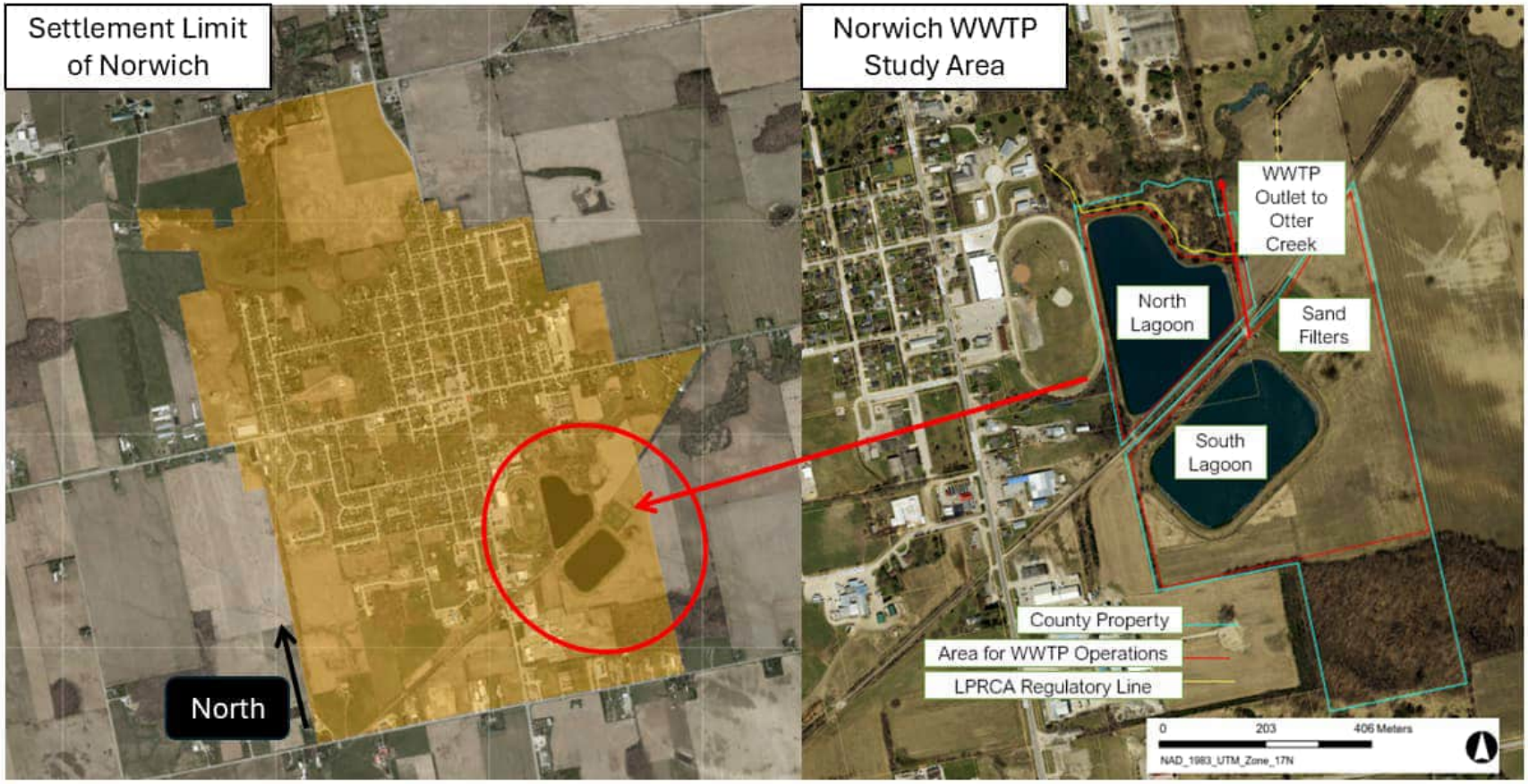


Figure 1.1 - Norwich Settlement Area and Norwich WWTP Study Area

2.0 EXISTING CONDITIONS OF STUDY AREA

2.1 Natural Environment Existing Conditions Report

A Natural Environment Existing Conditions Report was prepared and this is included as Appendix 2-1. This report included a review of existing background information concerning the natural environment within and surrounding the Study Area, including Species at Risk (SAR). A terrestrial field investigation was conducted during the 2021 growing season and included a vegetation inventory and community delineation, survey for floral SAR, as well as incidental wildlife observations. No at-risk species or habitats for at-risk species protected under the ESA were positively identified during field work.

The Study Area is situated in an area with a long history of active cultivation and removal of native vegetation communities. As a result, wildlife expected to utilize the Study Area are those that are tolerant of modified landscapes or that utilize the area occasionally, such as birds, especially waterfowl, during migration. Current design concepts are for upgrades to be constructed within the agricultural (soybean) field to the east and/or south of the existing facility with no disturbance within unmaintained areas within the facility itself. As a result, impacts to terrestrial habitats within the Study Area will be generally limited to edge habitat or areas that undergo regular seasonal disturbance/maintenance.

The proposed improvements to the Norwich WWTP are not expected to require additional permitting or approvals regarding impacts to areas regulated by LPRCA, wildlife species (including SAR) or fish and their habitats. It was concluded that the project will have a very limited impact on terrestrial natural environment components within the Study Area and the overall function of the system is not expected to be significantly altered by the proposed project.

2.2 Cultural Heritage Environment

A review of the Oxford County Official Plan, Appendix Heritage Resources Inventory (https://www.oxfordcounty.ca/en/services-for-you/resources/Community-Planning/OP/appendix4.pdf) indicates that there are no known cultural resources within the property limits of the Norwich WWTP.

2.3 Archaeological Assessment

Should this MCEA study recommend work be undertaken in any area of the WWTP property that has not been disturbed to date by construction of the WWTP (facilities, outlets, access roads, etc.), then there will be a requirement under the Ontario Heritage Act and that archaeological assessment reports must be submitted to the Ontario Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI) for prior to any ground disturbance. As the full extent of work within undisturbed areas may not be known until preliminary design begins on upgrades, it is recommended that the County carry the commitment to undertake an archaeological assessment forward until such a time as the extent and timing of the upgrade implementation are confirmed.

2.4 Source Water Protection

The project area is within the Long Point Region Source Protection Area. The Long Point Region watershed takes in the area drained by 14 major waterways that empty into Lake Erie including Big Otter Creek, Big Creek, Lynn River-Black Creek, Nanticoke Creek and Sandusk Creek. Based on a review of available information (long-point-region-source-protection-area), the Study Area is not within any highly vulnerable aquifers or within the Well Head Protection Areas of any municipal drinking water sources. This is shown in Figure 2.1.

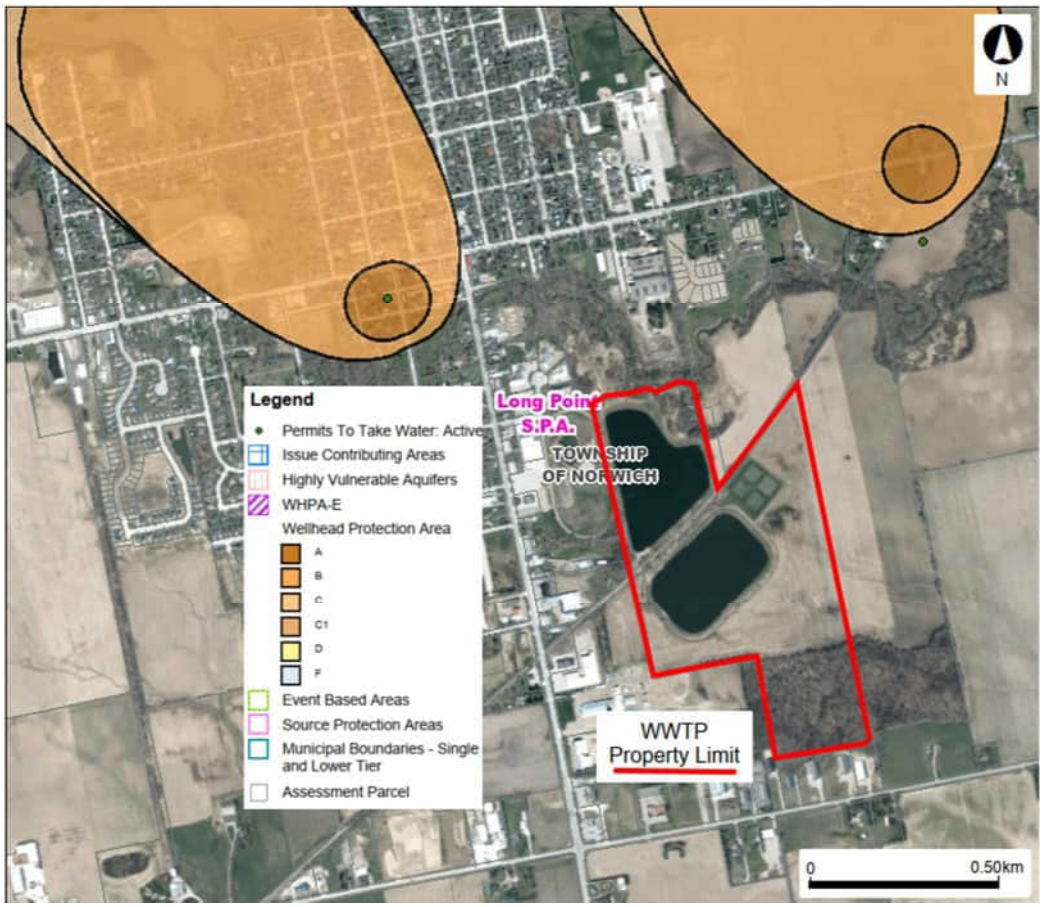


Figure 2.1- Source Water Protection in Study Area

3.0 HISTORIC OPERATION REVIEW

3.1 Historic Influent Flows

Norwich WWTP historic influent flows and characteristics between 2017 and 2021 were analyzed. Table 3.1 illustrates the historic influent flow values for annual average day flows (ADF), the annual max month flows (MMF), the annual peak day flows (PDF), and the respective PDF peaking factors (PF).

Table 3.1 – Historic Influent Flows (2017-2021)

Year	Flow (m^3/d)				
	ADF	MMF	PDF	PDF Factor	MMF Factor
2017	1,101	1,935	4,854	4.4	1.8
2018	1,165	1,934	6,175	5.3	1.7
2019	1,218	1,872	4,013	3.3	1.5
2020	1,139	1,992	6,922	6.1	1.7
2021	1,017	1,258	3,319	3.3	1.2
Average/Max	**1,134**	**1,992**	**6,922**	**6.1**	**1.8**

Figure 3.1 illustrates the historic influent flows trend of the monthly ADF and PDF for period of 2017-2021. Figure 3.1 also shows the overall ADF.

3.2 Historic Influent Characteristics

The historic influent characteristics and loadings for the period 2017-2021 were reviewed and summarized as indicated in Table 2.2. The average influent characteristics of period 2017-2021 were calculated by multipling the monthly influent charateristic concentration times the corospondant monthly ADF, and the overall loading value was divided by the histroric ADF, and the max month influent characteristic concentration was calculated by dividing the max month loading of each characteristic by the the historic max month flow. As for the case of $cBOD_5$ and TSS, it was noticed that they are tested once per month, therefore, for accuracy, there loadings were calcualted by multiplying the monthly characterstic concentration times the specific average day flow of the testing day.

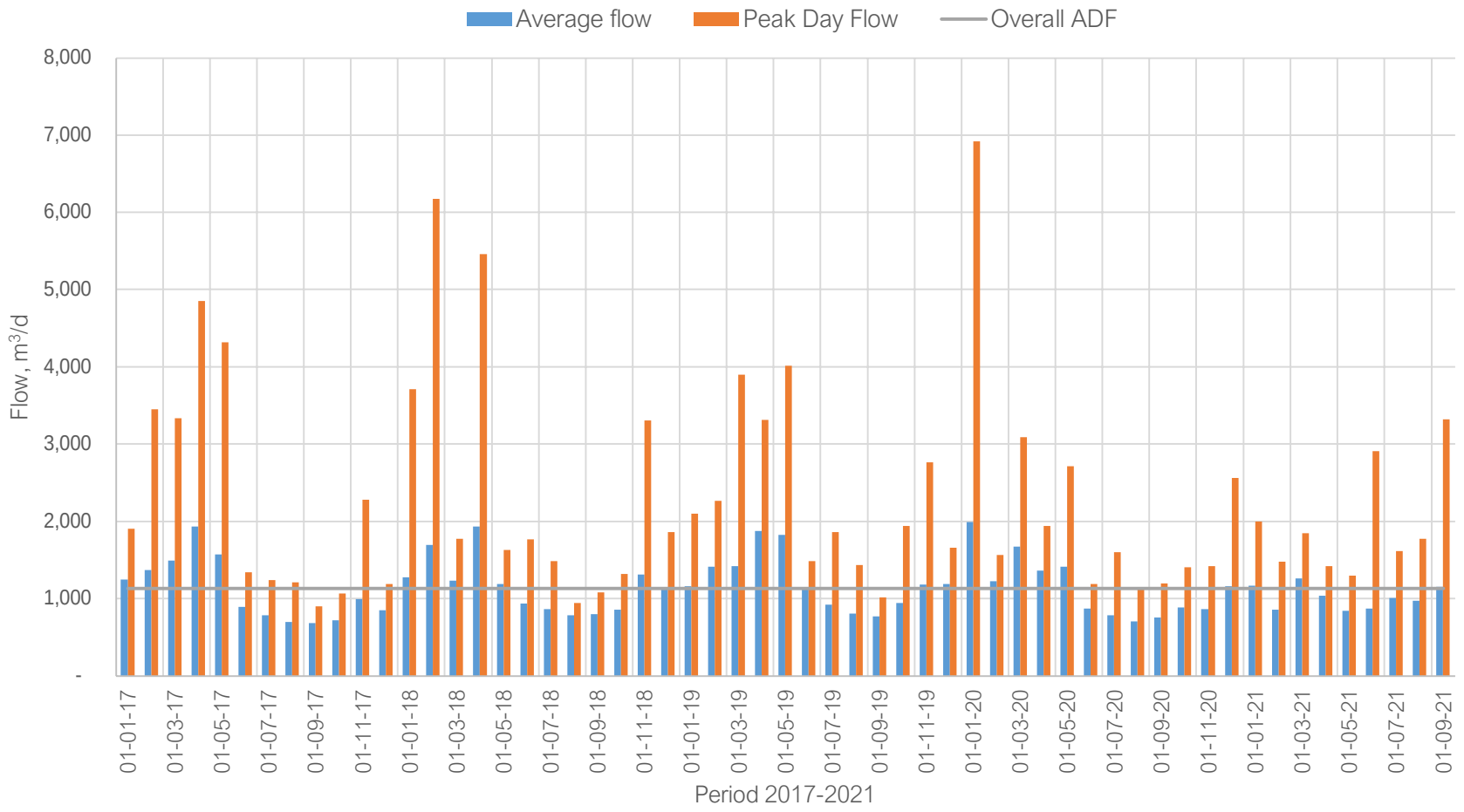


Figure 3.1 – Historic Average Influent Day Flow (ADF) and Peak Day Flow (PDF)

Table 3.2 illustrates the historic average and max month characteristics and loadings.

Table 3.2 – (2017-2021) Historic Average and Max Month Influent Characteristics

Influent Characteristics	Historic Average Characteristics based on Loading	Historic Max Month Characteristics based on Loading	Historic Loading (kg/d)	Historic Max Month Loading (kg/d)
Flow, m^3/d	1,222	1,992	N/A	N/A
$cBOD_5$, mg/L	147	156	179	310
TSS, mg/L	162	186	198	370
TKN, mg/L	34.4	29.7	39	59.1
TP, mg/L	3.7	3.1	4.2	6.2

4.0 2011 MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

4.1 Design Flows

In 2011 the County undertook a Municipal Class Environmental Assessment (MCEA) for Norwich WWTP to design the future flows and loadings. Table 4.1 presents the design wastewater flows, based on raw wastewater quality as well as average daily loadings and maximum monthly loadings projected to the Norwich WWTP to 2036. The design loadings presented in Table 4.2 are inclusive of contributions from the major industry in the Village of Norwich.

Table 4.1 – Norwich WWTP Summary of Design Future Flows per 2011 MCEA

Parameter	Unit	Value
Average Daily Flow, ADF	m^3/d	2,600
Maximum Day Flow, MDF	m^3/d	9,267
MDF Factor		3.6
Peak Instantaneous Flow, PIF	m^3/d	13,309
PIF Factor		5

Table 4.2 – Norwich WWTP Summary of Design Future Raw Wastewater Quality per 2011 MCEA

Parameter	Design Average Daily Loading	Average Design Concentration
BOD_5	500 kg/d (1,000 kg/d)	192 mg/L
TSS	578 kg/d (1,387 kg/d)	222 mg/L
TKN	81 kg/d (122 kg/d)	31.2 mg/L
TP	17.2 kg/d (25.8 kg/d)	6.6 mg/L

Note: Values in parentheses represent maximum month values

4.2 2012 Assimilative Capacity Study

In 2012 the County undertook an Assimilative Capacity Study (ACS) of Otter Creek. Given the fact that Norwich is a lagoon system, there is opportunity for some storage during periods where discharge may be limited due to low flows in the receiving stream or limited assimilation capacity in the receiving stream due to ambient water quality. The study reviewed the monthly maximum discharge scenarios beginning with the design future average daily flow of 2,600 m^3/day. Table 4.3 illustrates the proposed maximum monthly effluent discharge volumes.

Table 4.3 – Maximum Monthly Effluent Discharge volumes

Month	Maximum Monthly Discharge (m^3)	Equivalent Average Day discharge Rate (m^3/d)
January	165,230	5,330
February	123,200	4,400
March	165,230	5,330
April	159,900	5,330
May	82,460	2,660
June	79,800	2,660
July	27,590	890
August	82,460	2,660
September	79,800	2,660
October	82,460	2,660
November	79,800	2,660
December	122,450	3,950

Based on the assimilative capacity in the Otter Creek and maximum monthly discharge volumes from Norwich WWTP, the study proposed the following compliance limits and design objectives.

Table 4.4 illustrates the proposed future compliance limits and objectives. However, Oxford County confirmed that the proposed design flows and raw wastewater quality in Norwich Wastewater Treatment Plant Class EA – XCG TM#2 dated June 2011 and the proposed maximum monthly effluent discharge volumes and proposed effluent compliance limits and objective in Assimilative Capacity Study of Otter Creek – XCG TM#3 dated August 2012, can be used for Norwich WWTP future expansion of population growth up to 2046.

Table 4.4 – Proposed Future Compliance Limits and Objectives

Effluent Parameters	Compliance Limits		Objectives	
	Monthly Average Concentration (mg/L)	Average Loading (kg/d)	Monthly Average Concentration (mg/L)	Average Loading (kg/d)
$CBOD_5$				
January, March, April	10.0	53.3	5.0	26.7
February		44.0		22.0
May, June, August to November		26.6		13.3
July		8.9		4.5
December		39.5		19.8
Total Suspended Solids, TSS				
January, March, April	10.0	53.3	5.0	26.7
February		44.0		22.00
May, June, August to November		26.6		13.3
July		8.9		4.5
December		39.5		19.8
Total Phosphorus				
January, March, April	0.45	2.4	0.35	1.87
February		1.98		1.54
May, June, August to November		1.2		0.93
July		0.4		0.31
December		1.78		1.38
Total Ammonia Nitrogen				
January, March, April	4.5	24.0	3.5	18.7
February	4.5	19.8	3.5	15.4
May, June, August to November	0.4	1.1	0.3	0.8
July	0.4	0.4	0.3	0.27
December	4.5	17.8	3.5	13.8
E. Coli	< 200 organisms/100 mL	N/A	< 100 organisms/ 100 mL	N/A
Dissolved Oxygen	> 4	N/A	> 5	N/A

Notes:
Loadings are based on the maximum discharge scenario listed in Table 3.3
January, March, April – 5,330 m^3/d
February – 4,400 m^3/d
May, June, August to November – 2,660 m^3/d
July – 890 m^3/d
December – 3,950 m^3/d

4.3 2011 Planning Level Solutions

At the first and only PCC conducted for the 2011 MCEA study, the alternative solutions reviewed were:

1. Do nothing;
2. Limit growth;
3. Reduce wastewater flows through water efficiency measures and extraneous flow reduction;
4. Decommission the existing plant and build a new mechanical WWTP on the existing site;
5. Decommission the existing plant and build a new mechanical WWTP on a new site;
6. Decommission the existing plant and transfer wastewater from Norwich to the Woodstock WWTP for treatment;
7. Decommission the existing plant and transfer wastewater from Norwich to the Tillsonburg WWTP for treatment;
8. Build a new mechanical treatment plant to treat additional flows related to community growth and maintain the existing lagoon- based system to treat existing flows; and
9. Optimize, upgrade and/or expand the existing lagoon-based system to treat projected future flows.

4.4 Postponement of 2011 MECA

Between 2011 and 2015, growth in the community was not at the level anticipated, and the County experienced a reduction in water usage (and subsequently wastewater flows). As a result, in June 2016, County Council approved that the MCEA study be put on hold until which time increased development rates and associated WWTP flow rates are observed.

5.0 CURRENT MCEA PROCESS

5.1 Introduction

In 2021, RVA was retained by the County of Oxford to undertake the MCEA for the expansion of the Norwich WWTP with a design horizon of 25-years (to 2046).

The current 2023 MCEA process is an approved planning and design process under the Ontario Environmental Assessment Act (EAA). The process provides the framework for planning of municipal infrastructure projects to fulfill the requirements of Ontario Environmental Assessment Act for a class or category of infrastructure projects. Projects are divided into schedules based on the type of projects and activities. Schedules are categorized as Exempt, B and C with reference to the magnitude of their anticipated environmental impact. These are described briefly in the following paragraphs. Appendix 1: Project Tables, Table B: Municipal Water and Wastewater Projects of the current MCEA document provides guidance in the project schedules for typical water and wastewater municipal projects.

There are five key elements in the MCEA planning process. These include:

- Phase 1 – Identification of problem (deficiency) or opportunity;
- Phase 2 – Identification of alternative solutions to address the problem or opportunity. Public and review agency contact is mandatory during this phase and input received along with information on the existing environment is used to establish the preferred solution. It is at this point that the appropriate Schedule (B or C) is chosen for the undertaking. If Schedule B is chosen, the process and decisions are then documented in a Project File. Schedule C projects proceed through the following Phases;
- Phase 3 – Examination of alternative methods of implementing the preferred solution established in Phase 2. This decision is based on the existing environment, public and review agency input, anticipated environmental effects and methods of minimizing negative effects and maximizing positive effects;
- Phase 4 – Preparation of an Environmental Study Report summarizing the rationale, planning, design, and consultation process of the project through Phases 1-3. The ESR is then to be made available to agencies and the public for review; and
- Phase 5 – Completion of contract drawings and documents. Construction and operation to proceed. Construction to be monitored for adherence to environmental provisions and commitments. Monitoring during operation may be necessary if there are special conditions.

This report covers the technical work undertaken in Phases 1 and 2 of the MCEA process.

6.0 IDENTIFICATION OF PROBLEM OR OPPORTUNITY – PHASE 1

6.1 Problem/Opportunity Statement

Per Phase 1 requirements of the MCEA process for a schedule 'C' project, a "Problem and Opportunity Statement" was prepared to identify in detail the various problems and opportunities to be addressed by the study. In essence, the Problem Statement outlines the need and justification for the overall project and establishes the general parameters, or scope, of the study.

The Problem Statement will be confirmed following the assessment of the existing conditions within the study area, along with having discussions with County staff regarding municipal servicing and infrastructure needs; and through consultation with the public and technical agencies undertaken throughout the study.

At this time, the Study Problem & Opportunity Statement developed for the project is:

> "To determine the most cost effective, environmentally sound, and sustainable approach to provide wastewater treatment that will accommodate future growth within the 25-year planning horizon in the Township Norwich."

The 25-year period is defined as the period from 2021 to 2046.

6.2 Projected Sewage Flows

Population and sewage flow projections are based on the findings of the 2023 Oxford County Water and Wastewater Master Plan (Oxford W/WW MP). For planning purposes, the County has requested that population be assumed to be based on the high growth scenario. This is shown in Table 6.1.

Table 6.1 - Community of Norwich Population Projections

Population Type	2021	2026	2031	2036	2041	2046	2021-2046 Additional Population
Residential	4,330	5,092	5,854	6,616	7,378	8,140	3,810
Non-Residential	1,123	1,408	1,693	1,978	2,263	2,548	480

The Oxford W/WW MP found the following per capita average daily flow (ADF) values for Norwich:

- Residential 175 L/s; and
- Non-Residential 300 L/s.

Based on the high growth scenario, the 2046 ADF for Norwich is anticipated to be:

Residential - 1,425 m^3/day + Non-Residential- 766 m^3/day = 2,191 m^3/day.

To provide a margin of safety at the design horizon of 2046 to allow for continued approval of planned development in Norwich, the WWTP capacity should be 85% of the total capacity of the WWTP. Therefore, the target ADF capacity of the upgrade is 2,577 m^3/day which is rounded up to 2,600 m^3/day.

7.0 EFFLUENT CRITERIA AND DISCHARGE LIMITS FOR WWTP EXPANSION

7.1 Determination of Effluent Criteria

As part of the recommencement of the MCEA RVA retained Greenland International Consulting Ltd to review the 2012 ACS. With this review and updated operational data the Ontario Ministry of Environment Conservation and Parks (MECP) was approached to confirm if the findings of the 2012 ACS were valid and could be used as the basis for planning a WTP expansion. The MECP provided comments on the review and requested that a new ACS should be completed in light of the time that had passed since the 2012 study.

In early 2022 a terms of reference was agreed to between the County and MECP and additional field sampling was undertaken in 2022 and a new ACS analysis was undertaken and coordinated through RVA. The ACS was based on determining the effluent objective and limit criteria established for a design rating capacity of 2,600 m^3/d as per the recent 2023 ACS.

The results of the finalized ACS dated September 2024 appear in Appendix 2-2.

7.2 Confirmation of Effluent Criteria

The County and RVA met with MECP to confirm the effluent effluent quality for the expansion of the Norwich WWTP to 2,600 m^3/day. The last meeting was held on September 18, 2024, and subsequent correspondence with MECP resulted in approval of the discharge criteria shown in Table 7.1.

Table 7.1 - Approved Effluent Criteria

Parameter	Period	Proposed Effluent Limit	Proposed Effluent Objective
Total Phosphorus	Year Round	0.2 mg/L	0.10 mg/L
Total Ammonia Nitrogen	Non-Freezing (Apr-Nov)	1.5 mg/L	1.0 mg/L
	Freezing (Dec-Mar)	4.0 mg/L	2.0 mg/L
Fecal Coliforms as E.Coli	Year Round	100 CFU/100 mL	50 CFU/100 mL
Total Suspended Solids	Year Round	10 mg/L	5 mg/L
DO	Year Round	>6 mg/L	>6 mg/L
$CBOD_5$	Year Round	10 mg/L	5 mg/L

This effluent criteria is based on the following monthly discharge criteria as shown in Table 7.2.

Table 7.2 - Monthly Discharge Limits

Month	Daily Limit (l/s)	Daily Limit (m^3/d)
January	44	3,802
February	43	3,715
March	49	4,234
April	80	6,912
May	38	3,283
June	21	1,814
July	2	173
August	7	605
September	13	1,123
October	14	1,210
November	21	1,814
December	31	2,678

Documentation of the confirmation of effluent criteria with MECP appear in Appendix 2-3.

8.0 REVIEW OF ALTERNATIVE SOLUTIONS – PHASE 2

8.1 Alternative Solutions

Based on a review of existing conditions, the work in the 2011 MCEA process and the assimilative capacity study, the County/RVA team shortlisted the alternative solutions for consideration as follows:

- Option 1 – (2011 Alternative 1) Do nothing – mandatory to review for a Class EA Studies;
- Option 2 – (combination of 2011 Alternatives 4 and 8) Build a new mechanical WWTP on the existing site and repurpose existing lagoons; and
- Option 3 – (2011 Alternative 9) Optimize, upgrade and/or expand the existing lagoon-based system to treat projected future flows.

Option 1 "Do nothing" does not meet the MCEA objective to provide wastewater treatment that will accommodate future growth within the 25-year planning horizon in the Township Norwich. This alternative and therefore is not considered further.

Option 2 a new mechanical WWTP on the existing site and repurpose existing lagoons. Assuming that this would be a conventional activated sludge facility, it would consist of:

- New Headworks Building;
- Primary Aeration Tankage;
- Secondary Clarifiers;
- Tertiary Filters;
- UV Disinfection; and
- Biosolids Management as lagoon cells are required to store flows due to monthly discharge requirements.

Figure 8.1 shows Option 2.

Option 3 involves upgrade and/or expand the existing lagoon-based system to treat projected future flows, it would consist of:

- Retrofit of South Lagoon Cell for Enhanced Treatment including aeration;
- Possible replacement of Sand Filters with Ammonia Treatment System if not provided in South cell;
- Tertiary Filters;
- UV Disinfection; and
- Additional lagoon cell storage to store flows due to monthly discharge requirements.
- Figure 8.2 shows Option 3.

Figure 8.2 shows Option 3.

Figure 8.1 - Option 2 New Mechanical WWTP

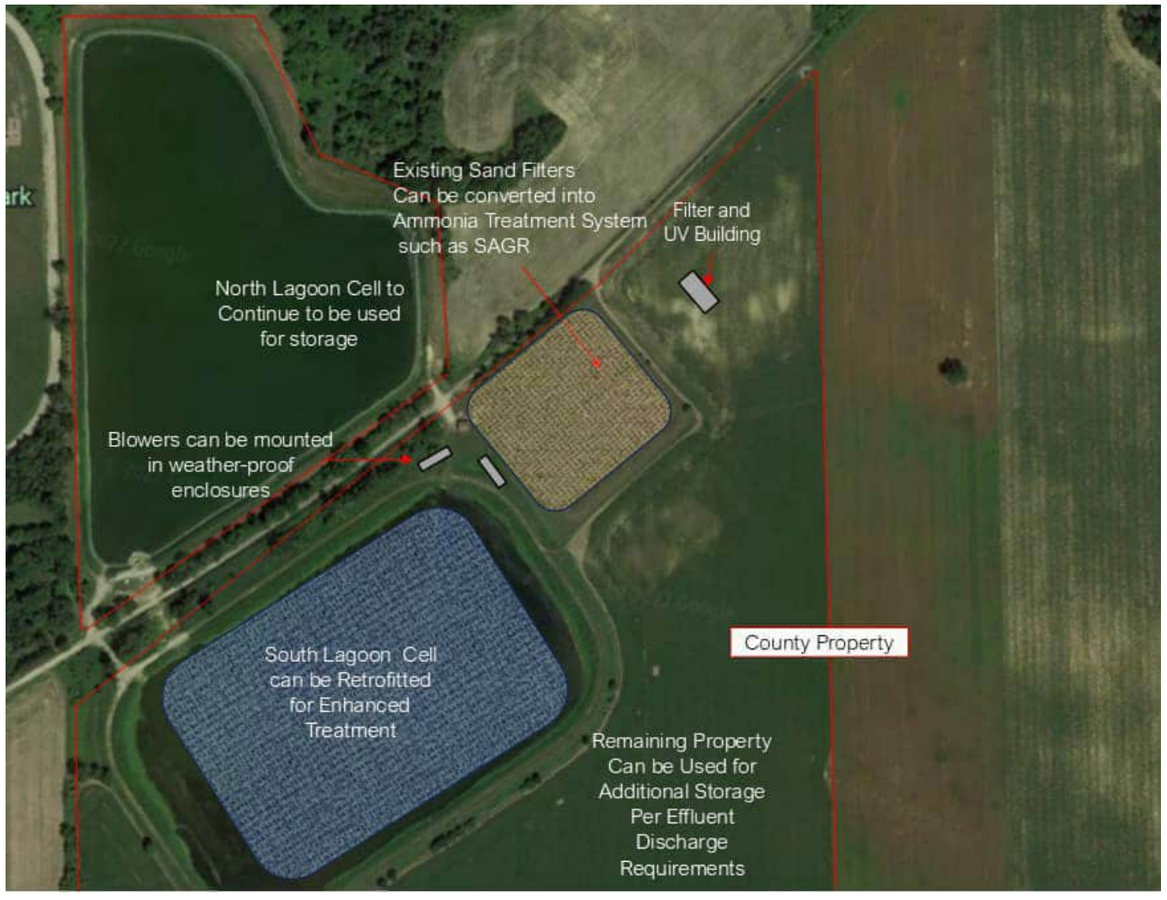


Figure 8.2 - Option 3 Optimize Existing Lagoon Based Treatment

8.2 Evaluation Methodology

8.2.1 General

The evaluation process for the different design concepts followed a two-step approach. First, a list of design concepts was proposed. Each option was described in general terms and compared against the problem and opportunity statement. The design concept was not carried forward for detailed evaluation if it contradicted the problem and opportunity statement or had any major constraints or disadvantages. Next, the shortlisted alternative concepts were evaluated further under the evaluation criteria described in the following sections.

8.2.2 Social

This criterion focuses on the potential impacts that a particular design concept may have on the local human environment. When considering social impacts, it is of uttermost importance to select a design concept that has an overall positive effect on the community's functioning while minimizing any negative impacts to the socio-cultural fabric. Some factors considered under this criterion include:

- The ability of the design concept to satisfy current needs while allowing to accommodate for future growth;
- Sensory impacts, including noise, dust, etc., both during and after construction;
- Effects on neighbouring properties;
- Effects on the municipality, local businesses, etc.; and
- Land requirements.

8.2.3 Technical

The technical aspects of a design concept relate to the engineering considerations, design, functionality and feasibility of the proposed design concept. In other words, the technical evaluation assesses how well the design concept approaches and solves the project goal. Some factors considered under this criterion include:

- Compatibility with existing systems;
- Ease of implementation;
- Constructability;
- Treatment complexity;
- Effects on operations and maintenance;
- Compliance with regulatory and approvals requirements; and
- Ability to meet existing and future servicing needs.

8.2.4 Financial

ASTM E 2516 (Standard Classification for Cost Estimate Classification System) provides a five-level classification system based on several characteristics, with the primary characteristic being the level of project definition (i.e., percentage of design completion).

The ASTM standard, shown in Table 8.1, illustrates the typical accuracy ranges that may be associated with the general building industries.

Table 8.1 - ASTM E2516 Accuracy Range of Cost Opinions for General Building Industries

Cost Estimate Class	Expressed as % of Design Completion	Anticipated Accuracy Range as % of Actual Cost
5	0-2	-30 to +50
4	1-15	-20 to +30
3	10-40	-15 to +20
2	30-70	-10 to +15
1	50-100	-5 to +10

The cost estimates developed in this report would be best described as a Class 5 Cost Estimate which is typically used for high level study project.

In some cases, project cost estimates were supplied with greater levels of accuracy based on MCEA Study conceptual design, detailed designs, etc.

This criterion quantifies the capital cost of the infrastructure itself, and the operation and maintenance costs associated with it. Although all design concepts will have a certain cost associated with them, the financial evaluation will determine each option's cost-benefit relationship. Carefully evaluating this aspect of all design concepts will allow identifying the most cost-effective solution. Some factors considered under this criterion include:

- Life cycle costs (capital costs and operations and maintenance);
- Financial sustainability and affordability;
- Possibility of implementing a phased approach to defer costs to the future;
- Funding opportunities; and
- Likelihood of financing partnerships.

8.2.5 Archaeological & Cultural Heritage

This criterion evaluates the potential impacts of the proposed design concepts on known archaeological and cultural heritage sites or structures. An ideal design concept should have no adverse effects on archaeological and cultural heritage sites. However, in some cases, when it is impossible to avoid all negative impacts on any of these sites, the preferred solution would be the one that entails the least possible disturbances. Some factors considered under this criterion include:

- Effects on First Nation and Indigenous communities;
- Effects on archaeological sites or structures; and
- Effects on cultural heritage sites or structures.

8.2.6 Environmental

Natural environmental criteria evaluate the impacts to sensitive areas that are critical to human or ecological functions and are most likely to be disturbed. The preferred design

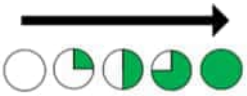
concept would have the least possible impact on the natural environment. Some factors considered under this criterion include:

- Effects on wildlife and vegetation;
- Likelihood of impacting species at risk;
- Effects on water, soil, and air quality; and
- Effects on climate change, and resilience and adaptability of the proposed infrastructure to the effects of climate.

8.3 Criteria Measurement

The proposed servicing concepts were rated for their fulfillment in each in the four categories based on the evaluation criteria. Table 8.2 illustrates the rating scale used. The visual rating provides a measure of the level of performance of each option and allows to select one that achieves the highest impact.

Table 8.2 - Alternative Solutions Rating Scale

Legend		
Highest Impact (Most Negative Solution)		Lowest Impact (Most Positive Solution)

8.4 Evaluation of Shortlisted Alternatives

The following section provides an evaluation of the shortlisted alternatives for wastewater treatment, with the evaluation shown in Table 8.3.

With regard to the costing, we have assumed a budget allowance of $5,000,000 to address requirements for additional storage and pumping within the available area on the Norwich WWTP site based on the monthly flow restrictions from the approved effluent criteria. This will be added on to the costs of both Options 2 and 3.

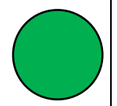
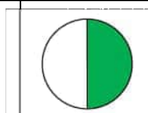
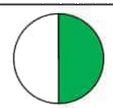
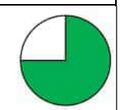
As the Option 2 Mechanical WWTP will be a greenfield, we have a assumed a high-level cost of $10,000 /$m^3$/day of ADF flow based on recent tendered WWTP projects. Our opinion of cost for this option is $31,000,000 ($5,000,000 + $26,000,000).

As the Option 3 Optimize Existing Lagoon Based Treatment, we have a assumed a high-level cost of $4,000 /$m^3$/day of ADF flow. Our opinion of cost for this option is $15,400,000 ($5,000,000 + $10,400,000).

8.5 Preferred Option

Option 3 “Upgrade the existing lagoon-based system to treat projected future flows” has been deemed most cost effective, environmentally sound, and sustainable approach to servicing the Norwich WWTP and meeting the wastewater servicing needs of the community to 2046.

Table 8.3 - Phase 2 Alternative Solutions Evaluation

Evaluation Criteria	Option 2 – Construct a New Mechanical WWTP	Rating	Option 3 – Upgrade the Existing Lagoon System	Rating
Financial	• Capital cost opinion for a new mechanical WWTP at Lagoon site is anticipated to be $31.0 M (-30%/+50%) • Higher operation and maintenance (O&M) cost due to increased operational effort, equipment maintenance, and monitoring/control requirements		• Capital cost opinion for upgrade of existing Lagoon facility is anticipated to be $15.4M (-30%/+50%) • Lower operation and maintenance cost compared for the new WWTF compared to a mechanical WWTF (Option 2) due to due lower operational effort, fewer equipment to operate and maintain, and fewer processes to monitor and operate	
Technical	• Capable of meeting the projected wastewater servicing needs by proving the required level of treatment and meeting the effluent quality requirements • Can be designed with required redundancy and modularity for additional capacity in future • Relatively low compatibility with the existing lagoon system and allows only a moderately efficient use of the existing lagoon system. • Higher operational complexity needing higher O&M and control effort than a lagoon system. • Requirement for additional storage is assumed to be the same for both Options.		• Capable of meeting the projected wastewater servicing needs by proving the required level of treatment and meeting the effluent quality requirements • Can be designed with required redundancy and modularity for additional capacity in future • High compatibility with the existing lagoon system facilitating an efficient use of the existing lagoon system for future wastewater treatment. • Low operational complexity with significantly lower O&M and control effort compared to a mechanical plant • Requirement for additional storage is assumed to be the same for both Options.	
Environmental	• This Option has a relatively higher carbon footprint for both construction and operation • The proposed solution would be resilient to climate change with the use of existing lagoon cells as equalization and/or sludge storage ponds. • This Option is likely to have a moderate impact on wildlife and vegetation due to higher amount of excavation and construction compared to a lagoon upgrade		• This Option has a low carbon footprint for construction as well as operation. • The proposed solution would be resilient to climate change with the retention of existing lagoon cells as a key treatment process facilitating attenuation of peak wet weather flows • This Option is likely to have a low impact on wildlife and vegetation due to lower amount of excavation and construction activity compared to a mechanical plant.	
Social, Cultural and Archeological	• Option can support existing developed areas and future growth • Moderate visual, noise, and potential archaeological impacts due to high degree of construction • Longer construction duration compared to Option 3		• Option can accommodate for future growth and support existing developed areas • Low visual, noise, and archaeological impacts due to low degree of construction • Shorter construction duration compared to Option 2	
Overall Conclusion				

APPENDIX 2-1

Natural Environment Assessment Memo

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1.0 PROJECT OVERVIEW

1.1 Introduction

R.V. Anderson Associates Limited (RVA) was retained by the County of Oxford (County) to complete a Municipal Class Environmental Assessment (MCEA) Study for upgrades to the Norwich Wastewater Treatment Plant (WWTP) to accommodate current and future growth. In support of the design process, a Natural Heritage Assessment was undertaken and included a desktop and on-site environmental review. The Study Area includes the existing Norwich WWTP facility, as well as County-owned lands to the immediate south and east in Norwich, Ontario. Areas within 30m of the preliminary design options considered were also reviewed in the field. (Figure 1.1).

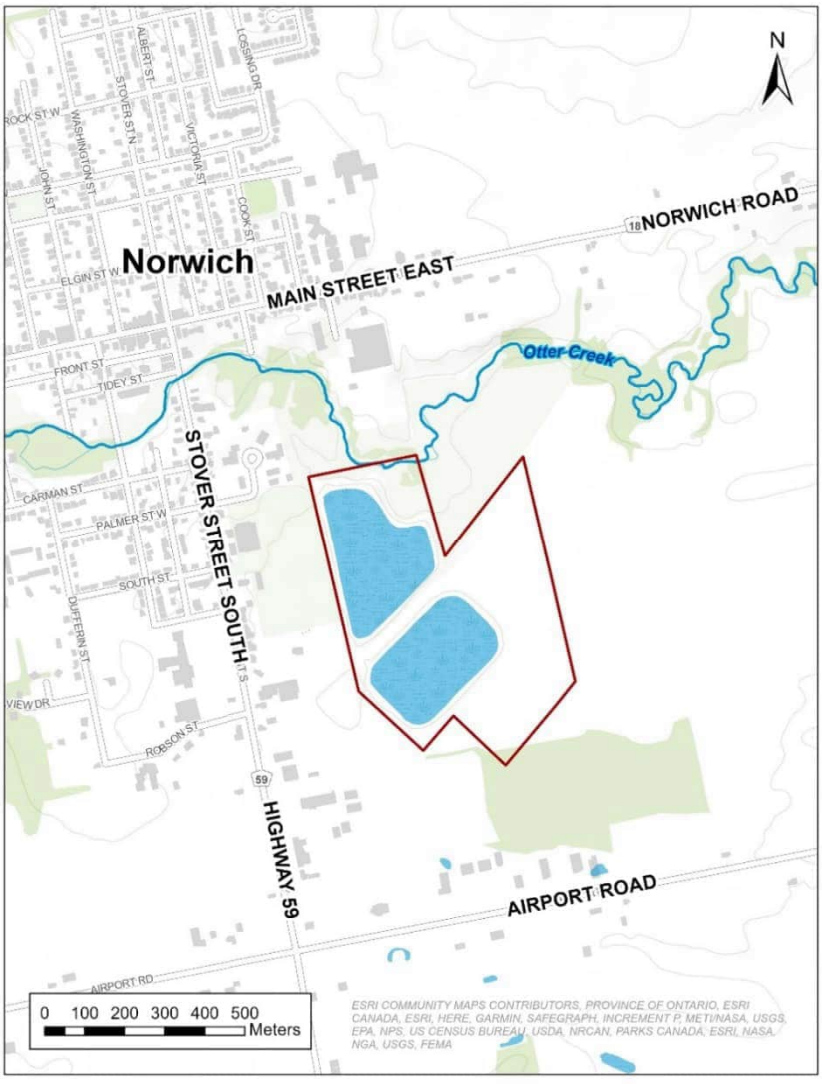

Figure 1.1 – Norwich WWTP Study Area

The following memo summarizes the results of the preliminary desktop review, as well as the field investigations conducted by an RVA Ecologist on October 22, 2021, impact assessment, and recommended mitigation measures.

1.2 Proposed Work

The purpose of this project is to upgrade/improve the Norwich WWTP to meet growth projections/forecasted flows within the community through facility upgrades, including expansion. Vegetation removals to accommodate the expansion will be limited to existing active agricultural lands, as well as potentially small sections of associated field edges and hedgerows.

2.0 DESKTOP REVIEW

2.1 Information Sources

Existing background information concerning the natural environment within and surrounding the Study Area, including Species at Risk (SAR), was compiled from the following sources:

- Natural Heritage Information Center database accessed via MNRF's Make-a-Map: Natural Heritage Areas application;
- Fisheries and Oceans Canada (DFO) online aquatic Species at Risk mapping tool (2021);
- Land Information Ontario (LIO) Aquatic Resources Data provided by the Ministry of Natural Resources and Forestry (MNRF);
- Ontario Breeding Bird Atlas (OBBA) Archives (Birds Canada);
- Ontario Reptile and Amphibian Atlas (ORAA) (Ontario Nature);
- AgMaps (drainage features and classifications);
- Ontario Butterfly Atlas (Toronto Entomological Society);
- Ontario Moth Atlas (Toronto Entomological Society);
- iNaturalist web application; and
- eBird Database – Norwich Sewage Lagoons HotSpot (2010-present) (Cornell Lab of Ornithology).

Review of these sources indicated the presence of SAR in the vicinity of the Norwich WWTP Study Area. A table listing rare and at risk species potentially present in the vicinity of the Study Area was compiled from these sources. This table, along with a preliminary map of the Study Area, was submitted to agencies as a part of consultation, which can be found in **Appendix A – Preliminary Study Area and Potentially Present Rare and At-Risk Species**.

2.2 Agency Consultation

Information Requests pertaining to natural heritage resources within the vicinity of the Study Area were submitted to the Ministry of Northern Development, Mines, Natural Resources and Forestry (MNDNRF) (formerly Ministry of Natural Resources and Forestry, MNRF) Aylmer District, the Ministry of Environment and Parks (MECP) Species at Risk Branch, and Long Point Region Conservation Authority (LPRCA) on April 1, 2021. LPRCA responded to a follow-up request on November 8, 2021, with a list of fish species and comment on aquatic habitat in the vicinity of the Study Area. Agency correspondence can be found in **Appendix B – Agency Correspondence**.

2.3 Summary of Background Information

MECP noted the presence of two additional Species at Risk (SAR) protected under the Endangered Species Act (ESA, Government of Ontario 2007) in the vicinity of the Study Area, as well as noting that the province has not been fully investigated for species at risk and that other species could be present within the project area. LPRCA noted that in the vicinity of the Study Area, Otter Creek is a warm water system. Sections of. the Study Area are within their regulation limit. No additional natural heritage concerns or areas were highlighted by the agencies.

3.0 FIELD REVIEW

A terrestrial field investigation was conducted during the 2021 growing season and included a vegetation inventory and community delineation, survey for floral SAR, as well as incidental wildlife observations, to support the Natural Heritage Assessment of the Study Area. Vegetation communities were classified as per Ecological Land Classification for Southern Ontario: First Approximation and Its Application (Lee et al. 1998). Study Area maps are provided in **Appendix C – Maps** and photo documentation is provided in **Appendix D – Photographic Record**

Table 3.1 – Field Investigations Schedule

Survey Type	Date	Weather	RVA Staff
Floral Inventory, SAR; Wetlands; Incidental Observations of Wildlife and Habitat	October 22, 2021	8 degrees, overcast	Paul Mikoda

4.0 EXISTING CONDITIONS

4.1 Designated Natural Areas

No designated natural areas were noted by any agencies or located during background review.

4.2 Vegetation and Vegetation Communities

Vegetation Communities

Vegetation within the project area is typical of southern Ontario rural environments being cultural in origin or culturally-influenced, see **Appendix C – Map 1**.

Along the northern edge of the facility where effluent is released to Otter Creek, woody vegetation is composed mainly of hybrid willow (*Salix babylonica X S. euxina*), Black Walnut (*Juglans nigra*), Basswood (*Tilia americana*) and Multiflora rose (*Rosa multiflora*). These trees provide a substantial (60%) cover in this area. There are channels and lowland areas through which released effluent pools before reaching Otter Creek. Lower-lying areas are dominated by Reed Canary Grass (*Phalaris arundinacea*), but are a minor component of the overall community.

Along the access road, invasive European Phragmites reed (*Phragmites australis* subsp. *australis*) has nearly formed a monoculture in the ditches with Eastern Cottonwood (*Populus deltoides*), Freeman Maple (*Acer x freemanii*) and American Elm (*Ulmus americana*) composing most of the sparse overstory. West of the existing control building, the treed hedgerow is composed mainly of American Elm and Black Cherry (*Prunus serotina*), with Multiflora Rose (*Rosa mulitflora*), Highbush Cranberry (*Viburnum opulus*) and Grey Dogwood (*Cornus racemosa*). The remainder of the vegetation within the facility is mainly Cultural Meadow and maintained lawn/access roads dominated by Smooth Brome (*Bromus inermus*), Phragmites reed, Goldenrods (Solidago sp.) and Asters (Symphotricum sp).

The agricultural field south of the facility was planted with soybean and the field to the east had a cover crop of radish, sunflower, oats and peas during the field investigations. A small lowland area within the soybean field immediately south of the New Hamburg Filter was observed to be consistently wet based on vegetation and was holding surface water during the site visit. A review of othoimagery in conjunction with site investigations shows that it is routinely cultivated, but with varying success. Soybeans did germinate within the perimeter of the feature, but vegetation was dominated by annual weeds (barnyard and panic grasses) interspersed with wetland species such as spikerush (*Eleocharis obtusa*), water plantain (*Alisma subcordatum*), water purslane (*Ludwigia*

palustris) and monkeyflower (*Mimulus ringens*). Vegetation communities are delineated in **Appendix C – Map 2.**

The woodland south of the site was reviewed specifically for at-risk tree species which often have protected radii which could intersect with one of the proposed upgrade designs. The woodland is a Fresh-Moist Oak-Maple-Hickory Deciduous Forest (FOD9) (Sugar Maple dominant) that was being actively managed as noted by felled trees and other areas of disturbance. No at-risk trees were observed. Vegetation community delineation is presented in **Appendix C – Maps**, and a complete list of vegetation identified during the site visit is included in **Appendix E – Species Lists**.

4.3 Aquatic Habitat and Facility Outfall

Otter Creek flows west to east beside the Norwich WWTP and a small section of the watercourse is within the Study Area. There is a dam and associated reservoir upstream, west of the Town of Norwich. According to historic background data, this watercourse supports a high-quality coolwater fish community, including Brown Trout (*Salmo trutta*) (Murray, M. 1995). MNMDNRF did not provide any additional comment on fisheries or aquatic habitat characteristics. LPRCA noted that though there is cool water habitat downstream of the Study Area, in the vicinity of Norwich, Otter Creek is a warm water system. Effluent from the WWTP is released to Otter Creek via a corrugated steel pipe (CSP), which flows down a cobble spillway before entering the Cultural Woodland community. The flows meander northward along two ill-defined channels through the woodland, with intermittent areas of pooling. A partially buried CSP was noted conveying water to the easternmost of the two channels. During site investigations, water flowing from the WWTP was noted to be clear, while water within Otter Creek was high and very turbid due to recent rains. No aquatic habitat was visible within Otter Creek due to these conditions.

4.4 Wildlife and Habitats

The Study Area is situated in an area with a long history of active cultivation and removal of native vegetation communities. As a result, wildlife expected to utilize the Study Area are those that are tolerant of modified landscapes or that utilize the area occasionally, such as birds, especially waterfowl, during migration. Turtles have been documented within the Study Area (Murray, M. 1995) and are expected to be present within the lagoons as well as Otter Creek, though none were observed during site investigations due to the timing. The control building was reviewed for signs of nesting by Barn Swallow or other birds. No nests were observed on the building. Wildlife observed was limited to birds, most of which were migrating through the area. Deer sign (track) was observed in the agricultural field. Numerous burrows were observed, most associated

with the southern and eastern banks of the secondary treatment pond. Most of these features were hidden under existing grasses and when discovered, were noted to have multiple openings and lightly utilized active trails leading to them. It is likely these features are used by common mammals such as skunks or eastern cottontail rabbits, however, American Badger (Endangered), noted by MECP as potentially in the Study Area, is known to utilize existing burrows on the landscape. Burrows utilized by American Badger, as well as a 5m radius around them, are protected under the ESA. No other wildlife or sign was noted, nor were any individuals of rare or at-risk species or candidate significant wildlife habitats. Mammal burrows may also provide hibernacula habitat for snakes, which, depending on species and numbers, can constitute Significant Wildlife Habitat which is protected under the Ontario Provincial Policy Statement (Ontario Ministry of Municipal Affairs & Housing 2020). At-risk bats, which can be found throughout southern Ontario, can utilize healthy as well as dead or decaying trees for roosting and as such require consideration, as do birds protected under the federal Migratory Birds Act (Government of Canada 1994). A complete fauna list is available in **Appendix E – Species Lists**.

5.0 IMPACT ASSESSMENT AND MITIGATION RECOMMENDATIONS

Current design concepts are for upgrades to be constructed within the agricultural (soybean) field to the east and/or south of the existing facility with no disturbance within unmaintained areas within the facility itself. As a result, impacts to terrestrial habitats within the Study Area will be generally limited to edge habitat or areas that undergo regular seasonal disturbance/maintenance. Some minor tree clearing may be required to support equipment access during construction. This will provide sufficient buffer to burrows that are candidate habitat for American Badger, as well as snake hibernacula. General mitigations will focus on minimizing incidental impacts to wildlife, as well as controlling sediment and erosion during construction. It should be noted that the proposed upgrades are to be located within areas of existing active agriculture, which significantly reduces the potential for negative impacts to local natural features and functions

- To prevent incidental impacts to nesting birds and bat maternity colonies (dead and decaying trees), vegetation clearing of uncultivated vegetation should be restricted to outside of the migratory bird nesting seasons, generally April 1 through October 31. If vegetation clearing must occur within this window, a qualified ecological professional should be retained to ensure no birds are incidentally harmed by vegetation removals. This technique should be reserved for smaller vegetation patches as it is difficult to confirm a lack of active nests in larger vegetation communities with vertical stratification.
- The impacts of dust on the surrounding ecosystem can be mitigated by dust suppression measures such as moistening dry soils with water as required during construction and adhering to erosion and sediment management measures as described below.
- Revegetation using a native seed mix would confer habitat benefits to pollinators and other wildlife.
- Good site housekeeping, including control of sediment into flowpaths, tiles, ditches and off site by equipment with appropriate Erosion and Sediment Control (ESC) measures will prevent incidental impacts to nearby sensitive aquatic habitats.
- Any vegetated areas disturbed as a result of the upgrades will be restored to pre-existing conditions or better. As a part of detailed design, consideration should be given to utilizing plants with high wildlife value (flowers and fruits).

6.0 POTENTIAL PERMITS AND APPROVALS

The proposed improvements to the Norwich WWTP are not expected to require additional permitting or approvals regarding impacts to areas regulated by LPRCA, wildlife species (including SAR) or fish and their habitats.

7.0 CONCLUSIONS

This Natural Environment Assessment Memo documents the existing conditions within the Norwich WWTP Study Area, supported by field studies carried out in 2021. These studies included a single-season review for rare and at-risk species as well as vegetation community and wildlife habitat assessment and recording of incidental wildlife observations. Field work was focused on species and features noted in background data and agency correspondence.

The project will have a very limited impact on terrestrial natural environment components within the Study Area and the overall function of the system is not expected to be significantly altered by the proposed project. Very minor amounts of cultural/anthropogenic vegetation and related habitats may be lost and are present throughout the surrounding landscape beyond the project area.

No at-risk species or habitats for at-risk species protected under the ESA were positively identified during field work. American Badger (Endangered) may utilize burrows found within the Study Area. At-risk bats may utilize any tree larger than 10cm DBH, but these individual features are not protected beyond periods of active use. Appropriate mitigation measures will be incorporated into the construction contract including ESCs, as well as contractor education, and appropriate timing of activities should serve to further reduce impacts to the Natural Heritage System. No other impacts are anticipated as a result of the proposed project, in part due to the recommended design which positions new development within existing agricultural lands. Thank you for providing us with the opportunity to undertake this study. If there is a query related to this memorandum, please feel free to contact Paul Mikoda at 905-516-3132 or by email at PMikoda@rvanderson.com.

Yours very truly,

R.V. ANDERSON ASSOCIATES LIMITED

Paul Mikoda, B.Sc.
Terrestrial Ecologist

Tisha Doucette, B.Sc., EP.
Ecological Services Coordinator

8.0 REFERENCES

Government of Canada, 1994. Migratory Birds Convention Act, Statutes of Canada (1994, c. 22). Retrieved from the Department of Justice Laws Website: http://laws-lois.justice.gc.ca/eng/acts/M-7.01/FullText.html

Government of Ontario, 2007. Endangered Species Act. S.O. 2007, c. 6. Retrieved from the Government of Ontario e-laws Website: https://www.ontario.ca/laws/statute/07e06

Lee, H., W. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig and S. McMurray. 1998. Ecological Land Classification for Southern Ontario. MNR, Peterborough, Ontario.

Murray, M.A.F. 1995. Norwich Sanitary Sewers and Lagoon Study, Project 60552 prepared by and submitted to Oxford County Public Works Committee, February 16, 1995

OMMAH (Ontario Ministry of Municipal Affairs & Housing). 2020. Provincial Policy Statement. 53 pp. Available at: https://files.ontario.ca/mmah-provincial-policy-statement-2020-accessible-final-en-2020-02-14.pdf

Appendix A

Preliminary Study Area and Potentially Present Rare and At-Risk Species


Study Area Map
Norwich WWTP EA - RVA 215673
Legend
Study Area
Palmer St E
Palmer St W
Pitcher St
Otter St
South St
59
Jerdon St
Stover St S
Union St
Google Earth
N
1000 ft

Table 1: Rare and At-Risk Species Potentially Present in the Vicinity of the Study Area

Common Name	Scientific Name	S-Rank	ESA/SARA Status	Source*	Last Observed (Year)
FLORA					
Kentucky Coffeetree	*Gymnocladus dioicus*	S2	THR/THR	NHIC	N/A
Butternut	*Juglans cinerea*	S2?	END/END	NHIC	N/A
Black Tupelo	*Nyssa sylvatica*	S3	-/-	INAT	2020
Hairy Puccoon	*Lithospermum caroliniense*	S3	-/-	INAT	2018
FUNGI AND LICHENS					
-	-	-	-	-	-
BIRDS					
Eastern Wood-pewee	*Contopus virens*	S4B	SC/SC	OBBA	2005
Wood Thrush	*Hylocichla mustelina*	S4B	SC/THR	OBBA	2005
Chimney Swift	*Chaetura pelagica*	S4B,S4N	THR/THR	OBBA; eBird	2020
Bank Swallow	*Riparia riparia*	S4B	THR/THR	eBird	2020
Barn Swallow	*Hirundo rustica*	S5B	THR/THR	OBBA; eBird	2020
Bobolink	*Dolichonyx oryzivorus*	S4B	THR/THR	OBBA	2005
Semipalmated Sandpiper	*Calidris pusilla*	S3B,S4N	-/-	eBird	2019
Pectoral Sandpiper	*Calidris melanotos*	SHB,S5N	-/-	eBird	2019
Redhead	*Aythya americana*	S2B,S4N	-/-	eBird	2020
Canvasback	*Aythya valisineria*	S1B,S4N	-/-	eBird	2018
REPTILES AND AMPHIBIANS					
Snapping Turtle	*Chelydra serpentina*	S4	SC/SC	ORAA; NHIC	2019
Blanding's Turtle	*Emydoidea blandingii*	S3	THR/THR	ORAA	2019
Midland Painted Turtle	*Chrysemys picta marginata*	S4	-/SC	ORAA	2019
Gray Ratsnake	*Pantherophis spiloides*	S1	END/END	ORAA	2013
INVERTEBRATES (excludes mussels)					
Monarch	*Danaus plexippus*	S2N,S4B	SC/SC	OBA	2018
FISH AND MUSSELS					
-	-	-	-	-	-

*Source Abbreviations:
INAT – iNaturalist.ca (filtered for Research Grade and Threatened)
NHIC – Natural Heritage Information Center
ARA – Aquatic Resource Area (segments, points, polygons) (OntarioGeoHub)
ORAA – Ontario Reptile and Amphibian Atlas (Ontario Nature)
OBA – Ontario Butterfly Atlas (Toronto Entomological Society)
OMA – Ontario Moth Atlas (Toronto Entomological Society)
OBBA – Ontario Breeding Bird Atlas (Birds Canada)
DFO – Department of Fisheries and Oceans Species at Risk Mapping Application
eBird – Norwich Sewage Lagoons Hotspot

Appendix B

Agency Correspondence

From: Paul Mikoda <pmikoda@rvanderson.com>
Sent: April-01-21 6:44 PM
To: MNRF Ayl Planners (MNRF) <MNRF.Ayl.Planners@ontario.ca>
Cc: John Tyrrell <JTyrrell@rvanderson.com>; Tisha Doucette <TDoucette@rvanderson.com>; Courtney Beneteau <cbeneteau@rvanderson.com>
Subject: 215673 - Natural Heritage Information Request - County of Oxford Municipal Class EA for Norwich WWTP

To whom it may concern,

R.V. Anderson Associates (RVA) has been retained by the County of Oxford to undertake a Municipal Class Environmental Assessment to evaluate upgrades to the Township of Norwich Waste Water Treatment Plant (WWTP). The focused Study Area is attached (**Study Area Map**). The project falls within the jurisdiction of Long Point Region Conservation Authority (LPRCA) as well as the Ministry of the Environment, Conservation and Parks (MECP) London District, and the Ministry of Natural Resources and Forestry (MNRF) Aylmer District. Otter Creek is present within the Study Area.

RVA has undertaken a desktop review of the following information sources as pertains to the Study Area, as per the Client's Guide to Preliminary Screening for SAR (MECP, May 2019) including:

- Natural Heritage Information Center database (accessed via MNRF's Make-a-Map: Natural Heritage Areas application (NAD83 Atlas 1km squares within the focused Study Area: 17NH3258, 17NH3259, 17NH3358, 17NH3359);
- Ontario Breeding Bird Atlas (OBBA) Archives (Atlas square: 17NH35);
- Ontario Reptile and Amphibian Atlas (ORAA) (Atlas square: 17NH35);
- Ontario Butterfly Atlas; Moth Atlas (Atlas square: 17NH35); and
- Aquatic resource area (ARA) polygons, segments and points (Ontario GeoHub)
- Department of Fisheries and Oceans Aquatic Species at Risk Map
- eBird (Norwich Lagoons Hotspot, 2011-present)
- iNaturalist.

Details regarding the records of Species at Risk (SAR) and rare species noted in the vicinity of the Study Area, including their associated S-ranks and status under the Endangered Species Act, are shown in **Table 1** (attached).

The NHIC database did not indicate the presence of any natural heritage features within the Study Area.

At this time, we would like to request any additional/supplemental natural heritage information that may be available in addition to the noted sources, as well as any concerns with the proposed project as related to natural heritage.

Please feel free to contact me if you have any questions or concerns with this request. A response to acknowledge your receipt of this email would be greatly appreciated.

Best regards,

Paul

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Paul Mikoda, B.Sc., CAN-CISEC
Terrestrial Ecologist
P: (519) 681-9916 ext. 5040
C: (905) 516-3132
R.V. Anderson Associates Limited
557 Southdale Road East, Suite 200, London, ON N6E 1A2
rvanderson.com

From: Webb, Jason (MNRF) <Jason.Webb@ontario.ca>
Sent: Tuesday, April 13, 2021 9:22 AM
To: Paul Mikoda <pmikoda@rvanderson.com>
Subject: FW: 215673 - Natural Heritage Information Request - County of Oxford Municipal Class EA for Norwich WWTP

Hi Paul,

The Ministry of Natural Resources and Forestry has reviewed the attached information and has no additional supplemental data to provide.

Let me know if you require anything else.

Thanks,

Jason Webb
Management Biologist
Ministry of Natural Resources and Forestry
Aylmer District
226-559-4906
Jason.webb@ontario.ca

Please Note: As part of providing accessible customer service, please let me know if you have any accommodation needs or require communication supports or alternate formats.

From: Paul Mikoda <pmikoda@rvanderson.com>
Sent: April 1, 2021 6:44 PM
To: Species at Risk (MECP) <SAROntario@ontario.ca>
Cc: John Tyrrell <JTyrrell@rvanderson.com>; Tisha Doucette <TDoucette@rvanderson.com>; Courtney Beneteau <cbeneteau@rvanderson.com>
Subject: 215673 - Natural Heritage Information Request - County of Oxford Municipal Class EA for Norwich WWTP

To whom it may concern,

R.V. Anderson Associates (RVA) has been retained by the County of Oxford to undertake a Municipal Class Environmental Assessment to evaluate upgrades to the Township of Norwich Waste Water Treatment Plant (WWTP). The focused Study Area is attached (**Study Area Map**). The project falls within the jurisdiction of Long Point Region Conservation Authority (LPRCA) as well as the Ministry of the Environment, Conservation and Parks (MECP) London District, and the Ministry of Natural Resources and Forestry (MNRF) Aylmer District. Otter Creek is present within the Study Area.

RVA has undertaken a desktop review of the following information sources as pertains to the Study Area, as per the Client's Guide to Preliminary Screening for SAR (MECP, May 2019) including:

- Natural Heritage Information Center database (accessed via MNRF's Make-a-Map: Natural Heritage Areas application (NAD83 Atlas 1km squares within the focused Study Area: 17NH3258, 17NH3259, 17NH3358, 17NH3359);
- Ontario Breeding Bird Atlas (OBBA) Archives (Atlas square: 17NH35);
- Ontario Reptile and Amphibian Atlas (ORAA) (Atlas square: 17NH35);
- Ontario Butterfly Atlas; Moth Atlas (Atlas square: 17NH35); and
- Aquatic resource area (ARA) polygons, segments and points (Ontario GeoHub)
- Department of Fisheries and Oceans Aquatic Species at Risk Map
- eBird (Norwich Lagoons Hotspot, 2011-present)
- iNaturalist.

Details regarding the records of Species at Risk (SAR) and rare species noted in the vicinity of the Study Area, including their associated S-ranks and status under the Endangered Species Act, are shown in **Table 1** (attached).

At this time, we would like to request any additional/supplemental SAR information that may be available in addition to the noted sources, as well as any concerns with the proposed project as pertains to SAR and their habitats.

Please feel free to contact me if you have any questions or concerns with this request. A response to acknowledge your receipt of this email would be greatly appreciated.

Best regards,

Paul

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Paul Mikoda, B.Sc., CAN-CISEC
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C: (905) 516-3132
R.V. Anderson Associates Limited
557 Southdale Road East, Suite 200, London, ON N6E 1A2
rvanderson.com

From: Species at Risk (MECP) <SAROntario@ontario.ca>
Sent: Tuesday, August 31, 2021 10:28 AM
To: Paul Mikoda <pmikoda@rvanderson.com>
Cc: John Tyrrell <JTyrrell@rvanderson.com>; Tisha Doucette <TDoucette@rvanderson.com>; Courtney Beneteau <cbeneteau@rvanderson.com>
Subject: RE: 215673 - Natural Heritage Information Request - County of Oxford Municipal Class EA for Norwich WWTP

Hello Paul,

RE: Species at Risk Data Request – Municipal Class Environmental Assessment for the Township of Norwich Waste Water Treatment Plant, Oxford County

I sincerely apologize for the delay in response. The Ministry of the Environment, Conservation and Parks (MECP) understands that R.V. Anderson Associates (RVA) is conducting natural heritage studies for the Municipal Class Environmental Assessment to evaluate upgrades to the Township of Norwich Waste Water Treatment Plant (WWTP), Oxford County, as identified in the information provided.

An initial species at risk (SAR) information screening has been completed under the *Endangered Species Act, 2007* (ESA) by MECP's Species at Risk Branch (SARB) for the above-noted project location with respect to endangered and threatened species in Ontario. The following species at risk, in addition to the species identified in the RVA memo, are known to occur in the general area of the project and should be considered in any assessment of potential impacts to SAR and/or habitat:

- American Badger (endangered) – receives species and regulated habitat protection
- Red-headed Woodpecker – this species is currently listed as special concern but will be up-listed to endangered in 2022, which will trigger species and habitat protection.

Please note that this is an initial screening for endangered and threatened SAR and the absence of an element occurrence does not indicate the absence of species. The province has not been surveyed comprehensively for the presence or absence of SAR and Ontario's data relies on observers to report sightings of SAR. Field assessments by a qualified professional may be necessary if there is a high likelihood for SAR species and/or habitat to occur within the project footprint and potentially be impacted.

The position of SARB is based on the information that has been provided by you on behalf of the proponent. Should information not have been made available and considered in our review, or new information comes to light, or if on-site conditions and circumstances change, please contact SARB as soon as possible (SAROntario@ontario.ca) to discuss next steps.

Regards,

Kathryn Markham
Management Biologist
Permissions and Compliance Section, Species at Risk Branch
Ministry of the Environment, Conservation and Parks

From: Paul Mikoda
Sent: Thursday, April 1, 2021 6:49 PM
To: bbravener@lprca.on.ca
Cc: John Tyrrell <JTyrrell@rvanderson.com>; Tisha Doucette <TDoucette@rvanderson.com>; Courtney Beneteau <CBeneteau@rvanderson.com>
Subject: 215673 - Natural Heritage Information Request - County of Oxford Municipal Class EA for Norwich WWTP

Hello Bonnie,

R.V. Anderson Associates (RVA) has been retained by the County of Oxford to undertake a Municipal Class Environmental Assessment to evaluate upgrades to the Township of Norwich Waste Water Treatment Plant (WWTP). The focused Study Area is attached (**Study Area Map**). The project falls within the jurisdiction of Long Point Region Conservation Authority (LPRCA) as well as the Ministry of the Environment, Conservation and Parks (MECP) London District, and the Ministry of Natural Resources and Forestry (MNRF) Aylmer District. Otter Creek is present within the Study Area.

RVA has undertaken a desktop review of the following information sources as pertains to the Study Area, as per the Client's Guide to Preliminary Screening for SAR (MECP, May 2019) including:

- Natural Heritage Information Center database (accessed via MNRF's Make-a-Map: Natural Heritage Areas application (NAD83 Atlas 1km squares within the focused Study Area: 17NH3258, 17NH3259, 17NH3358, 17NH3359);
- Ontario Breeding Bird Atlas (OBBA) Archives (Atlas square: 17NH35);
- Ontario Reptile and Amphibian Atlas (ORAA) (Atlas square: 17NH35);
- Ontario Butterfly Atlas; Moth Atlas (Atlas square: 17NH35); and
- Aquatic resource area (ARA) polygons, segments and points (Ontario GeoHub)
- Department of Fisheries and Oceans Aquatic Species at Risk Map
- eBird (Norwich Lagoons Hotspot, 2011-present)
- iNaturalist.

Details regarding the records of Species at Risk (SAR) and rare species noted in the vicinity of the Study Area, including their associated S-ranks and status under the Endangered Species Act, are shown in **Table 1** (attached).

The NHIC database did not indicate the presence of any natural heritage features within the Study Area. We note that portions of the Study Area are regulated under Ontario Regulation 178/06 associated with Otter Creek.

At this time, we would like to request any additional/supplemental natural heritage information that may be available in addition to the noted sources, and also any concerns with the proposed project as relates to natural heritage or O.Reg 178/06.

Please feel free to contact me if you have any questions or concerns with this request. A response to acknowledge your receipt of this email would be greatly appreciated.

Best regards,

Paul

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Paul Mikoda, B.Sc., CAN-CISEC
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557 Southdale Road East, Suite 200, London, ON N6E 1A2
rvanderson.com

From: Paul Mikoda <pmikoda@rvanderson.com>
Sent: November 3, 2021 3:07 PM
To: Bonnie Bravener <bbravener@lprca.on.ca>
Subject: 215673 - Natural Heritage Information Request - County of Oxford Municipal Class EA for Norwich WWTP

Hi Bonnie,

I am just following up on this request. I note I did not include attachments that I originally forwarded to your colleague, Leigh-Anne Mauthe.

I was wondering if you could provide any information related to this project, specifically any recent data on fish community or abiotic conditions within Otter Creek in the vicinity of the Town of Norwich?

Thank you,

Paul

Paul Mikoda, B.Sc., CAN-CISEC
TERRESTRIAL ECOLOGIST
t 519 681 9916 ext. 5040 | m 905 516 3132
a 557 Southdale Road East, Suite 200, London, ON N6E 1A2
rvanderson.com

From: Bonnie Bravener <bbravener@lprca.on.ca>
Sent: Monday, November 8, 2021 9:41 AM
To: Paul Mikoda <pmikoda@rvanderson.com>
Subject: FW: 215673 - Natural Heritage Information Request - County of Oxford Municipal Class EA for Norwich WWTP

Good Morning,

I have spoken with staff and they have provided the following information.

The closest fish data LPRCA has is downstream below Middletown Line, which is below Otterville dam and the confluence of the Big Otter main stem and the cold east branch. The species caught there include:

- Johnny Darter
- Blackside Darter
- Common White Sucker
- Northern Hogsucker
- Blacknose Dace
- Common Shiner

Please contact me should you have further questions in this regard.

Bonnie Bravener
Resource Technician

Long Point Region Conservation Authority
4 Elm Street, Tillsonburg, ON N4G 0C4
Office: 519-842-4242 ext. 233
Email: bbravener@lprca.on.ca

Please note that the LPRCA Administration Office, Conservation Education Centre and Waterford Workshop are currently closed to the public. For more information, visit www.lprca.on.ca

From: Paul Mikoda <pmikoda@rvanderson.com>
Sent: November 8, 2021 12:04 PM
To: Bonnie Bravener <bbravener@lprca.on.ca>
Subject: RE: 215673 - Natural Heritage Information Request - County of Oxford Municipal Class EA for Norwich WWTP

Hi Bonnie,

Thanks for the response. I would also be interested in any water quality/condition data for Otter Creek you might have, regardless of location. The most recent information I can locate is from 1992, where MNR noted it is a high-quality cool water fishery with Brown Trout. I am curious if this is still the case. Otherwise, no further questions.

Cheers,

Paul

From: Bonnie Bravener <bbravener@lprca.on.ca>
Sent: Monday, November 8, 2021 4:23 PM
To: Paul Mikoda <pmikoda@rvanderson.com>
Subject: RE: 215673 - Natural Heritage Information Request - County of Oxford Municipal Class EA for Norwich WWTP

Good Afternoon Paul

I have spoken with staff and they have provided the following information.

Here are the links to the Provincial Surface Water Quality Data. If you type in Big Otter Creek on the map you can get the station code for the data link.

https://www.ontario.ca/page/map-provincial-stream-water-quality-monitoring-network
https://data.ontario.ca/dataset/provincial-stream-water-quality-monitoring-network

The Big Otter Creek is a high-quality cool water fishery with Brown Trout below the confluence of the main stem and east branch (just upstream of Maple Dell Road), but is considered warm water in Norwich.

Please contact me should you have further questions in this regard.

Bonnie Bravener
Resource Technician

Long Point Region Conservation Authority
4 Elm Street, Tillsonburg, ON N4G 0C4
Office: 519-842-4242 ext. 233
Email: bbravener@lprca.on.ca

Appendix C

Maps

OXFORD COUNTY
Norwich Wastewater Treatment Plant
Municipal Class Environmental Assessment (MCEA)

Map 2: Vegetation Communities

0 50 100 150 200 Meters
Scale: 1:4,000

Date: 2021-11-11 | Page 2
RVA: 215673 | Draft By: CER

N

Legend
Watercourse
Permanent
Waterbody (Lagoons)
Scoped Study Area
Road
Study Area
Woodland

Data Sources: RVA, ESRI, LIO, Contains information licensed under the Open Government Licence - Ontario

Oxford County — Growing stronger together

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OXFORD COUNTY
Norwich Wastewater Treatment Plant
Municipal Class Environmental Assessment (MCEA)

Map 2: Vegetation Communities

0 50 100 150 200 Meters
Scale: 1:4,000

Date: 2021-11-11 | Page 2
RVA: 215673 | Draft By: CER

N

Legend

Watercourse
Permanent
Waterbody (Lagoons)
Scoped Study Area
Road
Intermittent Wetland

Vegetation Communities
CUW1 - Cultural Woodland
FOD9 - Fresh-Moist Oak - Maple Deciduous Forest
CUM1 - Old Field Meadow
Mowed
Hedgerow

Data Sources: RVA, ESRI, LIO, Contains information licensed under the Open Government Licence - Ontario

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Appendix D

Photographic Record

1 - October 22, 2021
Outfall releasing effluent to Otter Creek, facing northeast.

2 - October 22, 2021
Initial area of effluent pooling near outfall, facing west.

3 - October 22, 2021
Additional area of effluent pooling prior to release to Otter Creek, facing east.

4 - October 22, 2021
Effluent (clear) flowing into turbid Otter Creek, facing north.

5 - October 22, 2021
Typical canopy cover over effluent flow path.

6 - October 22, 2021
Cultural Woodland community surrounding effluent flow path, facing east.

7 - October 22, 2021
Northern lagoon, facing northwest from southeast corner.

8 - October 22, 2021
Former rail corridor, agricultural field and field edge vegetation north of New Hamburg Filter, facing northeast.

9 - October 22, 2021
Boundary of agricultural field and New Hamburg Filter, facing southeast.

10 - October 22, 2021
New Hamburg Filter, facing south.

11 - October 22, 2021
Northern edge of New Hamburg Filter and treed hedgerow, facing southwest.

12 - October 22, 2021
Agricultural field and intermittent wetland near New Hamburg Filter, facing west.

13 - October 22, 2021
Existing control building, facing west. Building was surveyed for bird nests, including Barn Swallow. None were found.

14 - October 22, 2021
South lagoon, facing southwest from northeast corner.

15 - October 22, 2021
Agricultural field and woodland, facing southeast from southern lagoon.

16 - October 22, 2021
Woodland south of existing facility, general conditions.

17 - October 22, 2021
Southern lagoon berm, typical conditions, facing northeast along southern berm.

18 - October 22, 2021
One of many burrows within the southern lagoon berm, this one exhibiting signs of recent excavation.

Appendix E

Species Lists

Table 1 – Floral Inventory

Common Name	Scientific Name	Provincial Status (S Rank)*	County of Oxford Rank**
Velvetleaf	*Abutilon theophrasti*	SE5	IX
Common Three-seeded Mercury	*Acalypha rhomboidea*	S5	X
Manitoba Maple	*Acer negundo*	S5	X
Silver Maple	*Acer saccharinum*	S5	X
Sugar Maple	*Acer saccharum*	S5	X
(Acer rubrum X Acer saccharinum)	*Acer x freemanii*	SNA	
Common Yarrow	*Achillea millefolium*	SE5?	IX
Garlic Mustard	*Alliaria petiolata*	SE5	IX
Redroot Amaranth	*Amaranthus retroflexus*	SE5	IX
Common Ragweed	*Ambrosia artemisiifolia*	S5	X
Great Ragweed	*Ambrosia trifida*	S5	X
American Hog-peanut	*Amphicarpaea bracteata*	S5	X
Canada Anemone	*Anemonastrum canadense*	S5	X
Hemp Dogbane	*Apocynum cannabinum*	S5	
Common Burdock	*Arctium minus*	SE5	IX
Common Milkweed	*Asclepias syriaca*	S5	X
Garden Asparagus	*Asparagus officinalis*	SE5	IX
Smooth Brome	*Bromus inermis*	SE5	IX
Woodland Sedge	*Carex blanda*	S5	X
Inland Sedge	*Carex interior*	S5	X
Shagbark Hickory	*Carya ovata*	S5	X
Northern Catalpa	*Catalpa speciosa*	SE1	IX
Spotted Knapweed	*Centaurea stoebe*	SE5	IX
Wild Chicory	*Cichorium intybus*	SE5	IX
Canada Thistle	*Cirsium arvense*	SE5	IX
Bull Thistle	*Cirsium vulgare*	SE5	IX
Grey Dogwood	*Cornus racemosa*	S5	X
Red-osier Dogwood	*Cornus sericea*	S5	X
Dotted Hawthorn	*Crataegus punctata*	S5	X
Perennial Yellow Flatsedge	*Cyperus esculentus*	S5	X
Orchard Grass	*Dactylis glomerata*	SE5	IX

Common Name	Scientific Name	Provincial Status (S Rank)*	County of Oxford Rank**
Wild Carrot	*Daucus carota*	SE5	IX
Smooth Crabgrass	*Digitaria ischaemum*	SE5	IX
Hairy Crabgrass	*Digitaria sanguinalis*	SE5	IX
Large Barnyard Grass	*Echinochloa crus-galli*	SE5	IX
Wild Cucumber	*Echinocystis lobata*	S5	X
Blunt Spikerush	*Eleocharis obtusa*	S5	X
Quackgrass	*Elymus repens*	SE5	IX
Virginia Wildrye	*Elymus virginicus*	S5	
Annual Fleabane	*Erigeron annuus*	S5	X
Canada Horseweed	*Erigeron canadensis*	S5	X
American Beech	*Fagus grandifolia*	S4	X
Eurasian Black Bindweed	*Fallopia convolvulus*	SE5	IX
Red Fescue	*Festuca rubra*	S5	
White Ash	*Fraxinus americana*	S4	X
Smooth Bedstraw	*Galium mollugo*	SE5	IX
Sweet-scented Bedstraw	*Galium odoratum*	SE1	
Rough-fruit Corn Bedstraw	*Galium tricornutum*	SEH	
Large-leaved Avens	*Geum macrophyllum*	S5	
Wood Avens	*Geum urbanum*	SE3	IX
Ground-ivy	*Glechoma hederacea*	SE5	
Dame's Rocket	*Hesperis matronalis*	SE5	IX
Spotted Jewelweed	*Impatiens capensis*	S5	X
Black Walnut	*Juglans nigra*	S4?	X
Common Nipplewort	*Lapsana communis*	SE5	IX
Small Duckweed	*Lemna minor*	S5?	X
European Privet	*Ligustrum vulgare*	SE5	IX
Butter-and-eggs	*Linaria vulgaris*	SE5	IX
Northern Spicebush	*Lindera benzoin*	S4	X
Indian-tobacco	*Lobelia inflata*	S5	
Tall Ryegrass	*Lolium arundinaceum*	SE5	
Tatarian Honeysuckle	*Lonicera tatarica*	SE5	IX
Marsh Seedbox	*Ludwigia palustris*	S5	X
Common Apple	*Malus pumila*	SE4	IX
White Sweet-clover	*Melilotus albus*	SE5	IX

Common Name	Scientific Name	Provincial Status (S Rank)*	County of Oxford Rank**
Square-stemmed Monkeyflower	*Mimulus ringens*	S5	X
White Mulberry	*Morus alba*	SE5	IX
Common Evening-primrose	*Oenothera biennis*	S5	
Sensitive Fern	*Onoclea sensibilis*	S5	X
Fall Panicgrass	*Panicum dichotomiflorum*	SE5	IX
Thicket Creeper	*Parthenocissus vitacea*	S5	X
Reed Canarygrass	*Phalaris arundinacea*	S5	X
Common Reed	*Phragmites australis*	S4?	
Clammy Ground-cherry	*Physalis heterophylla*	S4	X
Common Pokeweed	*Phytolacca americana*	S4	X
English Plantain	*Plantago lanceolata*	SE5	IX
Common Plantain	*Plantago major*	SE5	IX
Kentucky Bluegrass	*Poa pratensis*	S5	
Eastern Cottonwood	*Populus deltoides*	S5	
Trembling Aspen	*Populus tremuloides*	S5	X
Creeping Cinquefoil	*Potentilla reptans*	SE2	
Sweet Cherry	*Prunus avium*	SE4	
Chokecherry	*Prunus virginiana*	S5	X
Common Pear	*Pyrus communis*	SE4	IX
Cursed Buttercup	*Ranunculus sceleratus*	S5	
Staghorn Sumac	*Rhus typhina*	S5	X
European Black Currant	*Ribes nigrum*	SE2	
Marsh Yellowcress	*Rorippa palustris*	S5	X
Multiflora Rose	*Rosa multiflora*	SE5	IX
Allegheny Blackberry	*Rubus allegheniensis*	S5	X
Red Raspberry	*Rubus idaeus*	S5	
Black Raspberry	*Rubus occidentalis*	S5	X
Curled Dock	*Rumex crispus*	SE5	IX
Broad-leaved Arrowhead	*Sagittaria latifolia*	S5	X
Pussy Willow	*Salix discolor*	S5	X
Cottony Willow	*Salix eriocephala*	S5	X
(Salix babylonica X Salix euxina)	*Salix x pendulina*	SNA	
Soft-stemmed Bulrush	*Schoenoplectus tabernaemontani*	S5	X

Common Name	Scientific Name	Provincial Status (S Rank)*	County of Oxford Rank**
Yellow Foxtail	*Setaria pumila*	SE5	IX
Green Foxtail	*Setaria viridis*	SE5	IX
Bladder Campion	*Silene vulgaris*	SE5	IX
Bittersweet Nightshade	*Solanum dulcamara*	SE5	IX
Eastern Black Nightshade	*Solanum emulans*	S5	X
Tall Goldenrod	*Solidago altissima*	S5	
Canada Goldenrod	*Solidago canadensis*	S5	
Field Sow-thistle	*Sonchus arvensis*	SE5	IX
Common Chickweed	*Stellaria media*	SE5	IX
White Heath Aster	*Symphyotrichum ericoides*	S5	
Panicled Aster	*Symphyotrichum lanceolatum*	S5	X
Calico Aster	*Symphyotrichum lateriflorum*	S5	X
New England Aster	*Symphyotrichum novae-angliae*	S5	X
Common Dandelion	*Taraxacum officinale*	SE5	IX
Basswood	*Tilia americana*	S5	X
Red Clover	*Trifolium pratense*	SE5	IX
White Clover	*Trifolium repens*	SE5	IX
Scentless Chamomile	*Tripleurospermum inodorum*	SE	
(Typha angustifolia X Typha latifolia)	*Typha x glauca*	SNA	
White Elm	*Ulmus americana*	S5	X
Stinging Nettle	*Urtica dioica*	S5	
Common Mullein	*Verbascum thapsus*	SE5	IX
White Vervain	*Verbena urticifolia*	S5	X
Highbush Cranberry	*Viburnum opulus ssp. trilobum*	S5	X
Tufted Vetch	*Vicia cracca*	SE5	IX
Woolly Blue Violet	*Viola sororia*	S5	X
Riverbank Grape	*Vitis riparia*	S5	X

** S Rank: S5 – Secure, S4 – Apparently secure, S3 – Vulnerable, S2 – Imperiled, S1 – Critically imperiled*
*** County Rank: I – Introduced, C – Common, U – Uncommon, R – Rare, H – Historic, X – Present, ? – Unconfirmed report, hyb – Hybrid*

Table 2 – Incidental Terrestrial Wildlife

Common Name	Scientific Name	Provincial Status (S Rank)*
Birds		
American Crow	Corvus brachyrhynchos	S5
American Robin	Turdus migratorius	S5
Blue Jay	Cyanocitta cristata	S5
Bufflehead	Bucephala albeola	S4
Common Grackle	Quiscalus quiscula	S5
Dark-eyed Junco	Junco hyemalis	S5
Downy Woodpecker	Dryobates pubescens	S5
Golden-crowned Kinglet	Regulus satrapa	S5
Mallard	Anas platyrhynchos	S5
Red-tailed Hawk	Buteo jamaicensis	S5
Red-winged Blackbird	Agelaius phoeniceus	S5
Rock Dove	Columba livia	SE
Ruddy Duck	Oxyura jamaicensis	S4
Song Sparrow	Melospiza melodia	S5
White-crowned Sparrow	Zonotrichia leucophrys	S4
Wilson's Snipe	Gallinago delicata	S5
Mammals		
Eastern Gray Squirrel	Sciurus carolinensis	S5
White-tailed Deer	Odocoileus virginianus	S5

** S Rank: S5 – Secure, S4 – Apparently secure, S3 – Vulnerable, S2 – Imperiled, S1 – Critically imperiled, SNA – Non-native*

APPENDIX 2-2

Little Otter/Big Otter Creek Assimilative Capacity Study

2024 Sept.

Little Otter / Big Otter Creek Assimilative Capacity Study

PROPOSED NORWICH WWTP UPGRADE

Final Report

Prepared for R.V. Anderson Associates Ltd. for:

Oxford County

Submitted by:

Greenland International Consulting Ltd.

Contents

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1 Overview and Objective

The Norwich Wastewater Treatment Plant services the Town of Norwich and surrounding areas. The plant is located within the Town of Norwich at 4 Sutton St, in the southeastern area of Oxford County. The serviced population is approximately 3,500 residents and is expected to increase 85% over the next 25 years.

The Town's current lagoon treatment system discharges into Little Otter Creek at a rate of 1,530 m^3/day. A capacity increase for the plant is required to adequately service the increasing demands on the system from population growth.

An Assimilative Capacity Study (ACS) was completed in 2012 by XCG Consulting, but further development did not proceed at that time and the process was put on hold. In 2021 Greenland was retained to provide a summary and review of the XCG (2012) report with a recommended strategy for updating the ACS. The Ontario Ministry of Environment Conservation and Parks (MECP) provided comments on the summary / review document and requested that a new ACS should be completed in light of the time that had passed since the XCG (2012) study.

The objective of the study was to establish the level of treatment required to comply with Provincial discharge requirements and to minimize any impacts to the Little Otter Creek as well as downstream reaches and receiving waters. Water quality parameters considered included those typically associated with municipal wastewater and for which applicable Provincial Water Quality Objectives or other guidelines are available including phosphorus, nitrogen, ammonia, BOD, dissolved oxygen and suspended solids.

Figure 1-1 shows the locations of hydrometric flow stations and water quality stations used for the analysis.

Figure 1-1 Overview of Monitoring and Watershed Boundaries

2 Characterization of Proposed Discharge

2.1 Anticipated Volume

The Norwich WWTP is currently rated at a capacity of 1,530 m^3/day. To address population growth, it is proposed to be upgraded to an increased capacity of 2,600 m^3/day [1].

The facility is currently discharging 236 days/year using the lagoon system with storage capacity during non-discharge periods [1]. A continuous discharge operation is preferred for the upgraded WWTP.

The following analysis uses a design rating capacity of 2,600 m^3/d such that the discharge on an average, continuous basis is 30 L/s unless otherwise specified.

3 Flow Statistics – Big Otter Creek

Water Survey of Canada (WSC) hydrometric station 02GC017, Big Otter Creek Above Otterville is located at Maple Dell Road, approximately 7 km downstream of the Norwich Lagoon outfall. It is the closest and most relevant, hydrometric station for the low flow analysis. [2]

There is an adequate period of historical record from 1964-1991 and 2003-2022 to assess low flow conditions without additional flow monitoring. The available data is shown in Figure 3-1 [2].

Since the drainage area at the WSC station is approximately twice that of Little Otter Creek at the Norwich Lagoon outfall and flows are not spatially proportional to drainage area, a rating curve relationship was used to derive low flow statistics at the outfall location [1].

The rating curve developed by XCG (2012) was used to relate downstream flows with the short-term flow monitoring upstream of the outfall at the Stover Street S weir [1]. From this relationship, it is possible to scale the long duration downstream flow to estimate return period low flows at the outfall location.

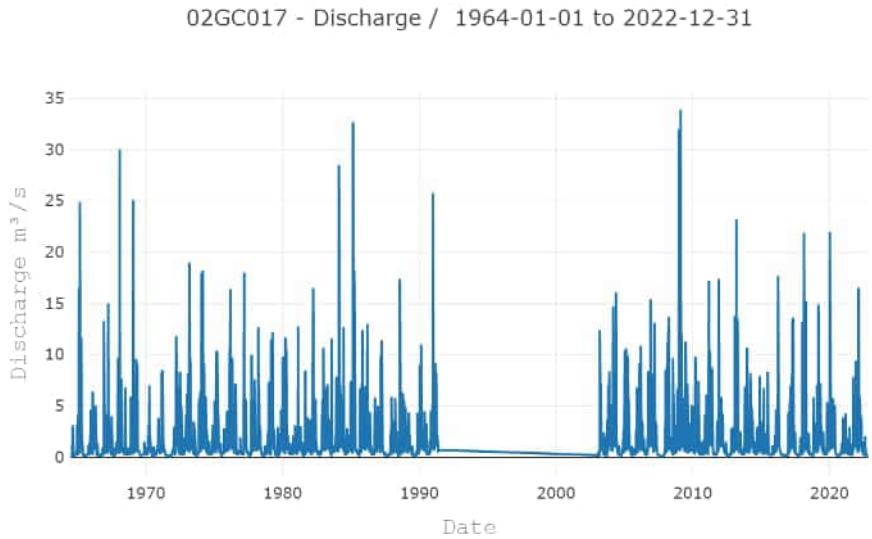

Figure 3-1 Flow Record at WSC Station: Big Otter Creek

3.1 Low Flow Analysis at Big Otter Creek Above Otterville

XCG (2012) performed a monthly low flow analysis on the 02GC017 Big Otter Creek above Otterville hydrometric station. The 7Q20 flow was determined to be 0.023 m^3/s occurring in July [1].

Greenland performed an updated analysis of annual 7Q20 using data from 1965 to 2021 for Big Otter Creek, Figure 3-2. The updated analysis determined a 7Q20 flow of 0.030 m^3/s for the period.

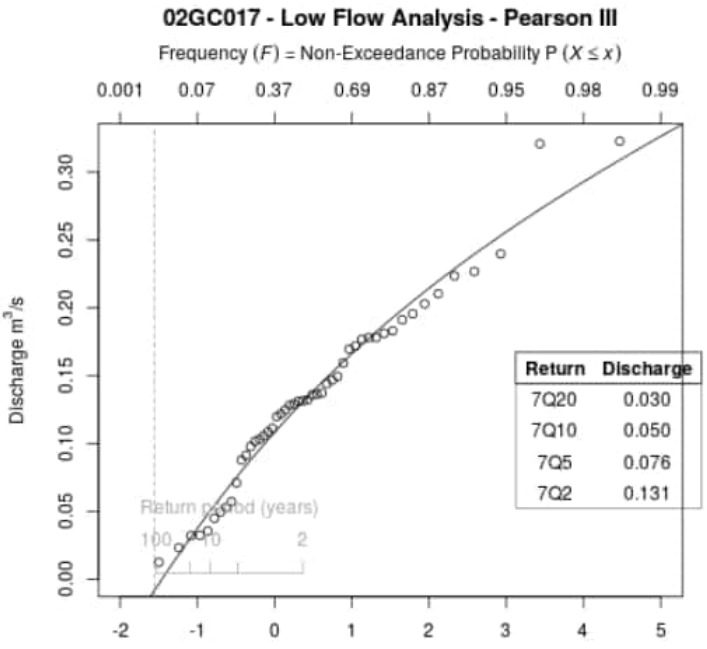

Figure 3-2 Low Flow Analysis: Big Otter Creek at Maple Dell Road for (1965-2021 inclusive

A Mann-Kendall trend analysis was applied to hydrometric data to identify any long-term trends in flow. This analysis did not determine any statistically significant increase or decreases in flow for the period 2003 through 2022 at either a monthly on annual level. However, when applied to the period from 1965 to 2022, it did identify a positive signal indicating an increased minimum annual flow and an increased June flow.

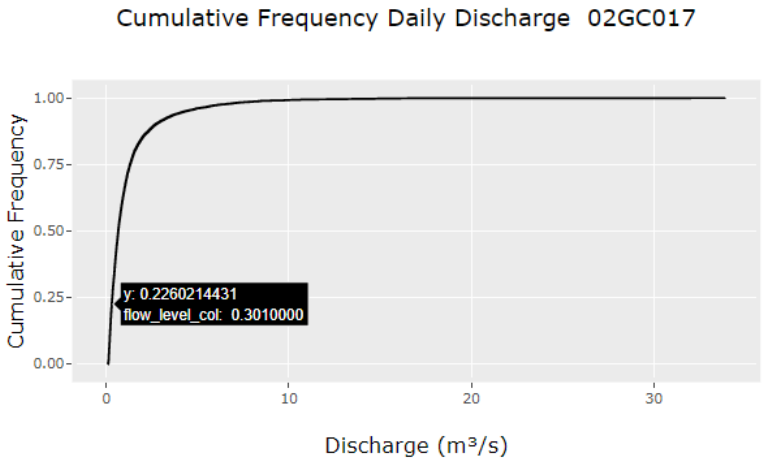

Figure 3-3 Cumulative Frequency Analysis of Big Otter Creek 2004-2022

Applying the analysis to the period from 2003 through 2022 yields a 7Q20 of 0.101 m^3/s – more than four times the low flow determined from the longer record. While there may be some influence from climate change and other factors, the discharge from the Norwich WWTP beginning in 1974 and subsequent increases over time are likely the largest contributor. As the current discharge schedule avoids release of effluent during low flow months, using the lower 7Q20 value of 0.030 is more representative of natural conditions.

A cumulative frequency daily discharge analysis was performed to relate discharge quantities and frequency of occurrence to aid in dilution ratio calculations, Figure 3-3. The y-axis of the chart should be read as the cumulative portion of time that discharge is less than x-axis value.

3.2 Low Flow Analysis at Norwich WWTP

Effluent discharges into Little Otter Creek travel approximately 7km before reaching the Big Otter Creek confluence, and the WSC hydrometric station. XCG (2012) developed Equation 1 which relates flows at Big Otter Creek to flows measured above the Norwich WWTP outfall at the Norwich Dam [1]:

$$Flow\ at\ Norwich\ Dam = 0.3456(Flow\ at\ Big\ Otter\ Creek\ Above\ Otterville)^{1.142} \quad \textbf{Equation 1}$$

The equation was used to estimate the 7Q20 flow at the Norwich WWTP from the longer record downstream. Using the annual 7Q20 value of 0.030 m^3/s for Big Otter Creek, this resulted in a 7Q20 at the Norwich WWTP of 0.006 m^3/s. A safety factor of 15% was added, which resulted in a final annual 7Q20 value of 0.005 m^3/s or 5 L/s.

3.3 Flow Regime and Dilution Ratio

Little Otter Creek is a small stream with very low flow during parts of the year. The proposed continuous effluent discharge is 30 L/s; 6 times the flow of the stream during 7Q20 flow events. Although the Ontario guidance for wastewater discharge is based on concentration objectives [3], it is generally desirable to achieve a 10:1 dilution of stream flow to effluent discharge [4], [5].

Since the flows on Little Otter Creek are limited during parts of the year, a dynamic discharge approach based on real-time stream flow is proposed. An analysis was completed using the cumulative frequency analysis (Figure 3-3).

The low flows on Little Otter Creek prevent achieving a 10:1 dilution ratio consistently, but a dynamic discharge that maintains at least a 3:1 dilution rate or better at the point of discharge was deemed reasonable. This approach achieves a 10:1 dilution ratio downstream at Big Otter Creek.

3.4 Monthly 7Q20 Low Flows

Another alternative approach considered monthly statistical 7Q20 low flow conditions determined for the period 1964 to 2021 to maintain consistency. Using a minimum dilution ratio of 1.88 : 1 ambient stream to effluent, yields the following monthly effluent release schedule that permits release of the annual projected wastewater flow without carry over of storage in lagoons.

Table 3-1 Maximum effluent discharge; constant dilution ratio for monthly 7Q20 conditions

	7Q20 (m3/s)	7Q20 (m3/s)	Dilution (u/s)	Dilution (d/s)	WWTP	WWTP	
	Big Otter Creek	Little Otter Creek (15% Safety factor)			Discharge (m3/s)	Discharge (m3)	
January	0.329	0.083	1.88	7.49	0.044	117,584	/month
February	0.321	0.080	1.88	7.52	0.043	103,261	/month
March	0.360	0.091	1.88	7.40	0.049	130,319	/month
April	0.555	0.150	1.88	6.96	0.080	206,753	/month
May	0.287	0.071	1.88	7.64	0.038	100,603	/month
June	0.175	0.040	1.88	8.20	0.021	55,337	/month
July	0.026	0.005	1.88	10.75	0.002	6,481	/month
August	0.069	0.014	1.88	9.36	0.007	19,755	/month
September	0.114	0.025	1.88	8.71	0.013	33,920	/month
October	0.124	0.027	1.88	8.61	0.014	38,583	/month
November	0.170	0.039	1.88	8.23	0.021	53,536	/month
December	0.246	0.059	1.88	7.81	0.031	84,364	/month
						950,496	/year (Total)
/year (Required to avoid carry over of storage)						949,000	

The adjustment requires further reducing the dilution ratio at the point of discharge; but dilution conditions become more favourable downstream at the confluence with Big Otter Creek where the dilution ratio achieves a minimum of nearly 7:1 in April.

This approach avoids the need for operators to continually monitor stream flows and adjust the discharge.

4 Ambient Water Quality

The ACS requires characterization of water quality in the receiving water course. From the Provincial Guidelines for wastewater discharge, the 75th percentile concentration is used for this assessment [6]. The Guidance suggests that samples should be taken seasonally over three years or monthly over two years to develop an adequate period of record. Concentrations of water quality parameters are in flux throughout the year and are dependent on a variety of factors including temperature, contributing runoff areas, and other discharge points to the water course [6].

The MECP uses the surface water management goals and policies described in MOE (1994) [6] and MOECC (2016) [6] to ensure that the surface waters in the Province are of a quality satisfactory for aquatic life and recreation. Guidelines define Policy 1 and Policy 2 receiving water courses as:

- *Policy '1': In areas which have water quality better than the Provincial Water Quality Objective (PWQO), water quality shall be maintained at or above the objective (better than the objective).*
- *Policy '2': Water quality which presently does not meet the PWQOs shall not be further degraded and all practical measures shall be undertaken to upgrade the water quality to the PWQO* [3].

4.1 Monitoring Program and Results

Three water quality datasets are used for this study; the existing 2011-2012 XCG data, the 2022 monitoring program by Greenland and RV Anderson, and the Provincial Water Quality Monitoring Network. The 2022 water quality monitoring program took place from 2022 March through 2022 November. The program set out to determine the ambient water quality upstream of the Norwich WWTP outfall, and fully mixed condition downstream of the outfall. Data on existing lagoon effluent was also accessed from the facility operator.

4.1.1 Upstream Sampling Location – Representative of Ambient Conditions

The upstream sampling was taken at Stover St. S approximately 600 m upstream of the outlet of the Norwich WWTP on Little Otter Creek. This location provided a representation of the quality of water prior to the influence of the WWTP discharge.

4.1.2 Downstream Sampling Location – Representative of Downstream Conditions

Provincial Water Quality Monitoring Network (PWQMN) Station 1601900702, Big Otter Creek at Maple Dell Road [7] was used as a downstream location for consideration of cumulative impacts. It is located approximately 7 km downstream of the outfall. It has data from 1980 to 2019 with a break in data collection between 1995 and 2002 [7]. This data set represents existing and historic conditions during which the Norwich Lagoon has been discharging.

Additional samples were taken approximately 200 m downstream of the outfall on Little Otter Creek.

4.1.3 Sampling Methodology

Water quality samples were collected on a monthly or twice monthly basis from March 2022 to November 2022. In-situ measurements of pH, temperature, dissolved oxygen, conductivity, river depth, and river speed were taken. Samples were submitted to ALS Environmental for laboratory work. The following water quality parameters were evaluated:

- pH
- Total Suspended Solids
- Ammonia, Total (as N)
- Nitrate and Nitrite as N
- Nitrate (as N)
- Nitrite (as N)
- Total Kjeldahl Nitrogen
- Phosphorus, Total
- E. Coli
- BOD Carbonaceous
- Water Temperature
- Dissolved Oxygen

4.1.4 Water Quality Objectives

Table 4-1 provides a summary of acute (applicable to un-mixed effluent) and chronic (in-stream mixed) water quality objectives and guidelines. The assimilative capacity analysis determines theoretical effluent quality needed to achieve these objectives in the receiving waters. Little Otter Creek and Big Otter Creek are both classified as cold-water streams [8].

Table 4-1 Water Quality Parameters, Objectives, Regulating Body

Parameters	Units	Water Quality Objectives		
		Short Term (Acute)	Long Term (Chronic)	Criteria
pH	pH units	N/A	6.5-9.0	CCME
Total Suspended Solids	mg/L	Ambient + 25	Ambient + 5	CCME
Ammonia	mg/L	0.20mg/L (Unionized Ammonia)	0.020mg/L (Unionized Ammonia)	PWQO
Nitrate and Nitrite as N	mg/L	550	13	CCME
Nitrate (as N)	mg/L	550	13	CCME
Nitrite (as N)	mg/L		0.060	PWQO
Phosphorus, Total	mg/L	n/a	0.03	PWQO
E. Coli	CFU/100mL	n/a	100	PWQO
BOD	mg/L	Based on Critical DO Concentration		PWQO
Water Temperature	°C	Lesser of Ambient + 10 mg/L or 30 mg/L	Ambient + 10 mg/L	PWQO
Dissolved Oxygen	mg/L	Cold Water Stream Thermal Designation; DO Concentration based on stream temperature, ranges from 5 – 8 mg/L		PWQO

4.1.5 In-Stream Water Quality Characterization

In 2022 there were 11 sampling events conducted upstream and immediately downstream of the outfall. Table 4-2 and Table 4-3 displays the laboratory or in-situ field monitoring results for the upstream sampling, respectively. Statistical analysis on available water quality data from the PWQMN and collected during the 2022 and 2011-2012 field monitoring programs are summarized in this section.

Table 4-2 Summary of Monitoring Data (2022 March – November in mg/L) Lab reported

NORWICH - OTTER CREEK UPSTREAM									
Date	pH	Total Suspended Solids	Ammonia, Total (as N)	Nitrate and Nitrite as N	Nitrate (as N)	Nitrite (as N)	Phosphorus, Total	E. Coli	BOD Carbonaceous
3/3/2022	8.0	9	0.28	3.01	2.99	0.02	0.16	82	3.0
3/24/2022	8.2	68	0.13	5.63	5.57	0.06	0.34	1400	3.0
4/26/2022	8.5	20	0.10	4.00	3.96	0.04	0.07	41	3.0
6/14/2022	8.2	24	0.12	6.63	6.55	0.08	0.09	540	3.0
7/6/2022	8.4	12	0.09	0.50	0.47	0.03	0.17	990	3.0
7/27/2022	8.0	18	0.09	0.27	0.27	0.01	0.18	300	3.0
8/11/2022	8.4	19	0.05	1.63	1.58	0.05	0.12	290	3.0
8/24/2022	8.6	17	0.03	0.15	0.15	0.01	0.16	500	4.0
9/13/2022	8.3	45	0.05	0.25	0.25	0.05	0.19	6000	3.7
9/29/2022	8.6	17	0.02	0.02	0.02	0.01	0.10	340	3.6
11/10/2022	8.5	10	0.01	0.02	0.02	0.01	0.10	94	6.6
Minimum	8.0	9	0.01	0.02	0.02	0.01	0.07	41	3.0
Median	8.4	18	0.09	0.50	0.47	0.03	0.16	340	3.0
Mean	8.3	23	0.09	2.01	1.98	0.03	0.15	962	3.5
75th Percentile	8.5	22	0.11	3.51	3.48	0.05	0.18	765	3.7
Max	8.6	68	0.28	6.63	6.55	0.08	0.34	6000	6.6
Standard Deviation	0.2	17	0.07	2.32	2.30	0.02	0.07	1641	1
Relative Standard Deviation	2%	72%	81%	115%	116%	67%	45%	171%	29%
Variance	0	282	0	5	5	0	0	2692580	1

Table 4-3 Summary of Monitoring Data (2022 March – November): Upstream, In-Situ

NORWICH - OTTER CREEK UPSTREAM						
Date	Field Temperature	Field pH	Field Conductivity	Field DO	River Depth	River Flow
3/3/2022	0.0	7.9	263.00	14.94	0.79	0.28
3/24/2022	3.8	7.8	339.90	14.18	0.50	0.69
4/26/2022	13.5	7.9	560.67	10.68	0.50	0.20
6/14/2022	21.0	7.9	644.33	7.21	0.44	0.11
7/6/2022	20.6	7.8	556.33	5.95	0.30	0.01
7/27/2022	19.7	8.0	604.67	6.07	0.18	0.00
8/11/2022	22.3	8.0	594.00	6.10	0.43	0.04
8/24/2022	20.7	7.8	519.33	6.55	0.35	0.02
9/13/2022	18.2	7.9	442.00	7.29	0.45	0.10
9/29/2022	13.1	8.7	470.67	9.19	0.41	0.01
11/10/2022	8.6	8.3	496.00	8.86		
Minimum	0.0	7.8	263.00	5.95	0.18	0.00
Median	18.2	7.9	519.33	7.29	0.43	0.07
Mean	14.7	8.0	499.17	8.82	0.43	0.14
75th Percentile	20.65	8.0	577.33	9.93	0.49	0.18
Max	22.3	8.7	644.33	14.94	0.79	0.69
Standard Deviation	7.3	0	110.32	3.06	0.15	0.20
Relative Standard Deviation	50%	3%	22%	35%	34%	140%
Variance	53	0	12171	9	0	0

Table 4-4 Summary of 2022 Monitoring and PWQMN Data

Parameter	Unit	Upstream 75th Percentile Monitoring[3]	Number of Samples	Downstream 75th Percentile PWQMN[1,3]	Number of Samples	Criteria[2]	Policy
pH	pH units	8.5	11	8.2	69	6.5-9.0	
Total Suspended Solids	mg/L	21.6	11	17.3	71	22.25	Policy 1
Ammonia, Total (as N)	mg/L	0.11	11	0.06	71	0.02 [2]	Policy 1
Nitrate and Nitrite as N	mg/L	3.51	11			13	
Nitrate (as N)	mg/L	3.48	11	4.95	71	13	Policy 1
Nitrite (as N)	mg/L	0.05	11			0.06	
Phosphorus, Total	mg/L	0.176	11	0.075	91	0.030	Policy 2
E. Coli	CFU/100mL	765	11			100	Policy 2
BOD Carbonaceous	mg/L	3.65	11				
Field Temperature	°C	22.3	11	16.5	70	30	
Field DO	mg/L	6.3	11	8.6	69	4.0-8.0	
Field Conductivity	uS/cm	577	11				
River Depth	m	0.37	10				
Total Kjeldahl Nitrogen	mg/L	1.25	11				

1: The PWQMN did not have records for Nitrate as N Concentrations, therefore Nitrate and Nitrite as N Concentrations were u

2: Total Ammonia as N criteria uses Unionized Ammonia Concentrations of 0.02mg/L for the chronic long term requirement

3: 100th Percentile for Temerature, 25th Percentile for DO

Table 4-5 Data Summary: Upstream (XCG / Greenland) and Downstream (WSC Station)

Norwich Results Summary and Comparison of the 75th Percentiles					
Parameter (75th Percentile)	Unit	Upstream of Norwich WWTP		Downstream at Big Otter Creek PWQMN	
		2011-2012	2022	2000-2011	2012-2022
Total, Ammonia as N	mg/L	0.300 (14)	0.108 (11)	0.058 (70)	0.058 (71)
Nitrate as N	mg/L	0.39 (14)	3.48 (11)	4.55 (69)	4.95 (71)
Phosphorus as P	mg/L	0.155 (14)	0.176 (11)	0.091 (71)	0.0745 (91)
Total Suspended Solids	mg/L	32.0 (14)	21.6 (11)	17.3 (67)	17.3 (71)
Fecal Coliform	CFU/100mL	655 (14)	765 (11)	880 (14)	605 (11)

5 Assimilative Capacity and Mixing Analysis

The fully mixed in-stream concentration can be determined using Equation 2. In-stream concentration after effluent of a given flow and concentration are fully mixed is assessed to determine the concentration and load that could theoretically be assimilated without exceeded water quality objectives.

$$C_{mix} = \frac{C_{eff}Q_{eff} + C_{amb}Q_{7Q20}}{Q_{7Q20} + Q_{eff}}$$ ***Equation 2***

Where C_{eff} and C_{amb} are the effluent and ambient 75th percentile in-stream concentrations, respectively and Q_{eff} and Q_{7Q20} are the corresponding flow rates.

Equation 2 is applied for each of the water quality parameters of interest. The equation is solved for C_{eff} by setting C_{mix} to the in-stream water quality objective.

5.1 Phosphorus

Phosphorus is regulated under the Provincial Water Quality Objectives and is set to a concentration of 0.030mg/L to prevent excessive algal growth in rivers and streams [3]. The Big Otter Creek PWQMN station 75th percentile phosphorus concentration over the past decade is 0.075 mg/L (Table 4-5).

The sampling program above the outfall indicates that the 75th percentile in stream phosphorus concentrations are 0.176 mg/L as seen in Table 4-4, thus classifying it as a Policy 2 receiver for phosphorus. This requires that the effluent concentration cannot exceed the existing ambient concentration.

Assimilative capacity for phosphorus is calculated looking at both upstream and downstream locations. From Table 5-1 the downstream location governs in determining the allowable effluent concentration at 0.075 mg/L and 72 kg/year.

Table 5-1 Phosphorus Mixing Analysis

Phosphorus Mixing Analysis	Unit	Upstream Location	Downstream Location
Stream 7Q20 Flow Rate with Safety Factor	l/s	5	26
Ambient 75th Percentile Phosphorus	mg/l	0.176	0.075
Policy Assessment	0.030	Policy 2	Policy 2
Effluent Flow to River	l/s	30.09	30.09
Max Effluent Concentration Phosphorus	**mg/l**	**0.176**	**0.075**
Annual Loading Rate	kg/yr	167	72
Mixed Conc.	mg/L	0.176	0.075
Policy 2	mg/L	0.176	0.075

If a monthly 7Q20 design flow is used in the analysis, it has little impact as the effluent concentration is capped at the 75th percentile in-stream ambient concentration under a policy 2 designation. Therefore, phosphorus is not impacted by the specific dilution ratio.

5.2 Ammonia

5.2.1 Chronic Toxicity

Unionized ammonia (NH_3) and ionized ammonia (NH_4^+) exist together in equilibrium in an aqueous solution. The MECP regulates un-ionized ammonia concentrations and has set a chronic toxicity limit of 0.02 mg/L. Correspondence from MECP (Oct, 2022) indicated that a value of 0.2 mg/L should be used for acute (unmixed effluent) toxicity of un-ionized ammonia [9]. This is consistent with studies done by US EPA on toxicity in fish that suggest an acute toxicity threshold of 0.166 mg/L is appropriate [10].

Un-ionized ammonia can be calculated from Total Ammonia as Nitrogen (TAN) concentrations and in-situ 75th percentile pH and 75th percentile seasonal temperatures.

Un-ionized ammonia concentrations are calculated from Total Ammonia [3] using **Equation 3** and **Equation 4.**

$$f = \frac{1}{10^{\,pKa - pH} + 1} \qquad \textit{Equation 3}$$

Where f is the fraction of the total ammonia that is NH3 in solution and

$$pKa = 0.09018 + \frac{2729.92}{T + 273.16} \qquad \textit{Equation 4}$$

Where T is temperature in degrees Celsius

5.2.2 Un-ionized Ammonia Analysis with Annual 7Q20 Low Flow Conditions

The calculations were performed on a seasonal basis where four seasons were identified: Winter (December-February), Spring (March-May), Summer (June-August), and Fall (September-November). The 75th percentile temperature recordings of each of these seasons were used in the calculations to determine the maximum TAN effluent concentration. Unfortunately, the 2022 sampling period was unable to collect recordings during January, February, and December. XCG reported higher 75th percentile temperatures in all seasons. To ensure a conservative approach, the XCG seasonal values were applied. Higher temperatures will produce more stringent TAN concentration requirements.

As pH does not change seasonally, the overall 75th percentile pH was used for this analysis.

The season with the highest upstream TAN concentration occurs during the summer months. It is equivalent to an un-ionized ammonia concentrations of 0.007 mg/L given 75th percentile in-situ pH and seasonal temperature. Therefore, Policy 1 applies.

The calculations in Table 5-2 and Table 5-3 determine the maximum allowable TAN concentration in effluent that can satisfy the water quality objective for each season at upstream and downstream locations using the annual 7Q20 low flow conditions.

Table 5-2 TAN Mixing Analysis: Chronic, Upstream, Annual 7Q20 Low Flow

Chronic Max Effluent Concentration TAN	Unit	Upstream Location			
Based on MECP Blue Book		December-February	March-May	June-August	September-November
Stream 7Q20 Flow Rate with Safety Factor	l/s	5	5	5	5
Stream Temperature (Warm/Cool)	°C	4	14	23	18
Stream 75th Percentile pH		8.10	8.10	8.10	8.10
pKa		9.93	9.60	9.32	9.47
Fraction of Un-Ionized Ammonia in Total Ammonia		0.01	0.03	0.06	0.04
75th Percentile Ambient In-stream TAN	mg/l	0.108	0.108	0.108	0.108
75th Percentile Un-ionized Ammonia (ambient)	mg/l	0.002	0.004	0.007	0.005
Policy Assessment	0.02	Policy 1	Policy 1	Policy 1	Policy 1
Effluent Discharge Rate (l/s)	l/s	30.09	30.09	30.09	30.09
Mixed Conc. Total Ammonia -N (TAN)	mg/L	1.15	0.54	0.29	0.40
Mixed Conc. Total Ammonia (TAN/0.8224)	mg/L	1.40	0.66	0.35	0.49
Max Effluent Concentration TAN	**mg/l**	**1.334**	**0.620**	**0.323**	**0.456**
Loading Rate	kg/day	3.47	1.61	0.84	1.18
In-stream mixed Un-ionized Ammonia	mg/L	0.02	0.02	0.02	0.02
PWQO (Policy 1) Un-ionized Ammonia	mg/L	0.02	0.02	0.02	0.02

Table 5-3 TAN Mixing Analysis: Chronic, Downstream, Annual 7Q20 Low Flow

Chronic Max Effluent Concentration TAN	Unit	Downstream Location			
Based on MECP Blue Book		December-February	March-May	June-August	September-November
Stream 7Q20 Flow Rate with Safety Factor	l/s	26	26	26	26
Stream Temperature (Warm/Cool)	°C	4	13	18	11.9
Stream 75th Percentile pH		8.22	8.22	8.22	8.22
pKa		9.95	9.65	9.45	9.67
Fraction of Un-Ionized Ammonia in Total Ammonia		0.02	0.04	0.06	0.03
75th Percentile Ambient In-stream TAN	mg/l	0.058	0.058	0.058	0.058
75th Percentile Un-ionized Ammonia (ambient)	mg/l	0.001	0.003	0.004	0.002
Policy Assessment	0.02	Policy 1	Policy 1	Policy 1	Policy 1
Effluent Discharge Rate (l/s)	l/s	30.09	30.09	30.09	30.09
Mixed Conc. Total Ammonia -N (TAN)	mg/L	0.90	0.46	0.30	0.48
Mixed Conc. Total Ammonia (TAN/0.8224)	mg/L	1.10	0.55	0.36	0.58
Max Effluent Concentration TAN	**mg/l**	**1.615**	**0.793**	**0.502**	**0.832**
Loading Rate	kg/day	4.20	2.06	1.30	2.16
In-stream mixed Un-ionized Ammonia	mg/L	0.02	0.02	0.02	0.02
PWQO (Policy 1) Un-ionized Ammonia	mg/L	0.02	0.02	0.02	0.02

The results of the upstream analysis determined values of 1.3 mg/L, 0.6 mg/L, 0.3 mg/L, and 0.5 mg/L, for Winter, Spring, Summer, and Fall, respectively. The downstream analysis determined max effluent TAN concentrations of 1.6 mg/L, 0.8 mg/L, 0.5 mg/L, and 0.8 mg/L. The upstream location required more stringent ammonia concentrations and therefore is the governing condition with continuous discharge of 30 L/s. These concentrations may be technologically difficult to achieve.

5.2.3 Un-ionized Ammonia Analysis with Monthly 7Q20 Low Flow Conditions

A mixing scenario was set up using monthly 7Q20 flows and effluent discharge rate to achieve 1.88 to 1 minimum dilution ratio noted in Section 3-4. The scenario uses a winter TAN effluent concentration of 4.0 mg/L and spring/summer/fall concentration of 1.5 mg/L which were the lowest concentrations that could be feasibly achieved using the proposed treatment technology. The resulting mixed concentrations of un-ionized ammonia are shown in Tables 5-4 and 5-5 with corresponding inputs.

Table 5-4 TAN Mixing Analysis: Chronic, Upstream, Monthly 7Q20 Low Flow

Chronic Max Effluent Concentration TAN	Unit	Upstream Location											
Based on MECP Blue Book		**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**
Stream 7Q20 Flow Rate with Safety Factor	l/s	59	83	80	91	150	71	40	5	14	25	27	39
Stream Temperature (Warm/Cool)	°C	4	4	4	14	14	14	23	23	23	18	18	18
Stream 75th Percentile pH		8.10	8.10	8.10	8.10	8.10	8.10	8.10	8.10	8.10	8.10	8.10	8.10
pKa		9.94	9.94	9.94	9.60	9.60	9.60	9.32	9.32	9.32	9.47	9.47	9.47
Fraction of Un-Ionized Ammonia in Total Ammonia		0.01	0.01	0.01	0.03	0.03	0.03	0.06	0.06	0.06	0.04	0.04	0.04
75th Percentile Ambient In-stream TAN	mg/l	0.108	0.108	0.108	0.108	0.108	0.108	0.108	0.108	0.108	0.108	0.108	0.108
75th Percentile Un-ionized Ammonia (ambient)	mg/l	0.002	0.002	0.002	0.004	0.004	0.004	0.007	0.007	0.007	0.005	0.005	0.005
Policy Assessment	0.02	Policy 1	Policy 1	Policy 1	Policy 1	Policy 1	Policy 1	Policy 1	Policy 1	Policy 1	Policy 1	Policy 1	Policy 1
Effluent Discharge Rate (l/s)	l/s	31.38	44.15	42.55	48.40	79.79	37.77	21.28	2.66	7.45	13.30	14.36	20.74
Mixed Conc. Total Ammonia -N (TAN)	mg/L	1.46	1.46	1.46	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59
Mixed Conc. Total Ammonia (TAN/0.8224)	mg/L	1.77	1.77	1.77	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Max Effluent Concentration TAN	**mg/l**	**4.000**	**4.000**	**4.000**	**1.500**	**1.500**	**1.500**	**1.500**	**1.500**	**1.500**	**1.500**	**1.500**	**1.500**
Loading Rate	kg/day	10.85	15.26	14.71	6.27	10.34	4.89	2.76	0.34	0.97	1.72	1.86	2.69
In-stream mixed Un-ionized Ammonia	mg/L	0.025	0.025	0.025	0.022	0.022	0.022	0.041	0.041	0.041	0.029	0.029	0.029
PWQO (Policy 1) Un-ionized Ammonia	mg/L	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
Dilution ratio (ambient to effluent)		1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88	1.88

Table 5-5 TAN Mixing Analysis: Chronic, Downstream, Monthly 7Q20 Low Flow

Chronic Max Effluent Concentration TAN	Unit	Downstream Location											
Based on MECP Blue Book		**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**
Stream 7Q20 Flow Rate with Safety Factor	l/s	246	329	321	360	555	287	175	26	69	114	124	170
Stream Temperature (Warm/Cool)	°C	4	4	4	13	13	13	18	18	18	11.9	11.9	11.9
Stream 75th Percentile pH		8.22	8.22	8.22	8.22	8.22	8.22	8.22	8.22	8.22	8.22	8.22	8.22
pKa		9.95	9.94	9.95	9.65	9.65	9.65	9.45	9.45	9.45	9.67	9.67	9.67
Fraction of Un-Ionized Ammonia in Total Ammonia		0.02	0.02	0.02	0.04	0.04	0.04	0.06	0.06	0.06	0.03	0.03	0.03
75th Percentile Ambient In-stream TAN	mg/l	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058
75th Percentile Un-ionized Ammonia (ambient)	mg/l	0.001	0.001	0.001	0.003	0.003	0.003	0.004	0.004	0.004	0.002	0.002	0.002
Policy Assessment	0.02	Policy 1	Policy 1	Policy 1	Policy 1	Policy 1	Policy 1	Policy 1	Policy 1	Policy 1	Policy 1	Policy 1	Policy 1
Effluent Discharge Rate (l/s)	l/s	31.38	44.15	42.55	48.40	79.79	37.77	21.28	2.66	7.45	13.30	14.36	20.74
Mixed Conc. Total Ammonia -N (TAN)	mg/L	0.50	0.52	0.52	0.23	0.24	0.23	0.21	0.19	0.20	0.21	0.21	0.21
Mixed Conc. Total Ammonia (TAN/0.8224)	mg/L	0.61	0.64	0.63	0.28	0.29	0.27	0.26	0.23	0.24	0.25	0.25	0.26
Max Effluent Concentration TAN	**mg/l**	**4.000**	**4.000**	**4.000**	**1.500**	**1.500**	**1.500**	**1.500**	**1.500**	**1.500**	**1.500**	**1.500**	**1.500**
Loading Rate	kg/day	10.85	15.26	14.71	6.27	10.34	4.89	2.76	0.34	0.97	1.72	1.86	2.69
In-stream mixed Un-ionized Ammonia	mg/L	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
PWQO (Policy 1) Un-ionized Ammonia	mg/L	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Dilution ratio (ambient to effluent)		7.84	7.45	7.54	7.44	6.96	7.60	8.23	9.78	9.27	8.57	8.63	8.19

As a result of using monthly 7Q20 low flows as the design stream flow, the dilution factor that can be achieved and permit release of the total annual flow requirements from the facility must be reduced. At the point of discharge the fully mixed effluent does not achieve the 0.02 mg/L PWQO for un-ionized ammonia in any of the months under monthly 7Q20 in-stream flows. Downstream, the PWQO is met for all months under this scenario.

The current 75th percentile concentration of instream un-ionized ammonia is boarder-line Policy 2. This leaves very little room for any additional load in the stream. The low flow and elevated pH of Little Otter Creek present further constraints.

The effluent is expected to have a lower pH than the water course. This may produce some benefits toward achieving unionized ammonia concentration objectives, but without a better understanding of the buffering capacity of the receiver, it cannot be determined to what extend the unionized ammonia might be pushed lower. Although beneficial for maintaining lower concentrations of unionized ammonia, significantly altering the pH of the water course is not recommended.

As higher temperatures and lower flows will likely coincide, the WWTP should be designed to discharge at a dynamic rate according to in-stream flow and water temperature conditions, with more discharge under higher flows and lower temperatures that assimilate higher TAN loads.

5.2.4 Acute Toxicity

To address acute toxicity (short term exposure to un-mixed effluent), the above process will be used where stream temperature and pH will be replaced with effluent temperature and pH. The analyses were performed with pH in increments of 0.5. A value of 0.166 mg/L was used for the un-ionized ammonia objective as per the US EPA requirements [10]. Given the limited mixing opportunity in Little Otter Creek during parts of the year, the more conservative US EPA recommendation for acute toxicity of un-ionized ammonia (0.166 mg/L) was adopted for this study. Table 5-6 provides the maximum effluent TAN concentrations for combinations of effluent temperature and pH. The operations are expected to have a maximum effluent temperature of 20°C and pH range between 6.5 and 7.5; these conditions have been highlighted in orange.

Table 5-6 Total Ammonia as N Effluent Concentration: Acute Toxicity Criteria

Max NH3 Conc. to Achieve Regulated Un-Ionized Ammonia Conc.							0.166	mg/L
At Different Temperatures and pH		Effluent Temperature (*C)						
		0	5	10	15	20	25	30
Effluent pH	6.5	524.0	346.5	232.6	158.3	109.1	76.2	53.9
	7	165.8	109.7	73.6	50.1	34.6	24.2	17.1
	7.5	52.5	34.8	23.4	15.9	11.0	7.74	5.51
	8	16.7	11.1	7.49	5.14	3.58	2.54	1.84
	8.5	5.38	3.60	2.46	1.72	1.23	0.90	0.67
	9	1.79	1.23	0.87	0.64	0.48	0.38	0.31
	9.5	0.66	0.48	0.37	0.29	0.25	0.21	0.19

The analysis determined that the maximum allowable TAN concentration for the effluent is restricted by the upstream chronic condition. Therefore, for continuous, constant discharge under 7Q20 conditions, effluent TAN that achieves the concentration from the chronic analysis will ensure that the un-ionized

ammonia concentrations do not exceed 0.02 mg/L for chronic conditions in warm and cool seasons, respectively.

These concentrations also achieve acute toxicity requirements for the specified range of effluent pH and temperature. The relatively low TAN capacity is driven by the relatively high in-stream pH and existing in-stream TAN concentrations.

Plume Consideration

XCG (2012) developed a mixing zone (plume) model to determine the extent of the plume before achieving complete mixing. Although their scenarios reported some uncertainty from the CORMIX model, most scenarios achieved complete mixing within 10m or 40m of the outfall.

Since the TAN concentration proposed to achieve chronic in-stream water quality objectives will be non-acutely toxic, no further study of the effluent plume was undertaken.

5.3 Dissolved Oxygen

Dissolved Oxygen is inversely related to temperature and is a critical aspect of a viable fishery. The PWQO for Dissolved Oxygen is variable depending on the temperature and thermal classification of the stream. It ranges between 4 and 8 mg/L [3]. Little Otter Creek and Big Otter Creek are classified as cold-water streams [8]. The effluent DO and BOD concentrations cannot decrease in-stream DO concentrations below the values set out in Table 5-7 [3].

Table 5-7 Required Dissolved Oxygen Concentrations [3]

Dissolved Oxygen Concentration		
Temperature °C	Cold Water Biota: % Saturation	Cold Water Biota: mg/L
0	54	8
5	54	7
10	54	6
15	54	6
20	57	5
25	63	5

At the point of discharge, the effluent DO and temperature will have the greater influence on the mixed in-stream DO concentration, especially during lower flow conditions. Downstream, the BOD of the effluent will likely have more impact on in-stream DO.

XCG (2012) assessed the upstream DO condition of Little Otter Creek as a warm water fishery. Their data suggested that it was Policy 1 with respect to DO from November through June, but otherwise Policy 2. The additional field data from 2022 support this finding. With a cold-water fishery designation, the Policy 2 designation would extend to a longer portion of the year.

Therefore, there may be some available assimilative capacity during the cooler seasons, but otherwise, the effluent should not contribute to reducing the in-stream DO concentration further.

The measured cBOD at the upstream location was found to vary between <3.0 mg/L (detection limit) and 6.6 mg/L over 11 samples in 2022 with 7 samples being below detection limit. Applying a conservative approach and replacing non-detect results with the detection limit yields a 75th percentile cBOD of 3.7 mg/L. This is consistent with the 4 mg/L finding by XCG (2012) over 27 samples.

Review of the downstream data shows that over the period from 2003 to 2020, in 128 sample events, the 25th percentile concentration of DO was maintained above 5 mg/L with the 25th percentile for July being the lowest at 7.78 mg/L. Therefore, the upstream DO condition will be the limiting condition.

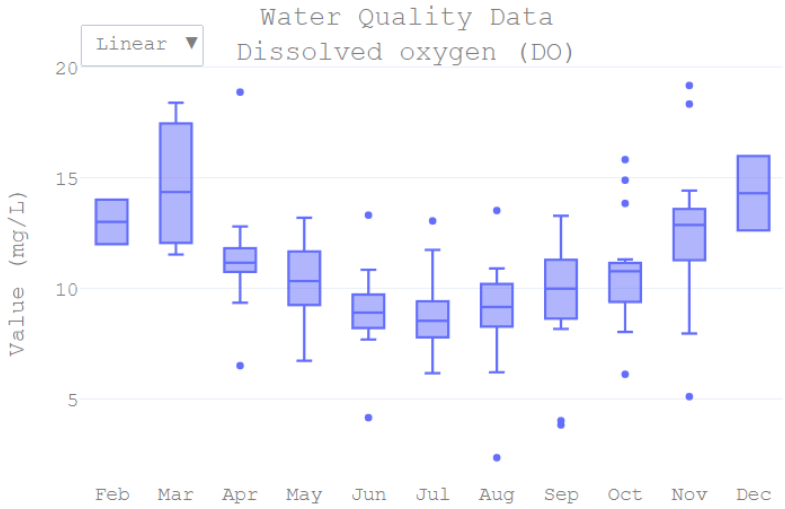

Figure 5-1 Dissolved Oxygen 2003-2002 from PWQMN station at Maple Dell Road

Discharge into Little Otter Creek should have DO greater than or equal to 5 mg/L during warm season and greater than 7 mg/L in the cool season. BOD in the effluent should be maintained at a level similar to background conditions. Although there is some capacity downstream where BOD loading may have greater influence on DO levels, there is limited capacity at the point of discharge. Therefore, a BOD effluent limit in the order of 5 mg/L is prudent. This is especially important at lower dilution ratios where the effluent will make up a large proportion of the stream flow.

5.4 Nitrate

The PWQMN Big Otter Creek Station does not have nitrate concentrations though it did have inorganic nitrogen data. Inorganic nitrogen contains both nitrate and nitrite, though nitrite is typically in substantially smaller quantities. Therefore, inorganic nitrogen is a reasonable proxy for nitrate. There is no PWQO for nitrate, but CCME guidelines suggest 13mg/L for protection of aquatic life [11]. The 75th percentile nitrate concentration from the upstream monitoring was 3.48 mg/L. The theoretical limit for nitrate in effluent was determined to be 15 mg/L as shown in Table 5-8. Actual effluent objective and limit recommendations will be lower.

Table 5-8 Nitrate Mixing Analysis

Nitrogen Mixing Analysis	Unit	Upstream Location	Downstream Location
Stream 7Q20 Flow Rate with Safety Factor	l/s	5	26
Ambient 75th Percentile Nitrate	mg/l	3.48	4.95
Policy Assessment	13	Policy 1	Policy 1
Effluent Flow to River	l/s	30.09	30.09
Max Effluent Concentration Nitrate	**mg/l**	**15**	**20**
Annual Loading Rate	kg/yr	14,490	18,815
Mixed Conc.	mg/L	13	13
Policy 1	mg/L	13	13

5.5 Fecal Coliform

E. coli should be maintained below 100 CFU/100 mL according to the PWQO [3]. The 75th percentile E. coli concentrations from the monitoring data was 765 CFU/100 mL upstream and 605 CFU/100 mL at the downstream locations. Both Little Otter and Big Otter Creek are therefore Policy 2 for E. coli. In Table 5-9, in-stream mixing calculations were used to determine the maximum E. coli concentration for the effluent. The assimilative capacity is governed by the downstream conditions. In theory, the effluent should not exceed 605 CFU/100 mL to avoid increasing the existing downstream concentration. However, a lower concentration will be recommended.

Table 5-9 Fecal Coliform Mixing Analysis

Fecal Coliform Mixing Analysis	Unit	Upstream Location	Downstream Location
Stream 7Q20 Flow Rate with Safety Factor	l/s	5	26
Ambient 75th Percentile Fecal Coliform	CFU/100mL	765	605
Policy Assessment	100	Policy 2	Policy 2
Effluent Flow to River	l/s	30.09	30.09
Max Effluent Concentration Fecal Coliform	**CFU/100mL**	**765**	**605**
Annual Loading Rate	kg/yr	725,985	574,145
Mixed Conc.	CFU/100mL	765	605
Policy 2	CFU/100mL	765	605

5.6 Total Suspended Solids (Sediments)

The water quality objective for effluent with respect to suspended sediment is relative to prior ambient conditions. CCME suggests that for long term discharges to freshwater the maximum increase in ambient background conditions should be no more than 5 mg/L [11]. The 75th percentile TSS concentration for the upstream and downstream location was 21.55 mg/L and 17.25 mg/L, respectively. Equation 4 was used to determine the assimilative capacity of the stream. The calculations for TSS concentration are displayed in Table 5-10.

Table 5-10 Total Suspended Solids Mixing Analysis

TSS Mixing Analysis	Unit	Upstream Location	Downstream Location
Stream 7Q20 Flow Rate with Safety Factor	l/s	5	26
Ambient 75th Percentile TSS	mg/l	21.6	17.3
Policy Assessment		Policy 1	Policy 1
Effluent Flow to River	l/s	30.09	30.09
Max Effluent Concentration TSS	**mg/l**	**27.4**	**26.5**
Annual Loading Rate	kg/yr	26,041	25,136
Mixed Conc.	mg/L	26.6	22.3
Policy 1	mg/L	26.6	22.3

The theoretical maximum effluent concentration for Total Suspended Solids is 26.487 mg/L as it is the lower of the upstream and downstream concentration.

5.7 Thermal Impacts

Changes in temperature and thermal regime can have adverse effects on fish communities and sensitive species. The Thermal Designation is a quality assessment of a stream's ability to maintain temperature despite higher ambient air temperatures. A resilient stream (cold water stream) typically has significant groundwater contribution, enabling a higher air/water temperature differential even during warmer summer days.

To assess potential thermal impact of the Norwich WWTP on the Little Otter Creek, the methods built by Stoneman et al. (1996) were used. Stoneman et al (1996) proposed a method to classify stream thermal stability with single observations of daily maximum water and air temperature [12]. Equations to define warm, cool, and cold-water stream temperatures relative to air temperature were derived with data from the Grand River watershed.

The downstream temperatures recorded from the PWQMN Station on Big Otter Creek were used with data available upstream of the WWTP discharge location. The monthly distribution of measured temperature for Big Otter Creek from 2003 to 2020 are shown in Figure 5-2. Fewer data points are recorded during the winter months. Air temperature from the Government of Canada Historic Weather, Climate and Hazard were obtained for corresponding days when water temperature measurements were taken [13].

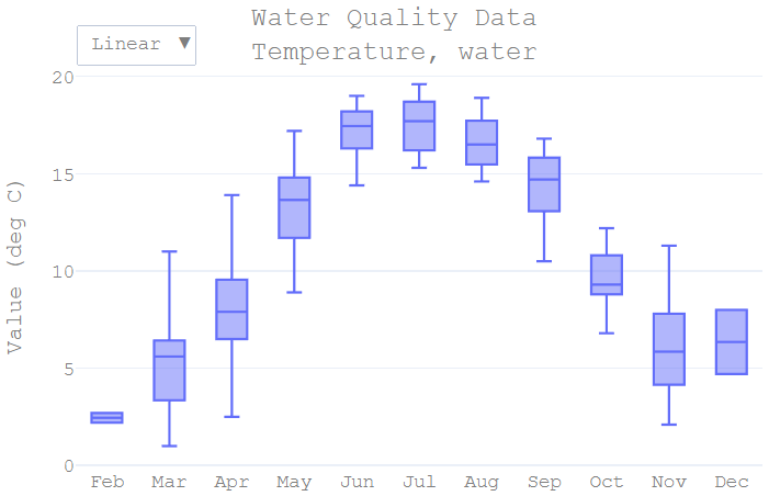

Figure 5-2 Big Otter Creek at Maple Dell Road Water Temperature 2003-2020

Little Otter Creek is classified as a cold-water stream as per the Long Point Region Conservation Authority [8]. Upstream data collected in 2011 and 2022 suggest a cool-water designation.

When air and water temperature of Big Otter Creek were plotted with the Stoneman et al (1996) thresholds, the data points fell within cool and cold-water stream designations, as seen in Figure 5-3. To ensure a conservative estimate for thermal impact, the stream will be evaluated as a cool-water stream.

The Stoneman et al (1996) range starts at 24°C whereas the operating temperatures for the WWTP are expected to be 20°C and below to address ammonia discharge constraints. Table 5-11 shows maximum effluent temperature, highlighted in orange, for corresponding air temperature to maintain the cool-water thermal designation. It indicates the acceptable resulting mixed temperatures in the stream that would ensures that the thermal regime is not altered. As effluent temperature requirements change with air temperature, a recommendation should be based on ambient conditions.

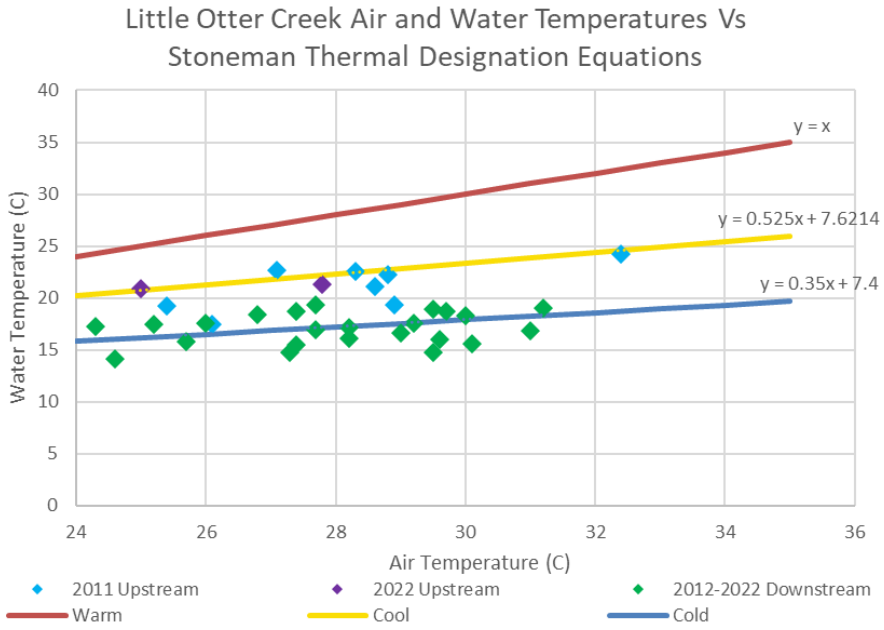

Figure 5-3 Stoneman's Evaluation for Thermal Designation

Table 5-11 Maximum Effluent Temperatures to Maintain Thermal Designation of Stream

Air Temperature (°C)	Thermal Designation (Cool)	Effluent Temperature (°C)
24	20.2	20.0
25	20.7	20.6
26	21.3	21.3
27	21.8	21.9
28	22.3	22.5
29	22.8	23.1
30	23.4	23.7
31	23.9	24.4
32	24.4	25.0
33	24.9	25.6
34	25.5	26.2
35	26.0	26.8
36	26.5	27.5

6 Existing Operating Conditions

The Norwich Waste Water Treatment Plant has been operating since 1974, serving the Town of Norwich and surrounding areas. The plant is operating under a Certificate of Approval which regulates the effluent quality and discharge periods. Discharge is allowed 236 days of the year for an average daily discharge of 1,530 m^3/day. Table 6-1 displays the existing Certificate of Approval effluent quality requirements.

Table 6-1 Current Operating Concentration Requirements

Effluent Parameters	Limits		Objectives	
	Monthly Average Conc. (mg/L)	Average Loading (kg/d)	Monthly Average Conc. (mg/L)	Average Loading (kg/d)
$cBOD_5$	10.0	23.7	5.0	11.8
TSS	10.0	23.7	5.0	11.8
Total Phosphorus				
Non-Freezing Period	0.5	1.2	0.3	0.7
Freezing Period	1.0	2.4	0.8	1.9
Total Ammonia Nitrogen				
Non-Freezing Period	3.0 (5.0)	11.8	2.0	7.1
Freezing Period	5.0 (8.0)	18.9	4.0	11.8
Total Chlorine Residual	0.002 (0.01)	0.005	0.000	0.000
Dissolved Oxygen	> 4	N/A	> 5	N/A
E. Coli	200 CFU/100 mL	N/A	150 CFU/100 mL	N/A

Notes:
1. Values in brackets indicate daily concentration limits.
2. In addition to Total Ammonia Nitrogen concentrations noted above, the un-ionized ammonia concentration in the effluent shall not exceed 0.1 mg/L for monthly average values and 0.2 mg/L for any individual sample
3. The loadings are based on average daily flow of 2,366 m^3/d over 236-day discharge period

The previous 11 years (2011 to 2021) of effluent quality records were provided by the County. An analysis was performed to understand the existing operations. As seen in Table 6-2, the 75th percentile monthly average concentrations were below the monthly Objective and Limit concentration requirements. There were a few occurrences where the monthly average was higher than the Objective or Limit.

Table 6-2 Norwich WWTP Monthly Operating Discharge Concentration Averages

Monthly Concentration Averages											
Operations Summary	TP (mg/L) (Non-Freezing)	TP (mg/L) (Freezing)	TA as N (mg/L) (Non-Freezing)	TA as N (mg/L) (Freezing)	Unionized Ammonia (mg/L)	E. Coli (#/100ml)	TSS (mg/L)	D.O. (mg/L)	BOD5 (mg/L)	Temp (°C)	pH
Minumum	0.11	0.15	0.05	0.11	0.000	1	1.0	4.6	1	1.5	7.1
Average	0.24	0.23	0.61	1.95	0.007	114	2.8	7.8	3	12.0	7.5
75th Percentile	0.29	0.24	0.88	3.09	0.009	101	3.0	5.9	4	17.5	7.6
Maximum	0.48	0.46	2.57	4.53	0.028	886	9.8	12.4	11	24.0	8.1
Monthly Objective	0.30	0.80	2.00	4.00		150	5.0	5.0	5		
Monthly Limit	0.50	1.00	3.00	5.00	0.100	200	10.0	4.0	10		6.0

7 Recommended Effluent Characteristics

The recommended discharge limits and objectives are assigned the lowest feasible concentrations so as not to utilize the entire capacity of the water course and leaving availability for downstream users, and sustainable improved quality to fish and aquatic species for the long term.

As Little Otter Creek is currently an impaired stream, it is importance to prevent further degradation and improve water quality as possible. There are some challenges in achieving this goal with the limited flow available during parts of the year and the elevated pH that has been observed.

7.1 Recommended Effluent Discharge Rates

Three means of regulating discharge rate to the receiving water course were considered. For operational purposes, the County prefers the second option - monthly prescribed discharge rates derived from monthly 7Q20 receiver flows

7.1.1 Dynamic Effluent Discharge

To address low dilution ratio at the point of discharge and downstream that happens predominantly during summer months, regulating discharge from the WWTP based on real-time measured flow in Little Otter Creek or Big Otter Creek is the best means of achieving higher dilution ratios and ensuring that the treatment facility can discharge enough effluent during the year without expanding existing storage. A permanent hydrometric station or a staff gauge and rating curve established upstream of the outfall would provide this continuous data. Alternatively, the downstream WSC hydrometric station provides real-time flow readings and could be used to estimate upstream flows at the outfall using the empirical equation discussed in Section 3-2.

Using the real-time hydrometric station data, the maximum daily discharge from the WWTP could be determined as a function of the measured stream flow such that a minimum 3:1 dilution ratio is achieved at the point of discharge. Therefore, the maximum effluent discharge would be one third the determined in-stream flow. This approach permits more flexibility while safeguarding aquatic health.

It may be prudent to limit the maximum discharge during higher stream flow conditions to less than 33% of stream flow to protect the integrity of the watercourse from erosion; however any specific limits cannot be provided. The design capacity of the facility may be a limiting factor to the maximum flow that would negate this consideration.

7.1.2 Monthly Prescribed Effluent Discharge Based on Monthly 7Q20 Design Flows

Using the monthly 7Q20 flows to prescribe fixed daily effluent release limits for each month may reduce operational decision-making, but it results in missed opportunities to achieve higher dilution rates at greater frequency by over-restricting discharge when water course flows are higher. It may also increase the dependency on lagoon storage and increase the potential need to increase the available storage.

As Little Otter Creek exhibits statistical low flow conditions that greatly limit the monthly discharge rates, the design condition would achieve a much lower dilution rate. At higher flows a much higher

dilution rate would be achieved, but the facility would be limited to maintaining the same rate of effluent discharge as during low flow conditions.

7.1.3 Hybrid Dynamic Appraoch

A hybrid approach would consider dynamic, measured flow conditions whenever data can be reasonably accessed; and use of extreme condition discharge rates when data is not available.

7.2 Phosphorus

The assimilative capacity study produced an effluent limit of 0.075 mg/L for phosphorus for continuous, constant discharge under 7Q20 conditions. Existing technology to achieve this concentration is costly. There was a need to come to a compromise on an acceptable discharge objective and limit that considers the current permitted operations and the need to improve / maintain aquatic health. Considerations included available technology and cost, existing operations and CoA, and protection of the environment.

Use of the dynamic or monthly regulated effluent discharge rates do not benefit phosphorus conditions since the receiver is considered Policy 2 for phosphorus, the in-stream concentration dictates the effluent concentration. Table 7-1 Phosphorus compares corresponding concentrations and loads.

Table 7-1 Phosphorus Effluent Load and Concentration Options

Phosphrous	To Achieve the PWQM Objectives	To Maintain the Current Operating Loading Rate	To Maintain the Current Objective Loading Rate	To Maintain the Current Limit Loading Rate	To Maintain the Current Operating Concentration	To Maintain the Current Objective Concentration	To Maintain the Current Limit Concentration
Proposed Load (kg/year)	72	56	165	283	222	285	475
Proposed Flow (m3/day)	949,000	949,000	949,000	949,000	949,000	949,000	949,000
Proposed Concentration (mg/L)	0.075	0.059	0.174	0.298	0.234	0.300	0.500

7.3 Biological Oxygen Demand

From discussions with MECP, it was agreed that cBOD effluent concentrations with an objective / limit of 5 mg/ L and 10 mg/L, respectively would be acceptable.

Considering cBOD loading and concentration, existing and permitted loads were compared in Table 7-2.

Table 7-2 cBOD Effluent Load and Concentrations Options

cBOD	To Achieve the PWQM Objectives	To Maintain the Current Operating Loading Rate	To Maintain the Current Objective Loading Rate	To Maintain the Current Limit Loading Rate	To Maintain the Current Operating Concentrations	To Maintain the Current Objective Concentration	To Maintain the Current Limit Concentration
Proposed Load (kg/year)		856	2785	5593	3155	4745	9490
Proposed Flow (m3/day)		949,000	949,000	949,000	949,000	949,000	949,000
Proposed Concentration (mg/L)		0.9	2.9	5.9	3.3	5.0	10.0

7.4 Ammonia

During consultations with MECP on 2023 February 21, the Project Team was advised that the Ministry would consider the proposed effluent quality if the mixed in-stream un-ionized ammonia was determined to be less than 0.1 mg/L. The explanation for this adjustment was that volatilization in the water course could be expected.

However, using the dynamic discharge approach and maintaining a 3:1 dilution ratio, it was demonstrated that a cool condition limit of 4.0 mg/L TAN can achieve less than 0.02 mg/L mixed un-ionized ammonia concentration. During the warmer period, 1.5 mg/L TAN can achieve 0.02 to 0.03 mg/L mixed un-ionized ammonia in-stream.

Effluent TAN concentrations specified in Table 7-4 are a compromise that realizes a load reduction over current objectives / limits. This approach requires operations to manage TAN concentration seasonally and restrict discharge according to Table 3-1.

In addition to stream flow, temperature should be monitored upstream of the outfall during warmer periods to access suitability of conditions to discharge ammonia.

It is assumed that the pH of the effluent has limited impact on the mixed instream pH and that the effluent in not acutely toxic as discussed in Section 5-2-2.

7.5 Summary of Recommended Effluent Objectives / Limits

Table 7-3 summarizes recommended effluent objectives and limits.

The County has opted to use the second discharge volume option with prescribed monthly discharge limits based on monthly 7Q20 flows as per Table 3-1.

Total phosphorus concentrations are recommended based on a compromise between the existing CofA objectives and limits and findings of the assimilative capacity study. The aim is toward reducing the permitted concentrations, with some increase in loading required due to higher flows and working within the constraints of technology and feasibility.

Ammonia requires careful consideration as in-stream concentrations, higher temperature and pH contribute to un-ionized ammonia concentrations above the PWQO in the scenario using fixed monthly discharge when dilution ratios are low. This recommended discharge and concentration achieve PWQOs downstream at Big Otter Creek.

It is recommended that a monitoring program be established once the WWTP upgrade begins operations. The monitoring program should track upstream and downstream concentrations of water quality parameters noted in this study including phosphorus, TAN, pH, temperature, dissolved oxygen, BOD, fecal coliform and total suspended solids.

Samples should be taken at least seasonally during the first three years of operation. The need to continue sampling should be re-evaluated at that time. Results of the sampling program should be used to demonstrate that the new effluent achieves the required Policy 1 or Policy 2 criteria.

Table 7-3 Objectives, Limits, and Capacities of Effluent Water Quality Parameters

Parameter	Existing Operating Averages		Existing Operating Effluent Limit/Objective	Recommended Effluent Limit	Recommended Effluent Objective
Total Phosphorus	Non-Freezing (Apr – Nov)	0.24 mg/L	0.50 / 0.3 mg/L	0.20 mg/L	0.10 mg/L
	Freezing (Dec – Mar)	0.23 mg/L	1.0 / 0.8 mg/L		
Total Ammonia As N	Non-Freezing (Apr – Nov)	0.61 mg/L	3.0 / 2.0 mg/L (11.8 / 7.1 kg/day)	1.5 mg/L (3.5 kg/day avg.)	1.0 mg/L (2.4 kg/day avg.)
	Freezing (Dec – Mar)	1.95 mg/L	5.0 / 4.0 mg/L (18.9 / 11.8 kg/day)	4.0 mg/L (13.6 kg/day avg.)	2.0 mg/L (6.8 kg/day avg.)
Fecal Coliforms as E. Coli	114 CFU/100 mL		200 / 150 CFU/100 mL	100 CFU/100 mL	50 CFU/100 mL
Total Suspended Solids	3 mg/L		10 / 5 mg/L	10 mg/L	5 mg/L
DO	7.8 mg/L		>4 / >5 mg/L	>6 mg/L	>6 mg/L
cBOD5	3.3 mg/L		10 / 5 mg/L	10 mg/L	5 mg/L

** Monthly effluent discharge limited as per Table 3-1 with min / max daily flows of 173 / 6,912 m^3/day respectively

** Temperatures and pH above those used in Table 5-4 may result in higher in-stream concentrations of un-ionized ammonia

8 Images

Figure 8-1 Little Otter Creek: View upstream at Stover Street S. April 2021 (Google StreetView)

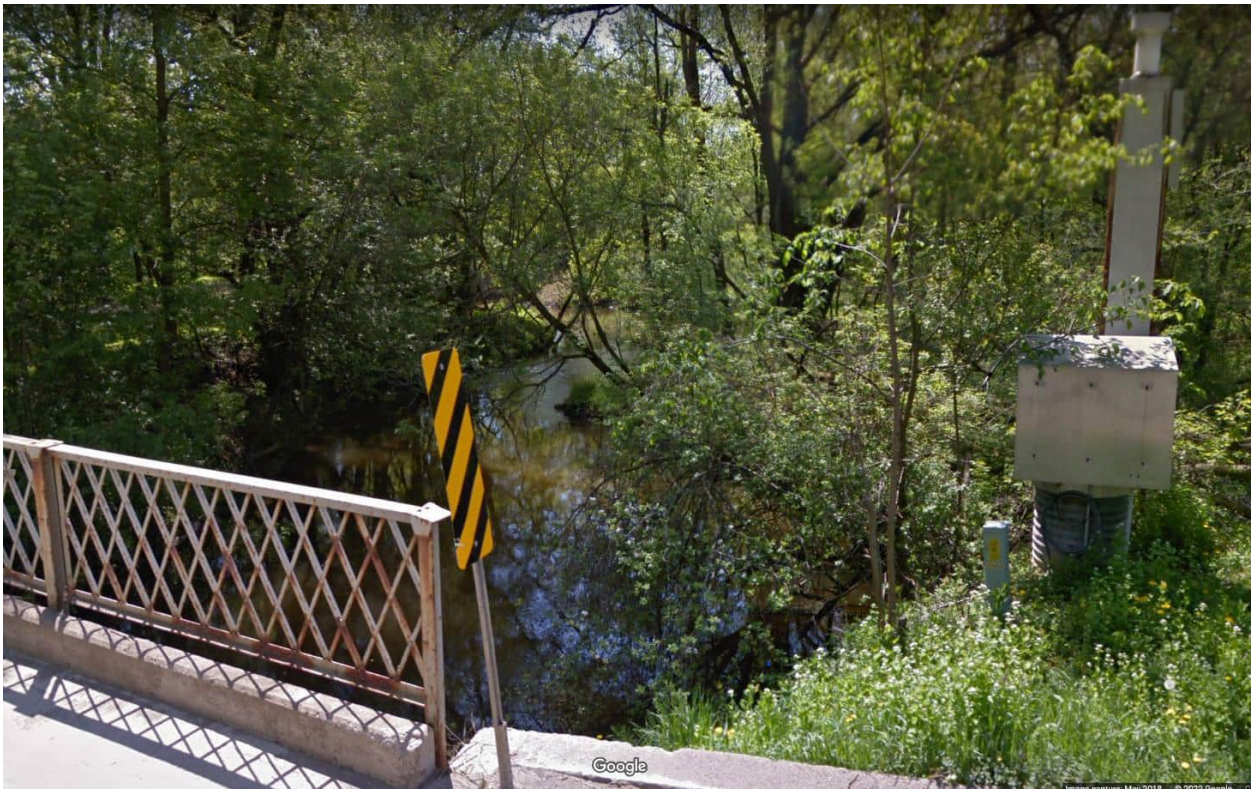

Figure 8-2 Big Otter Creek WSC station: View upstream at Maple Dell Road May 2018 (Google StreetView)

Figure 8-3 Norwich Dam upstream of WWTP outfall (source: Google Maps)

9 References

[1] XCG Consultants Ltd., "Assimilative Capacity Study of Otter Creek for Norwich WWTP, Oxford County," 2012.

[2] G. o. Canada, "Daily Discharge Graph for BIG OTTER CREEK ABOVE OTTERVILLE (02GC017)," 2022. [Online]. Available: https://wateroffice.ec.gc.ca/report/historical_e.html?stn=02GC017.

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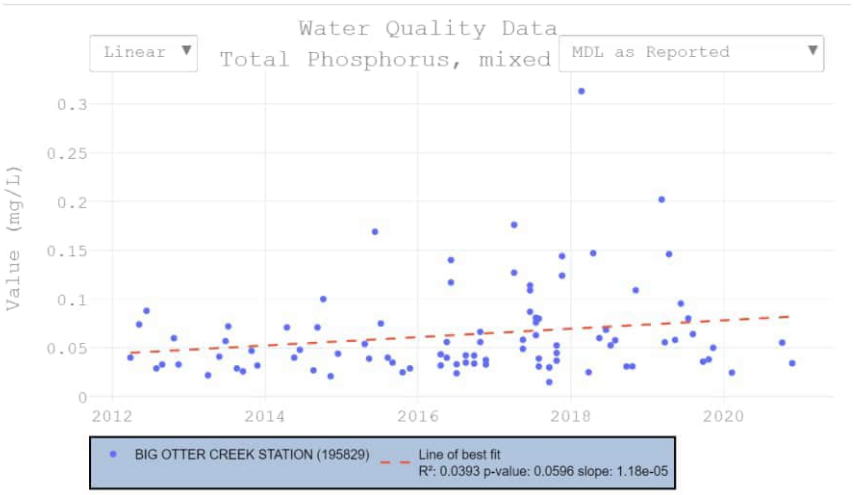
Appendix A: Supporting Data

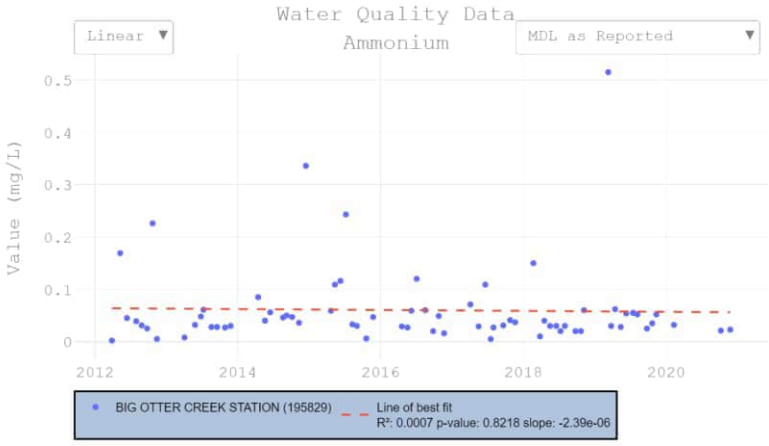
A-1 Water Quality Monitoring: PWQMN Big Otter Creek

Phosphorus



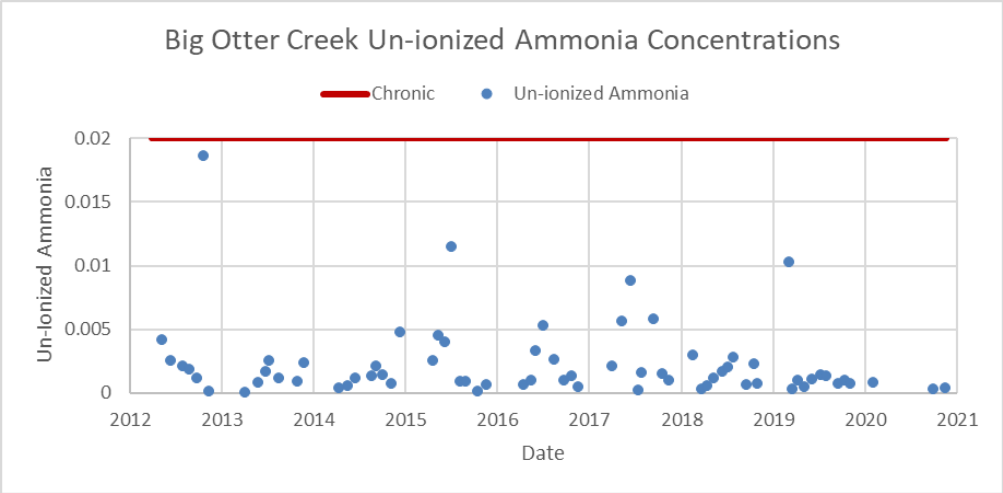
Phosphorus Concentrations at Big Otter Creek PWQMN Station

Total Ammonia as N



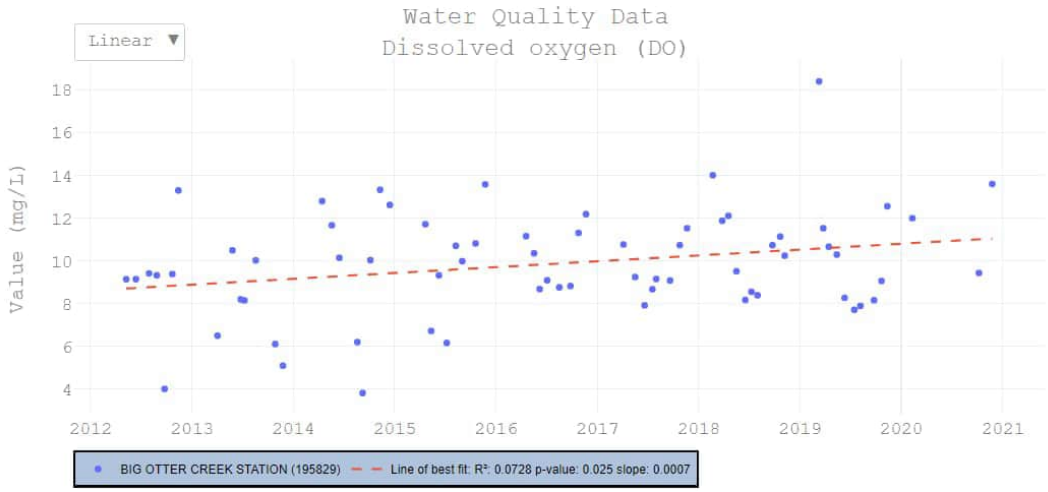
Ammonium Concentrations at Big Otter Creek PWQMN Station

An analysis of the unionized ammonia concentration in the stream was performed with pH and Temperature using THREATS. The in-stream un-ionized ammonia values are well below both the chronic (0.02 mg/L) and the acute (0.166 mg/L) requirements. The 75th percentile un-ionized ammonia concentration is 0.0025 mg/L, almost a magnitude lower than the chronic concentration.



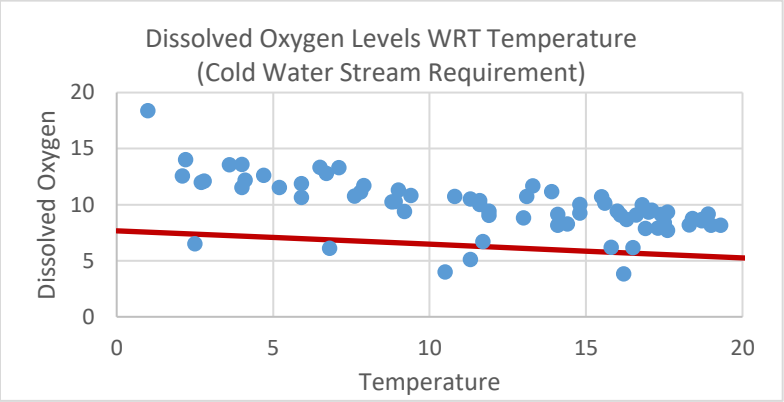
Unionized Ammonia Concentrations at Big Otter Creek PWQMN Station

Dissolved Oxygen



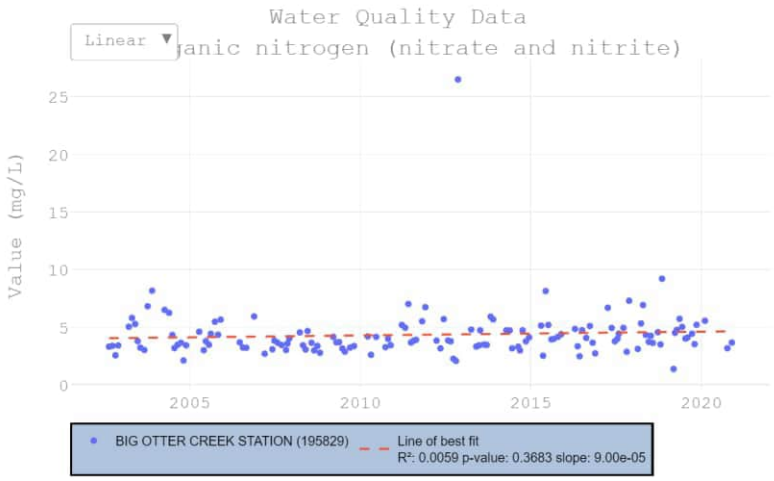
Dissolved Oxygen Concentrations at Big Otter Creek PWQMN Station

Dissolved Oxygen concentrations were recorded at the Big Otter Creek Station Above Otterville. The threshold for dissolved oxygen requirements are relative to the temperature. Based on the value in Table 5-7, an equation threshold was built (as seen as the red line in the following chart) to identify in the quality of the stream.



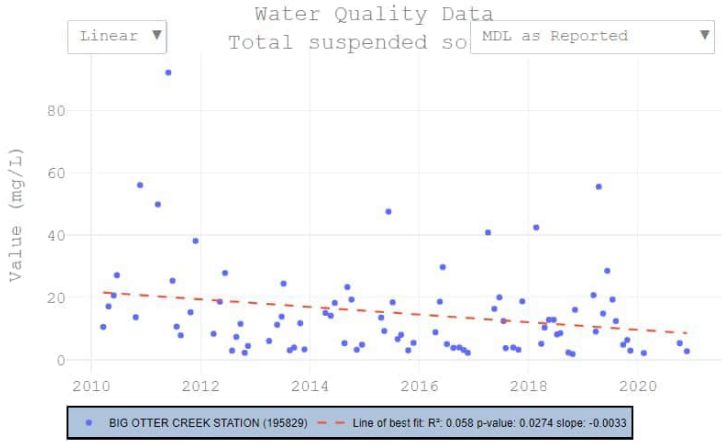
Dissolved Oxygen Concentrations with Respect to Temperature at Big Otter Creek PWQMN Station: Provincial Requirement

Nitrogen



Organic Nitrogen Concentrations at Big Otter Creek PWQMN Station

Total Suspended Solids



Total Suspended Solids Concentrations at Big Otter Creek PWQMN Station

APPENDIX 2-3

Confirmation of Effluent Criteria for the WWTP Expansion with MECP

John Tyrrell

From: Macki, Monika (MECP) <Monika.MacKi@ontario.ca>
Sent: October 4, 2024 10:05 AM
To: John Tyrrell
Cc: Smith, Mark (MECP); Geurts, Hugh (MECP); Austin Bender; hgoossens@oxfordcounty.ca
Subject: RE: Oxford County Norwich WWTP Class EA -ACS Review Meeting Questions and Request to Approve Effluent Criteria for Norwich WWTP Expansion
Attachments: Norwich_WWTP_Cl_EA_ MECP_ltr_25Sep24.pdf

Hi John, the Ministry offers the following comments:

MECP finds the correspondence (attached) adequately reflects the discussions and outcomes of the September 18, 2024 meeting. Furthermore, the responses to comments provided by the Ministry at that meeting have been adequately addressed to the satisfaction of the MECP.

Accordingly, MECP accepts the effluent criteria provided in Table 2 of the correspondence and the proposed discharge rates found in the September 18, 2024 slide deck (provided as an addendum to the September 25th correspondence). Effluent criteria and discharge rates are copied below for reference purposes.

Table 2: Proposed Effluent Criteria

Parameter	Period	Proposed Effluent Limit	Proposed Effluent Objective
Total Phosphorus	Year Round	0.2 mg/L	0.10 mg/L
Total Ammonia Nitrogen	Non-Freezing (Apr-Nov)	1.5 mg/L	1.0 mg/L
	Freezing (Dec-Mar)	4.0 mg/L	2.0 mg/L
Fecal Coliforms as E.Coli	Year Round	100 CFU/100 mL	50 CFU/100 mL
Total Suspended Solids	Year Round	10 mg/L	5 mg/L
DO	Year Round	>6 mg/L	>6 mg/L
$CBOD_5$	Year Round	10 mg/L	5 mg/L

Discharge Schedule

- A monthly effluent discharge schedule was prepared using historical 7Q20 values
  - Provides a 1.9 dilution factor in Little Otter Creek and a minimum of a 6.9 dilution factor downstream in Big Otter Creek
- During June through November excess effluent will be stored onsite, as needed, to be released when excess discharge capa exists, particularly in the Winter/Spring.

Month	Big Otter Creek 7Q20	Little Otter Creek 7Q20 (15% Safety Factor)	Norwich WWTP Discharge		Upstream Dilution (Little Otter Creek)	Downstream Dilution (Big Otter Creek)
-	m^3/s	m^3/s	m^3/s	m^3/d	-	-
January	0.329	0.083	0.044	3,802	1.88	7.49
February	0.321	0.080	0.043	3,715	1.88	7.52
March	0.360	0.091	0.049	4,234	1.88	7.4
April	0.555	0.150	0.080	6,912	1.88	6.96
May	0.287	0.071	0.038	3,283	1.88	7.64
June	0.175	0.040	0.021	1,814	1.88	8.2
July	0.026	0.005	0.002	173	1.88	10.75
August	0.069	0.014	0.007	605	1.88	9.36
September	0.114	0.025	0.013	1,123	1.88	8.71
October	0.124	0.027	0.014	1,210	1.88	8.61
November	0.170	0.039	0.021	1,814	1.88	8.23
December	0.246	0.059	0.031	2,678	1.88	7.81
			Annual Total	950,496	m^3/yr	
	Required Volume to prevent carryover of storage:			949,000	m^3/yr	

Thank you,

Monika Macki
Environmental Resource Planner/Environmental Assessment Coordinator
Environmental Assessment Branch
Ministry of the Environment, Conservation and Parks
monika.macki@ontario.ca

From: John Tyrrell <JTyrrell@rvanderson.com>
Sent: Thursday, October 3, 2024 4:46 PM
To: Macki, Monika (MECP) <Monika.MacKi@ontario.ca>
Cc: Smith, Mark (MECP) <Mark.Smith@ontario.ca>; Geurts, Hugh (MECP) <Hugh.Geurts@ontario.ca>; Austin Bender <abender@rvanderson.com>; hgoossens@oxfordcounty.ca
Subject: RE: Oxford County Norwich WWTP Class EA -ACS Review Meeting Questions and Request to Approve Effluent Criteria for Norwich WWTP Expansion
Importance: High

Hi Monika

I am inquiring as to the status of your review of our September 25th email submission to you.

The County is very eager to get the discharge criteria confirmed for the expansion to the Norwich WWTP so that they can mover forward with this project and complete the Class EA.

Can you provide an update of your review and a timeline for confirmation of the discharge criteria?

Thanks

John Tyrrell, M.Sc.(Eng.), P.Eng.

Regional Manager

R.V. Anderson Associates Limited
557 Southdale Road East, Suite 200, London ON N6E 1A2
t 519 681 9916 ext. 5038 | m 519 878 7903
LinkedIn | Facebook | Website

From: John Tyrrell <JTyrrell@rvanderson.com>
Sent: September 25, 2024 9:49 AM
To: Monika.MacKi@ontario.ca
Cc: Smith, Mark (MECP) <Mark.Smith@ontario.ca>; hugh.geurts@ontario.ca; Austin Bender <abender@rvanderson.com>; tboston@grnland.com; hgoossens@oxfordcounty.ca; rdavis@oxfordcounty.ca; dford@oxfordcounty.ca; jkreitzer@oxfordcounty.ca
Subject: Oxford County Norwich WWTP Class EA -ACS Review Meeting Questions and Request to Approve Effluent Criteria for Norwich WWTP Expansion
Importance: High

On behalf of Oxford County, RVA has prepared this attached letter to address the MECP comments regarding the ACS which was completed for Little and Big Otter Creeks in support of Norwich Wastewater Treatment Plant Municipal Class Environmental Assessment. Additionally, this letter includes a request to approve the effluent quality for the expansion of the Norwich WWTP to 2,600 m^3/day. We would request feedback from the MECP on these matters by October 11, 2024, so that the Public Consultation Centre # 2 presentation can be implemented in late October/early November 2024.

If you have any questions on these matters, please contact me.

Take care,

John Tyrrell, M.Sc.(Eng.), P.Eng.

Regional Manager

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rvanderson.com

RVA 215673

September 25, 2024

Ministry of Environment, Conservation and Parks
Environmental Assessment Branch
135 St. Clair Avenue W
Toronto ON M4V 1P5

Attention: Monika Macki, Environmental Resource Planner/ Environmental Assessment Coordinator

Dear Ms. Macki:

Re: Norwich Wastewater Treatment Plant Municipal Class Environmental Assessment
Additional Information from MECP County Meeting September 18, 2024, and
Request for Approval of Effluent Criteria

Introduction

On behalf of Oxford County, R.V. Anderson Associated Limited (RVA) has prepared this letter to address the Ministry of Environment Conservation and Parks (MECP) comments regarding the assimilative capacity study (ACS) which was completed for Little and Big Otter Creeks in support of Norwich Wastewater Treatment Plant Municipal Class Environmental Assessment. Additionally this letter includes a request to approve the effluent quality for the expansion of the Norwich WWTP to 2,600 m^3/day. Please refer to the attached meeting notes from September 18, 2024, for further information.

Responses to MECP Comments from September 18th Meeting

1. MECP Comment 1: The MECP noted the potential for the quality of stored effluent to degrade over time and that the County would be required to meet the effluent limits at the WWTP outfall for the blended (treated and stored) effluent.

   RVA Response: It is acknowledged that the blend of treated, and previously treated and stored, effluent must meet the effluent criteria before release. The conceptual design will include the ability to recirculate effluent from the storage lagoons to various points in the treatment system as needed to meet the effluent criteria.

2. MECP Comment 2: The MECP noted that as the County has limited control over the effluent temperature, the Little Otter Creek (LOC) is designated a cool water stream (as opposed to a cold-water stream) and effluent will be restricted during low flow/warm periods an effluent temperature limits is not warranted and can be removed.

RVA Response: The attached ACS report and accompanying effluent criteria have been updated to remove the effluent temperature limit.

3. **MECP Comment 3:** The MECP noted the proposed effluent limits would be acceptable provided that a table be provided to show the proposed total ammonia nitrogen limits criteria resulted in a net reduction in loading.

   RVA Response: The attached ACS report has been updated to detail the net reduction in total ammonia nitrogen (TAN) loadings deposited to Litter Otter Creek in Table 7-3. A summary is provided below in Table 1 which shows a reduction under both Freezing and Non-Freezing conditions. It should be noted that the reduction is the result of reduced effluent TAN limits as well as the proposed effluent discharge schedule which reduces allowable discharge limits during historical low flow periods.

Table 1: Current ECA and Proposed Effluent Criteria TAN Loadings

Period	Current ECA TAN Loadings (kg/d)		Proposed TAN Loadings (kg/d)	
	Limit	Objective	Limit	Objective
Freezing (Dec – Mar)	18.9	11.8	13.6	6.8
Non-Freezing (Apr – November)	11.8	7.1	3.5	2.4

4. **MECP Comment 4:** The MECP noted that effluent limits for E.coli should be reduced to 100 CFU per 100 mL.

   RVA Response: The attached ACS report and accompanying effluent criteria have been updated with an effluent limits for E.coli of 100 CFU per 100 mL and an effluent objective of 50 CFU per 100 mL has been proposed.

5. **MECP Comment 5:** The MECP requested that the area from the WWTP outlet to the point at which LOC creek joins Big Otter Creek (BOC) be reviewed for Species at Risk (SAR).

   RVA Response: RVA completed a desktop review for the study area including Little Otter Creek. A review of publicly available databases was reviewed and requests for additional information related to SAR and significant ecological features were sent to the Long Point Region Conservation Authority (LPRCA), Ministry of Natural Resources and Forestry (MNRF) and MECP. All responded and had no aquatic SAR to add. Desktop review also did not identify any aquatic fish or mussel SAR for BOC. BOC historically supported a high-quality cool-water fish community, however, LPRCA noted that the tributary within the study area is warmwater with cool-water habitat downstream. Please refer to the attached Natural Environment Assessment Memo.

Request to Approve Effluent Criteria

Provided that the above responses are sufficient, we respectfully request confirmation that the effluent criteria, presented below in Table 2 and on page 29 of the attached ACS report, are acceptable to the Ministry the effluent quality for the expansion of the Norwich WWTP to 2,600 m^3/day. This confirmation will allow the County to complete the Class EA process.

In conjunction with these criteria, the County will provide a minimum of a 1.88 : 1 dilution ratio in Little Otter Creek by controlling the flow of effluent deposited to the receiver as discussed as a part of the meeting, and in the ACS report. At this time the County wishes to pursue a monthly discharge schedule, presented on page 10 of the attached ACS report, prepared using historical low flow (7Q20) statistics to achieve this.

Table 2: Proposed Effluent Criteria

Parameter	Period	Proposed Effluent Limit	Proposed Effluent Objective
Total Phosphorus	Year Round	0.2 mg/L	0.10 mg/L
Total Ammonia Nitrogen	Non-Freezing (Apr-Nov)	1.5 mg/L	1.0 mg/L
	Freezing (Dec-Mar)	4.0 mg/L	2.0 mg/L
Fecal Coliforms as E.Coli	Year Round	100 CFU/100 mL	50 CFU/100 mL
Total Suspended Solids	Year Round	10 mg/L	5 mg/L
DO	Year Round	>6 mg/L	>6 mg/L
$CBOD_5$	Year Round	10 mg/L	5 mg/L

Closing Remarks

On behalf of Oxford County, we would request feedback from the MECP on these matters by October 11, 2024, so that the Public Consultation Centre # 2 presentation can be implemented in late October/early November 2024. If you have any questions on these matters, please contact John Tyrrell, M.Sc.(Eng.), P.Eng. From RVA at 519-681-9966 ext. 5038 or jtyrrell@rvanderson.com.

Yours very truly,

R.V. ANDERSON ASSOCIATES LIMITED

John Tyrrell, M.Sc.(Eng.), P.Eng.
Senior Project Manager/Regional Manager
519-681-9966 ext. 5038
jtyrrell@rvanderson.com

Encls. Norwich_WWTP_ Class_ EA_20240918_MECP_Mtg_Notes (PDF)
Little Otter / Big Otter Creek Assimilative Capacity Study (PDF)
Norwich WWTP Upgrades Municipal Class Environmental Assessment Natural Environment Assessment Memo (PDF)

Norwich WWTP Class EA
MECP/County Meeting Notes
September 18, 2024

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London ON N6E 1A2 Canada
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MEETING NOTES

Project Name:	Norwich Lagoons Class EA	**Date:**	September 18, 2024
Place:	Microsoft Teams: 1-2 PM	**Project No.:**	215673
Present:	John Tyrrell (RVA) Austin Bender (RVA) Trevor Boston (Greenland) Monika Macki (MECP) Hugh Geurts (MECP) Mark Smith (MECP)		Ruben Davis (Oxford) Harry Goosen (Oxford) Jason Kreitzer (Oxford) Don Ford (Oxford)

The purpose of the meeting was to review the assimilative capacity study, and proposed effluent criteria, prepared in support of the Norwich Wastewater Treatment Plant Municipal Class Environmental Assessment.

Discussion: **Action By:**

1. Introductions
   a) Team introductions were made — Info
   b) RVA presented an overview of the project, its drivers, and objectives
2. Effluent Discharge Strategy Review (refer to the attached presentation)
   a) The Norwich Wastewater Treatment Plants (the WWTP) location in the Big and Little Otter Creek Watershed was presented along with the water sampling location used in the ACS
   b) The process whereby $7Q_{20}$ low flow statistics for Little Otter Creek (LOC) were calculated based on long-term, historical flow data from Big Otter Creek (BOC) was described.
   c) Due to the low flows present in LOC at the point of effluent discharge at some point in the year a method of controlling effluent discharge rates was noted to be required.
   d) Two methods of effluent discharge were described:
      i. Dynamic Discharge: Effluent is discharged based on real-time measurement of the flow in the receiver to achieve a specified dilution ratio.
      ii. Monthly Discharge Schedule: Historical data is used to develop a monthly schedule which will specify the

Discussion: **Action By:**

maximum effluent which can be discharged to the receiver each day so that a minimum dilution ratio will be achieved.

e) It was noted that Oxford County has decided to pursue the monthly discharge schedule approach as is practiced at other County WWTPs.

f) A monthly discharge schedule was presented which provides a 1.88 dilution factor in LOC and a minimum of a 6.9 dilution factor downstream in BOC.

g) It was noted that is anticipated that during the Summer and Fall when the permitted discharge volumes are lower, excess effluent would be stored onsite in an effluent storage lagoon. This effluent would then be released when excess discharge capacity exists, particularly in the Winter/Spring.
   i. The MECP noted that they are pleased the County is looking to pro-rate their effluent flows.
   ii. The MECP noted the potential for the quality of stored effluent to degrade over time and that the County would be required to meet the effluent limits at the WWTP outfall for the blended (treated and stored) effluent. RVA/County
   iii. RVA noted that this will be considered in the conceptual designs and that the ability to recycle stored flows to various points in the treatment train will be considered.

3. Assimilative Capacity Study (ACS) Review (refer to the attached presentation)

a) Greenland presented highlights from the ACS report on the development of the effluent criteria.
b) Further discussion was had over the inclusion of an effluent temperature limit in the proposed effluent criteria
   i. The MECP noted that as the County has limited control over the effluent temperature, the LOC is designated a cool water stream (as opposed to a cold-water stream) and effluent will be restricted during low flow/warm periods an effluent temperature limits is not warranted and can be removed. RVA/ Greenland
   ii. RVA/Greenland to update the recommended effluent criteria in the ACS report.

c) The MECP noted that they agreed with the proposed total phosphorus, total suspended solids, and biological oxygen demand effluent criteria.

RVA/ Greenland

Discussion: **Action By:**

d) The MECP noted the proposed effluent limits would be acceptable provided that a table be provided to show the proposed total ammonia nitrogen limits criteria resulted in a net reduction in loading
    i. RVA/Greenland to provide table. — RVA/ Greenland

e) The MECP noted that effluent limits for E.coli should be reduced to 100 CFU per 100 mL
    i. RVA/Greenland to update the recommended effluent criteria in the ACS report.

f) The MECP inquired whether LOC was a municipal drain and would therefore require review by a drainage engineer to determine the impact of increased flows.
    i. RVA/Greenland noted that LOC is not a municipal drain

g) The MECP requested that the area from the WWTP outlet to the point at which LOC creek joins BOC be reviewed for Species at Risk (SAR) — RVA/ Greenland
    i. RVA noted that a Natural Environment Assessment report was included with the meeting agenda for review. (refer to the attached report)
    ii. RVA to provide comment on SAR in the project area to MECP

Notes prepared by: ACB/JT

Attachments: Presentation (PDF), Natural Environment Assessment Memo (PDF)

Distribution: All Present

PLEASE ADVISE THE WRITER OF ANY ERRORS OR OMISSIONS WITHIN 1 WEEK OF RECEIPT OF THESE NOTES

Norwich Lagoons Class EA MECP Meeting September 18, 2024

Meeting Presentation

Prepared for Oxford County

Little/Big Otter ACS Review

In support of the Norwich WWTP Expansion

September 18, 2024

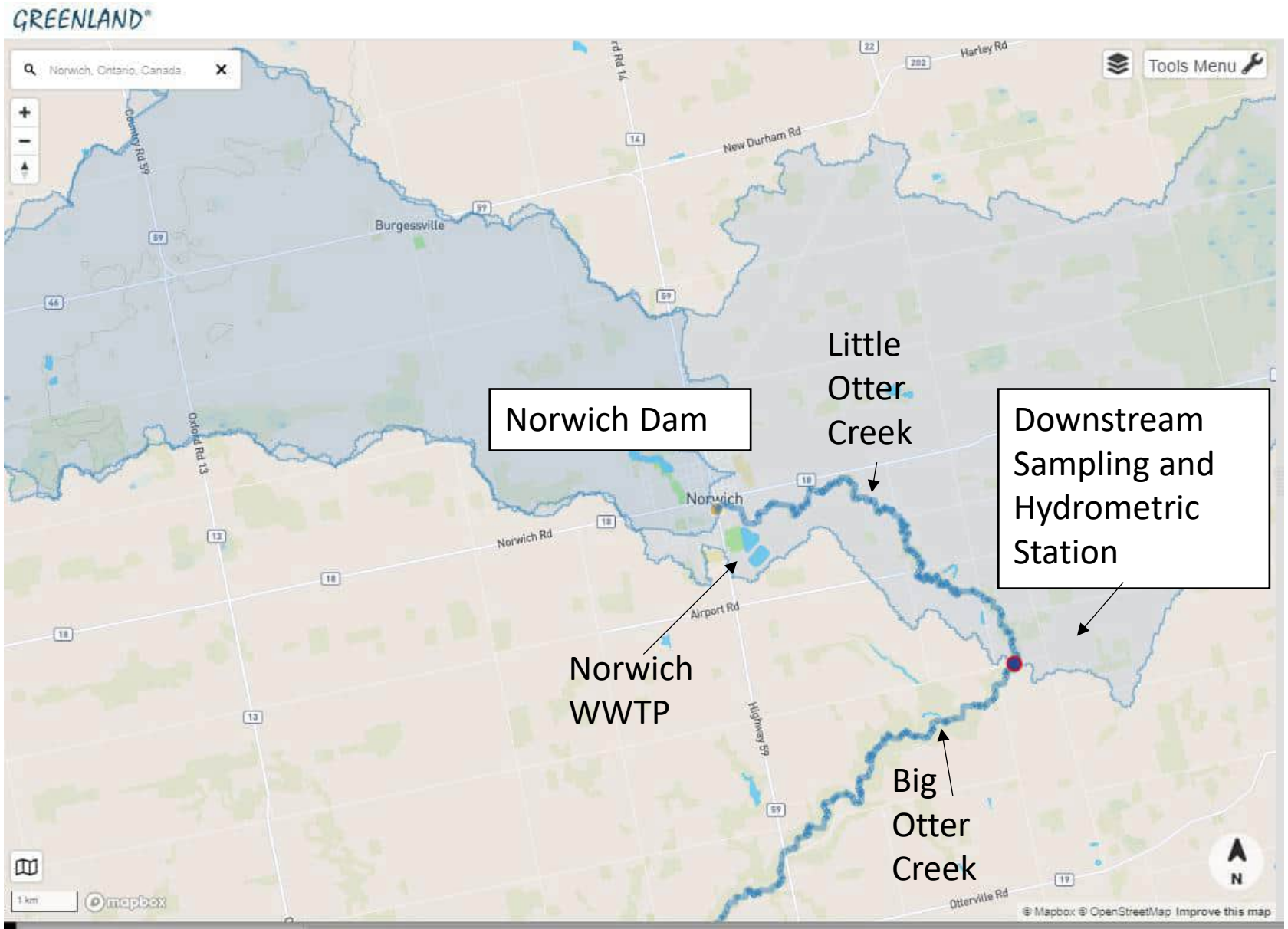
Background

- The Norwich WWTP is currently rated at a capacity of 1,530 m^3/day.
  - To address population growth, it is proposed to be upgraded to an increased capacity of 2,600 m^3/day.

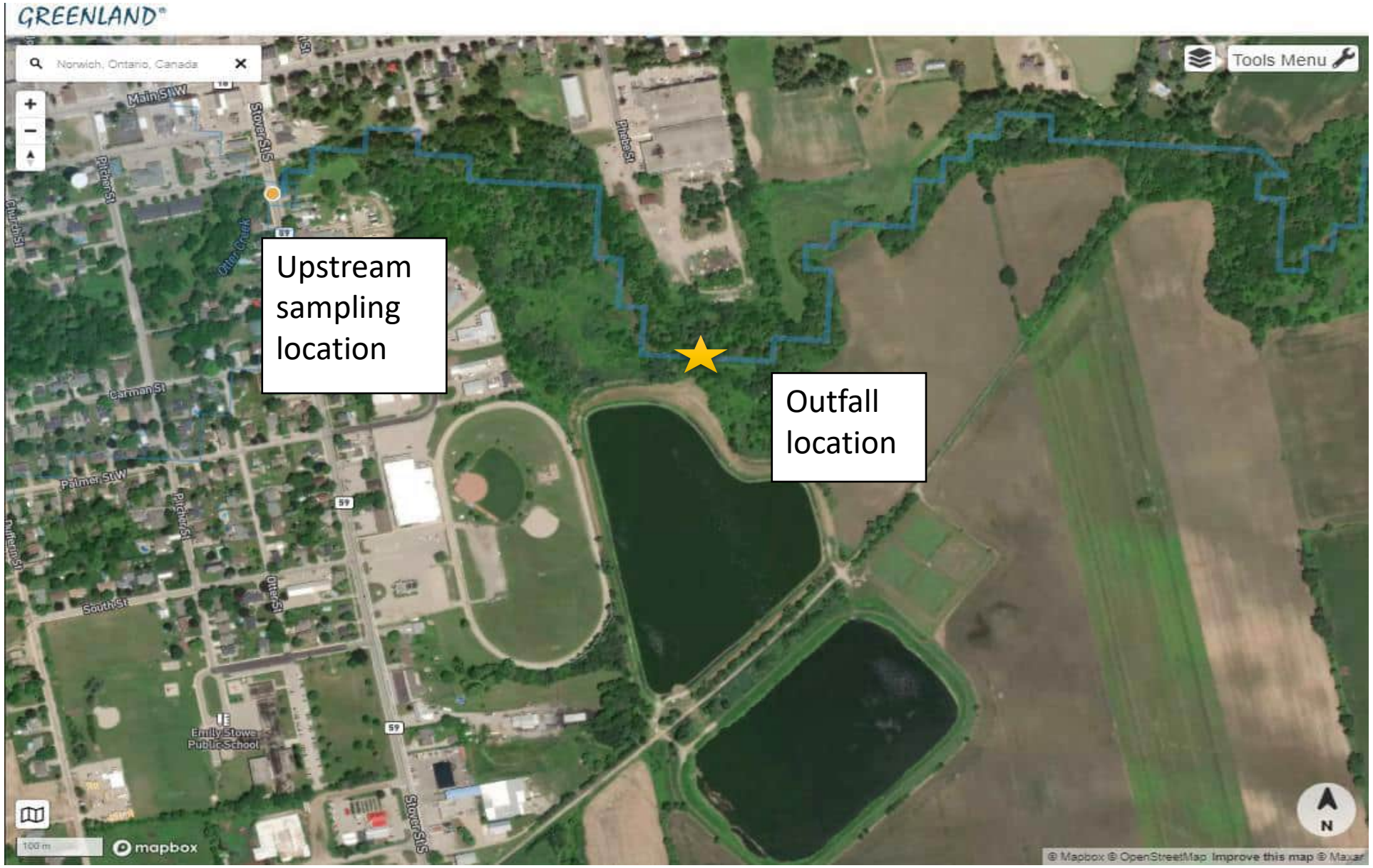
- Previously, an ACS had been completed by XCG in 2012
  - RVA, Greenland and County reviewed the ACS and it was determined in consultation with the MECP that a new ACS be completed.

- The objective of this ACS was to establish the level of treatment required to comply with Provincial discharge requirements and to minimize any impacts to the Little Otter Creek as well as downstream reaches and receiving waters.

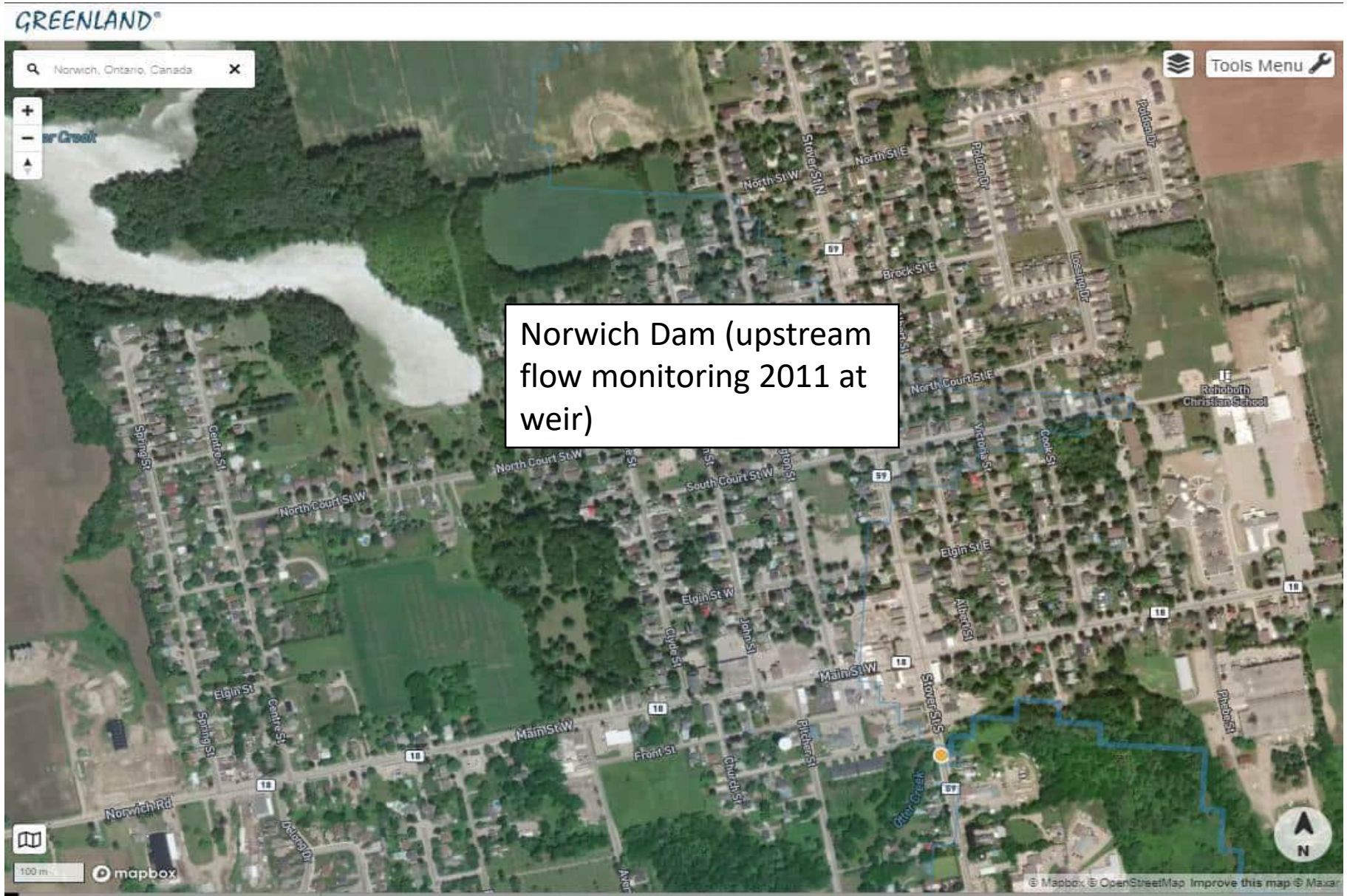
Sampling Locations



Sampling Locations Cont.



Sampling Locations Cont.



Low Flow Considerations and Approach

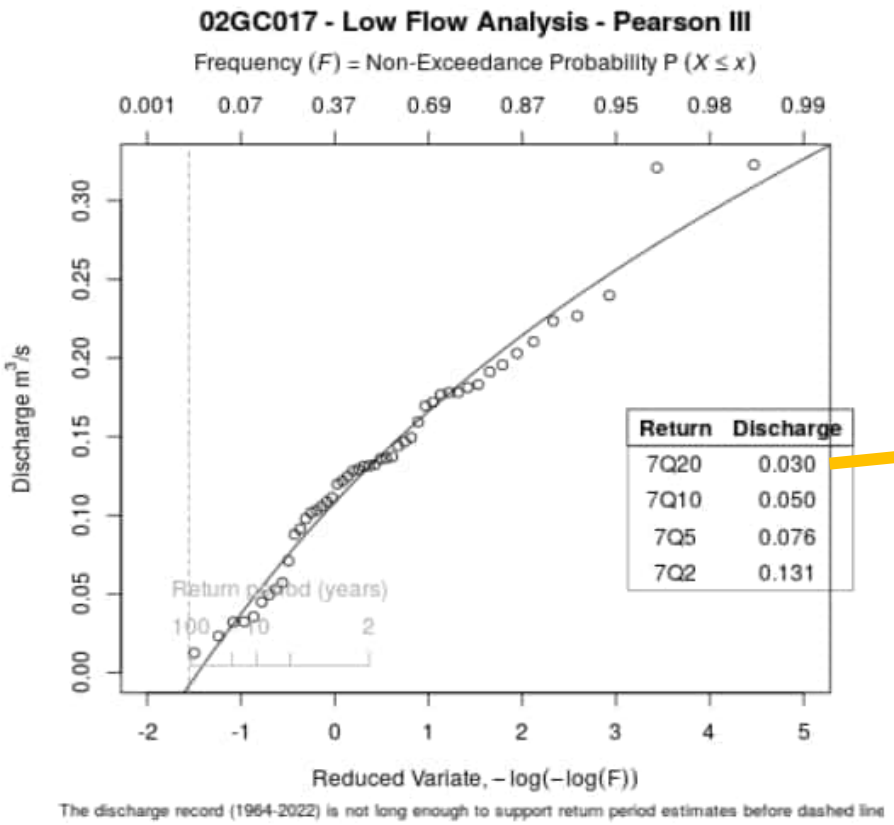


Figure 3-2 Low Flow Analysis: Big Otter Creek at Maple Dell Road for (1965-2021 inclusive

- Historical flow data was available downstream at Big Otter Creeks
- 7Q20 values were transformed upstream to the WWTP discharge (Norwich Dam)

$Q_{Norwich\ Dam} = 0.3456\ (Q_{02GC017})^{1.142}$

\+ 15% safety factor

$7Q20_{Norwich\ Dam} = 0.005\ m^3/s$

Scale according to XCG (2011) rating equation

Effluent Discharge Approaches

- Proposed rated capacity (2,600 m^3/d – 30 L/s) is 6 times the 7Q20 value in Little Otter Creek
- Two discharge strategies were reviewed:
  - Dynamic Discharge:
    - New approach which controls discharge rate based on real-time creek flow data to maintain a minimum 3:1 dilution ratio
    - Allows facility to take advantage of capacity in receiver when it is available
    - Previously reviewed with MECP at February 2023 meeting
  - Monthly Schedule :
    - Historical 7Q20 data is used to prepare a set monthly discharge table to provide a minimum dilution ratio
    - Approach is currently used at other Oxford facilities such as the Tavistock WWTP
- County has decided to pursue the monthly discharge schedule approach

Discharge Schedule

- A monthly effluent discharge schedule was prepared using historical 7Q20 values
  - Provides a 1.9 dilution factor in Little Otter Creek and a minimum of a 6.9 dilution factor downstream in Big Otter Creek.
- During June through November excess effluent will be stored onsite, as needed, to be released when excess discharge capacity exists, particularly in the Winter/Spring.

Month	Big Otter Creek 7Q20	Little Otter Creek 7Q20 (15% Safety Factor)	Norwich WWTP Discharge		Upstream Dilution (Little Otter Creek)	Downstream Dilution (Big Otter Creek)
-	m^3/s	m^3/s	m^3/s	m^3/d	-	-
January	0.329	0.083	0.044	3,802	1.88	7.49
February	0.321	0.080	0.043	3,715	1.88	7.52
March	0.360	0.091	0.049	4,234	1.88	7.4
April	0.555	0.150	0.080	6,912	1.88	6.96
May	0.287	0.071	0.038	3,283	1.88	7.64
June	0.175	0.040	0.021	1,814	1.88	8.2
July	0.026	0.005	0.002	173	1.88	10.75
August	0.069	0.014	0.007	605	1.88	9.36
September	0.114	0.025	0.013	1,123	1.88	8.71
October	0.124	0.027	0.014	1,210	1.88	8.61
November	0.170	0.039	0.021	1,814	1.88	8.23
December	0.246	0.059	0.031	2,678	1.88	7.81
			Annual Total	950,496	m^3/yr	
	Required Volume to prevent carryover of storage:			949,000	m^3/yr	

Summary of Monitoring (03/22 – 11/22) and PWQMN Data

Parameter	Unit	Upstream 75th Percentile Monitoring[3]	Number of Samples	Downstream 75th Percentile PWQMN[1,3]	Number of Samples	Criteria[2]	Policy
pH	pH units	8.5	11	8.2	69	6.5-9.0	
Total Suspended Solids	mg/L	21.6	11	17.3	71	22.25	Policy 1
Ammonia, Total (as N)	mg/L	0.11	11	0.06	71	0.02	Policy 1
Nitrate and Nitrite as N	mg/L	3.51	11			13	
Nitrate (as N)	mg/L	3.48	11	4.95	71	13	Policy 1
Nitrite (as N)	mg/L	0.05	11			0.06	
Phosphorus, Total	mg/L	0.176	11	0.075	91	0.030	Policy 2
E. Coli	CFU/100mL	765	11			100	Policy 2
BOD Carbonaceous	mg/L	3.65	11				
Field Temperature	°C	22.3	11	16.5	70	30	
Field DO	mg/L	6.3	11	8.6	69	4.0-8.0	
Field Conductivity	uS/cm	577	11				
River Depth	m	0.37	10				
Total Kjeldahl Nitrogen	mg/L	1.25	11				

1: The PWQMN did not have records for Nitrate as N Concentrations, therefore Nitrate and Nitrite as N Concentrations

2: Total Ammonia as N criteria uses Unionized Ammonia Concentrations of 0.02mg/L for the chronic long term require

3: 100th Percentile for Temerature, 25th Percentile for DO

Mixing Analysis and Theoretical Max Discharge for Limiting Chemicals

- Phosphorus – Policy 2 Receiver
  - Assimilative capacity for phosphorus is calculated looking at both upstream and downstream locations. The downstream location governs in determining the allowable effluent concentration at 0.075 mg/L and 72 kg/year.
  - If a monthly 7Q20 design flow is used in the analysis, it has little impact as the effluent concentration is capped at the 75th percentile in-stream ambient concentration under a policy 2 designation.
    - Therefore phosphorus is not impacted by the specific dilution ratio.

Phosphorus Mixing Analysis	Unit	Upstream Location	Downstream Location
Stream 7Q20 Flow Rate with Safety Factor	l/s	5	26
Ambient 75th Percentile Phosphorus	mg/l	0.176	0.075
Policy Assessment	0.030	Policy 2	Policy 2
Effluent Flow to River	l/s	30.09	30.09
Max Effluent Concentration Phosphorus	**mg/l**	**0.176**	**0.075**
Annual Loading Rate	kg/yr	167	72
Mixed Conc.	mg/L	0.176	0.075
Policy 2	mg/L	0.176	0.075

Mixing Analysis and Theoretical Max Discharge for Limiting Chemicals

- Upstream Chronic Un-ionized Ammonia as TAN – Policy 1 Receiver
  - Upstream and downstream locations reviewed, upstream determined to be most stringent
  - Monthly discharge rates were modelled with effluent limits achievable by available lagoon technologies
  - The PWQO (Policy 1) are not met however during consultations with MECP on February 21, 2023, the Project Team was advised that the Ministry would consider the proposed effluent quality if the mixed in-stream un-ionized ammonia (UIA) was determined to be less than 0.1 mg/L as volatilization in the water course could be expected.

Chronic Max Effluent Concentration TAN	Unit	Upstream Location											
Based on MECP Blue Book		Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Stream 7Q20 Flow Rate with Safety Factor	l/s	59	83	80	91	150	71	40	5	14	25	27	39
Stream Temperature (Warm/Cool)	°C	4	4	4	14	14	14	23	23	23	18	18	18
Stream 75th Percentile pH		8.10	8.10	8.10	8.10	8.10	8.10	8.10	8.10	8.10	8.10	8.10	8.10
pKa		9.94	9.94	9.94	9.60	9.60	9.60	9.32	9.32	9.32	9.47	9.47	9.47
Fraction of Un-Ionized Ammonia in Total Ammonia		0.01	0.01	0.01	0.03	0.03	0.03	0.06	0.06	0.06	0.04	0.04	0.04
75th Percentile Ambient In-stream TAN	mg/l	0.108	0.108	0.108	0.108	0.108	0.108	0.108	0.108	0.108	0.108	0.108	0.108
75th Percentile Un-ionized Ammonia (ambient)	mg/l	0.002	0.002	0.002	0.004	0.004	0.004	0.007	0.007	0.007	0.005	0.005	0.005
Policy Assessment	0.02	Policy 1	Policy 1	Policy 1	Policy 1	Policy 1	Policy 1	Policy 1	Policy 1	Policy 1	Policy 1	Policy 1	Policy 1
Effluent Discharge Rate (l/s)	l/s	31.38	44.15	42.55	48.40	79.79	37.77	21.28	2.66	7.45	13.30	14.36	20.74
Mixed Conc. Total Ammonia -N (TAN)	mg/L	1.46	1.46	1.46	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59
Mixed Conc. Total Ammonia (TAN/0.8224)	mg/L	1.77	1.77	1.77	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Max Effluent Concentration TAN	**mg/l**	**4.000**	**4.000**	**4.000**	**1.500**	**1.500**	**1.500**	**1.500**	**1.500**	**1.500**	**1.500**	**1.500**	**1.500**
Annual Loading Rate	kg/yr	223.85	223.85	223.85	34.01	34.01	34.01	34.01	34.01	34.01	34.01	34.01	34.01
In-stream mixed Un-ionized Ammonia	mg/L	0.025	0.025	0.025	0.022	0.022	0.022	0.041	0.041	0.041	0.029	0.029	0.029
PWQO (Policy 1) Un-ionized Ammonia	mg/L	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020

Recommended Effluent Criteria Considerations

Phosphorous

- Compromise between existing ECA objectives/limits, the findings of the ACS and constraints of technology
- Recommended limit of 0.2 mg/L will result in lower TP loadings than current operation while being achievable by cloth media filters and chemical dosing

Phosphrous	To Achieve the PWQM Objectives	To Maintain the Current Operating Loading Rate	To Maintain the Current Objective Loading Rate	To Maintain the Current Limit Loading Rate	To Maintain the Current Operating Concentration	To Maintain the Current Objective Concentration	To Maintain the Current Limit Concentration
Proposed Load (kg/year)	72	56	165	283	222	285	475
Proposed Flow (m3/day)	949,000	949,000	949,000	949,000	949,000	949,000	949,000
Proposed Concentration (mg/L)	0.075	0.059	0.174	0.298	0.234	0.300	0.500

TAN

- Receiver is just below Policy 2 condition – limited assimilative capacity
- TAN is limited by temperature and high in-stream pH (75th percentile field pH 8.1 upstream / 8.2 downstream)
- Un-mixed effluent is below acute toxicity criteria for un-ionized ammonia
- Effluent criteria are seasonal to address narrow window and proposed treatment technology constraints
- Proposed limits can achieve mixed in-stream UIA conc. of < 0.1 mg/L year round

Recommended Effluent Criteria Considerations

- Biological Oxygen Demand
  - From previous discussions with MECP, it was agreed that cBOD effluent concentrations with an objective / limit of 5 mg/ L and 10 mg/L, respectively would be acceptable

cBOD	To Achieve the PWQM Objectives	To Maintain the Current Operating Loading Rate	To Maintain the Current Objective Loading Rate	To Maintain the Current Limit Loading Rate	To Maintain the Current Operating Concentrations	To Maintain the Current Objective Concentration	To Maintain the Current Limit Concentration
Proposed Load (kg/year)		856	2785	5593	3155	4745	9490
Proposed Flow (m3/day)		949,000	949,000	949,000	949,000	949,000	949,000
Proposed Concentration (mg/L)		0.9	2.9	5.9	3.3	5.0	10.0

Recommended Limits and Objectives

Effluent Criteria

Parameter	Existing Operating Averages		Existing Operating Effluent Limit/Objective	Recommended Effluent Limit	Recommended Effluent Objective
Total Phosphorus	Non-Freezing (Apr – Nov)	0.24 mg/L	0.50 / 0.3 mg/L	0.20 mg/L	0.10 mg/L
	Freezing (Dec – Mar)	0.23 mg/L	1.0 / 0.8 mg/L		
Total Ammonia As N	Non-Freezing (Apr – Nov)	0.61 mg/L	3.0 / 2.0 mg/L	1.5 mg/L	1.0 mg/L
	Freezing (Dec – Mar)	1.95 mg/L	5.0 / 4.0 mg/L	4.0 mg/L	2.0 mg/L
Fecal Coliforms as E. Coli	114 CFU/100 mL		200 / 150 CFU/100 mL	150 CFU/100 mL	100 CFU/100 mL
Total Suspended Solids	3 mg/L		10 / 5 mg/L	10 mg/L	5 mg/L
DO	7.8 mg/L		>4 / >5 mg/L	>6 mg/L	>6 mg/L
cBOD5	3.3 mg/L		10 / 5 mg/L	10 mg/L	5 mg/L
Temperature	17.5 °C		No Limit	20 °C (warm)	15 °C (warm)

** Effluent discharge must be limited to achieve a minimum dilution ratio of 1:1.88 effluent to stream flow

Monthly Effluent Discharge limits

Month	Norwich WWTP Effluent Discharge
-	m^3/d
January	3,802
February	3,715
March	4,234
April	6,912
May	3,283
June	1,814
July	173
August	605
September	1,123
October	1,210
November	1,814
December	2,678

Next Steps

- MECP to review ACS report and provide any comment
- Confirmation of presented effluent criteria
- Completion of Public Consultation Center #2
- Prepare and submit ESR for 30-day review
- Finalize Class EA

Norwich Lagoons Class EA MECP Meeting September 18, 2024

Natural Environment Assessment Memo

REFER TO APPENDIX 2.2

Oxford County

Norwich Wastewater Treatment Plant Capacity Expansion

Appendix 3 – Alternative Technology Review

May 1, 2025

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NORWICH WWTP CLASS EA STUDY
ALTERANTIVE TECHNOLOGY REVIEW
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1.0 Project Background and Objectives

Norwich is a growing community located in the south-eastern part of Oxford County which is comprised of existing and future residential land use. The current population of approximately 4,400 people is projected to increase by approximately 85% over the next 25 years. The majority of Norwich is serviced by a municipal water and wastewater system owned and operated by the County. The WWTP is comprised of 2 facultative lagoon cells and 4 intermittent sand filters and has a rated capacity of 1,530 m3/day annual average day flow. While the facility is permitted to discharge year-round, due to freezing of the filter pipes, plant discharge currently does not occur through the winter.

The County began a Municipal Class EA (MCEA) study in 2011 for the Norwich WWTP to determine the preferred alternative for upgrades and/or expansion of the facility for the 25-year design horizon. However, between 2011 and 2015, the County experienced a reduction in water usage (and subsequently wastewater flows) as a result of water conservation by customer behavior, customer environmental knowledge and reaction to higher water rates when meters are in place, as is the case in Norwich. Furthermore, while growth had been steady in Norwich, it was not at the level that had originally been anticipated at the onset of the study. As a result, in June 2016, County Council approved that the Class EA Study be put on hold until which time increased development rates and associated WWTP flow rates are observed (at that time, it was anticipated that a new MCEA Study would commence in approximately 2022). An Assimilative Capacity Study was conducted in 2012 to propose effluent requirements for the design future flow to ensure water quality in the discharge receiver is not further degraded.

In 2020, Oxford County conducted an effluent quality and optimization study for the Norwich WWTP to review historical operation of the plant as currently configured. Study findings can be used to address existing lagoon operational challenges and optimize existing operations. The study also provides technical information on technologies (e.g. post lagoon treatment systems) which could be employed to expand the capacity of the system.

Recent daily WWTP flows (average over last 5 years) are approximately 70% of the rated plant capacity; however, wastewater capacity commitments for approved future developments trigger the need to commence the MCEA Study at this time.

R.V. Anderson Associates Limited (RVA) was retained by the County of Oxford to undertake a Municipal Class Environmental Assessment to evaluate upgrades to the Township of Norwich Wastewater Treatment Plant (WWTP). The project falls within the jurisdiction of Long Point Region Conservation Authority (LPRCA) as well as the Ministry of the Environment, Conservation and Parks (MECP) London District, and the Ministry of Natural Resources and forestry (MNRF) Aylmer District.

1.1 Project Objectives

The objective of this study is to evaluate different wastewater design concepts to satisfy the current and future needs of the Community of Norwich.

The principal components of this project include:

- Compile and review of all available background information related to the Norwich WWTP, and confirm/establish scope for the MCEA Study;
- Complete/finalize an Assimilative Capacity Analysis of Otter Creek at Norwich and obtain associated regulatory approvals; and
- Complete a MCEA Study in accordance with Oxford County Public Works' Consultation and Communication Plan for Municipal Class EA Studies and the most current version of the Municipal Engineers Association – Municipal Class Environmental Assessment document, to meet the needs of the community within the 25-year planning horizon to 2046. Study objectives include:
    - To identify and evaluate wastewater treatment alternative solutions, To select a preferred solution for wastewater treatment,
    - To evaluate and recommend a preferred design for wastewater treatment,
    - To complete and document the study as an Environmental Study Report (ESR), Collaborate planning and effective communication/consultation with stakeholders and the public throughout the study.

1.2 Intent of the Technical Memorandum

In light of the above objectives, the intent of this technical memorandum is to evaluate and recommend a preferred design(s) for wastewater treatment.

2.0 Norwich Wastewater Treatment Plant Overview

2.1 Existing WWTP Description

2.1.1 Process Overview

The Norwich WWTP consists of two facultative lagoon cells followed by four intermittent sand filter cells. The system was originally constructed in 1972. The sanitary sewer system was expanded, and a second lagoon cell was added in 1977. Intermittent sand filters were added in 1996 along with other upgrades to the sewage treatment system and pumping station. The height of the berms in the South lagoon was increased in 1998 and the North lagoon in 2009 providing additional storage capacity in the lagoons.

Sewage collection in the Village of Norwich is provided by a combination of gravity sewers and three sewage pumping stations (SPS): Sutton Street SPS, Dufferin Street SPS, and Lossing Drive SPS.

Influent flows from the Sutton St. and Dufferin St. SPS are delivered to a distribution chamber and can be directed to either the North or South lagoon cell. Both cells are facultative lagoons and therefore aeration is only provided via natural processes.

The South cell has a surface area of 60,705 m^2 and the North cell has a surface area of 58,276 m^2. There is flexibility in the design to operate the lagoon cells in parallel or in series. The effluent from the lagoon cells is pumped to intermittent sand filter (ISF). The ISF consist of four cells, each with a surface area of 1,600 m^2 for a total filter surface area of 6,400 m^2.

Each filter contains 760 mm of sand (0.13 mm effective size), 75 mm of crushed stone (5 mm), 75 mm crushed stone (13.2 mm), and 77 mm crushed stone (19 mm). The filter cell underdrains consist of 100 mm perforated PVC pipe. Effluent from the ISF is discharged to a wetland area which then flow to Little Otter Creek. The WWTP's Environmental Compliance Approval (ECA) allows for discharge during all times of year; however, discharge is limited to 236 days per year and the maximum discharge rate is capped at 5,160 m^3/d. Alum addition for phosphorus removal is provided at the Sutton Street SPS.

The Norwich WWTP with major elements indicated is presented in Figure 2.1.

Figure 2.1 Norwich WWTP Aerial Photo

2.2 Existing ECA Effluent Compliance Objectives and Limits

Table 2.1 presents the final effluent objective and limit concentrations per Amended ECA No. 1680-6F6QR5 issued August 31, 2005.

Table 2.1 Final Effluent Design Objectives

Effluent Parameters	Limits		Objectives	
	Monthly Average Concentration (mg/L)	Average Loading (kg/d)	Monthly Average Concentration (mg/L)	Average Loading (kg/d)
$cBOD_5$	10.0	23.7	5.0	11.8
TSS	10.0	23.7	5.0	11.8
Total Phosphorus				
Non-Freezing Period	0.5	1.2	0.3	0.7
Freezing Period	1.0	2.4	0.8	1.9

Effluent Parameters	Limits		Objectives	
	Monthly Average Concentration (mg/L)	Average Loading (kg/d)	Monthly Average Concentration (mg/L)	Average Loading (kg/d)
Total Ammonia Nitrogen				
Non-Freezing Period	3.0 (5.0)	11.8	2.0	7.1
Freezing Period	5.0 (8.0)	18.9	4.0	11.8
Total Chlorine Residual	0.002 (0.01)	0.005	0.000	0.000
Dissolved Oxygen	> 4	N/A	> 5	N/A
E. Coli	200 CFU/100 mL	N/A	150 CFU/100 mL	N/A

Notes:

1. Values in brackets indicate daily concentration limits.
2. In addition to Total Ammonia Nitrogen concentrations noted above, the un-ionized ammonia concentration in the effluent shall not exceed 0.1 mg/L for monthly average values and 0.2 mg/L for any individual sample.
3. The loadings are based on average daily flow of 2,366 m^3/d over 236-day discharge period.
4. Influent to the WWTP shall be limited to 1,530 m^3/d.
5. Flow through the WWTP shall be limited to 5,160 m^3/d

2.3 Design Value Development

2.4 Historical Data Review

RVA was provided historical influent data from 2017 through 2023 which was analyzed and is summarized below. Table 2.2 illustrates the historic influent flow values for annual average day flows (ADF), the annual max month flows (MMF), the annual peak day flows (PDF), and the respective PDF peaking factors (PF).

Table 2.2 Historic Influent Flows (2017-2021)

Year	Flow (m^3/d)			Peaking Factors	
	ADF	MMF	PDF	PDF Factor	MMF Factor
2017	1,101	1,935	4,854	4.4	1.8
2018	1,165	1,934	6,175	5.3	1.7
2019	1,218	1,872	4,013	3.3	1.5
2020	1,139	1,992	6,922	6.1	1.7
2021	1,017	1,258	3,319	3.3	1.2
2022	1,017	-	5,194	5.1	-
2023	1,182	-	6,288	5.3	-

Year	Flow (m^3/d)			Peaking Factors	
	ADF	MMF	PDF	PDF Factor	MMF Factor
Average	1,120	1,992	-	-	-
Max	-	-	6,922	6.1	1.8

2.5 Design Flow Development

Design flows for the upgraded WWTP were developed as detailed below.

2.5.1 Average Daily Flow (ADF)

The upgraded WWTP will be designed for an average daily flow (ADF) of 2,600 m^3/d. The design ADF was selected such that the projected influent flows will reach 85% of the upgraded WWTP's capacity by the end of the study period (2046), thereby providing the County time for planning of subsequent upgrades.

2.5.2 Maximum Daily Flow (MDF)

The future maximum daily flow (MDF) was developed using the methodology prepared as a part of the Oxford County 2024 Water and Wastewater Master Plan (RVA, 2024). As a part of the Master Plan study, historical flow data was combined with future growth projections to develop the ADF and MDF out to 2046. The resulting MDF peaking factor of 4.1 was then used with the design ADF to develop a MDF of 10,600 m^3/d as is shown in Table 2.3 below.

The projected MDF was calculated by summing the MDFs produced by residential (Res) and Non-residential (Non-Res) sources as shown below. These respective flows were comprised of baseflow, the wastewater produced by users which is considered constant, and the infiltration and inflow MDF (I&I) which is the volume of I&I received on a maximum day.

$$MDF\left(\frac{m^3}{d}\right) = MDF_{Res} + MDF_{Non-Res}$$

$$MDF_{Res}\left(\frac{m^3}{d}\right) = BF_{Res} + MDF_{I\&I\ Res}$$

$$MDF_{Non-Res}\left(\frac{m^3}{d}\right) = BF_{Non-Res} + MDF_{I\&I\ Non-Res}$$

Further information regarding the data used in these and the values used in this memorandum can be found in the Oxford County 2024 Water and Wastewater Master Plan.

Table 2.3 Maximum Daily Flow Determination

Parameter	Unit	Value	Notes
2046 MDF	m^3/d	8,976	Developed as a part of the 2024 Oxford County W/WWMP
2046 ADF	m^3/d	2,191	
MDF Peaking Factor	-	**4.1**	
Design ADF	m^3/d	2,600	
Design MDF	**m^3/d**	**10,660**	

It should be noted that the design MDF factor (4.1) is lower than the historical maximum of 6.1, however slightly larger that the factor which was proposed by XCG in the 2011 Class EA (3.6) (XCG, 2011). It is to be expected that the future peaking factor will be lower than historical values as new infrastructure will be less prone to infiltration and inflow (I&I) and older infrastructure will slowly be replaced over the growth horizon.

2.5.3 Maximum Monthly Flow (MMF)

The design maximum monthly flow (MMF) was determined by multiplying the historical MMF peaking factor by the design ADF. The historical (2017-2021) MMF peaking factor was determined to be 1.8 and therefore the design MMF was determined to be 4,680 m^3/d.

2.5.4 Peak Instantaneous Flow (PIF)

The future peak instantaneous flow (PIF) was developed using the methodology prepared as a part of the Oxford County 2024 Water and Wastewater Master Plan (RVA, 2024). As a part of the Master Plan study, historical flow data was combined with future growth projections to develop the PIF out to 2046. The determined PIF peaking factor of 5.3 was used with the design ADF to develop a PIF of 13,780 m^3/d as is shown in Table 2.4 below.

The PIF was developed using the projected residential and non-residential populations to estimate the associated Harmon peaking factors for the wastewater baseflow. This was then added to the previously developed MDFs to estimate the PIF the sewer system could be subject to and therefore would need to be pumped by the SPSs.

It should be noted that all flow to the WWTP is pumped and therefore the PIF received will be equal to the capacity of the upstream SPSs. The current capacity of the Sutton St. and Dufferin St. SPSs is 88 and 20.5 L/s respectively totaling 108.5 L/s (9,374 m^3/d) which is less than the proposed design PIF. This indicates that expansion of the SPS will be required at some point in the future to accommodate increased growth.

One of the inherent benefits of using a lagoon-based system is its ability to modulate influent flows and therefore the proposed design PIF will have limited impacts on the proposed treatment system(s).

Table 2.4 Peak Instantaeous Flow Determination

Parameter	Unit	Value	Notes
2046 PDF	m^3/d	11,627	Developed as a part of the 2024 Oxford County W/WWMP
2046 ADF	m^3/d	2,191	
MDF Peaking Factor	-	**5.3**	

Parameter	Unit	Value	Notes
Design ADF	m^3/d	2,600	
Design MDF	**m^3/d**	**13,780**	

2.5.5 Design Flow Summary

The WWTP design flows for the upgrade are summarized in Table 2.5 below and will be carried forward in this investigation.

Table 2.5 Design Flow Summary

Parameter	Unit	Value	Peaking Factor
ADF	m^3/d	2,600	-
MDF	m^3/d	10,660	4.1
MMF	m^3/d	4,680	1.8
PIF	m^3/d	13,780	5.3

2.6 Design Influent Loading Development

Historical influent characteristics and loadings from 2017 through 2021 were reviewed and summarized in Table 2.6. Annual average loadings were available for 2022 and 2023 and were incorporated into the historical average values to ensure most recent data was incorporated. Peak values for this period were not available at the time of writing.

The average influent characteristics for the study period were calculated by multipling the monthly influent parameter concentrations by the coresponding monthly ADF. The overall loading value was then divided by the historic ADF.

The max month influent characteristic concentration was calculated by dividing the max month loading of each characteristic by the the historical max month flow.

Table 2.6 Historic (2017-2021) Influent ADF and MMF Loadings

Influent Characteristics	Historical Average[1]		Historical Max Month	
	Characteristics based on Loading	Loading	Characteristics based on Loading	Loading
	mg/L	kg/d	mg/L	kg/d
Flow, m^3/d	**1,120**		**1,992**	
$cBOD_5$	171.0	191.6	218.7	435.6
TSS	183.4	205.4	237.1	472.3
TKN	33.7	37.7	29.7	59.1
TP	3.8	4.2	3.1	6.2

[1]Historical average include 2017 – 2023 data. Historical Max Month values for 2022 and 2023 were not available at the time of writing.

2.6.1 Design Loading Summary

The influent characteristic determined during the historical analysis were carried forward with the design flows to develop the influent design loadings.

It should be noted that any additional loadings due to the recirculation of stored effluent are not included in these values and will be accounted for in subsequent sections.

Table 2.7 Design Influent ADF and MMF Loadings

Influent Characteristics	Design Average		Design Max Month	
	Characteristics based on Loading	Loading	Characteristics based on Loading	Loading
	mg/L	kg/d	mg/L	kg/d
Flow, m^3/d	2,600		4,680	
$cBOD_5$	171.0	444.7	218.7	1023.5
TSS	183.4	476.9	237.1	1109.6
TKN	33.7	87.6	29.7	138.8
TP	3.8	9.8	3.1	14.5

3.0 WWTP Conceptual Design

3.1 Design Effluent Criteria

As a part of the Class EA study, an assimilative capacity assessment was completed for the Big and Little Otter Creeks to develop effluent criteria for the expanded WWTP which would be protective of the receiver.

Consultation with the MECP was completed and the effluent criteria presented in Table 3.1 were approved as they were found to reduce loadings to the receiver when compared to the current effluent limits.

Table 3.1 Effluent Parameters for WWTP Expansion

Parameter		Existing Operating Averages	Existing Operating Effluent Limit/ Objective	Effluent Limit for WWTP Expansion	Effluent Objective For WWTP Expansion
Total Phosphorus	Non-Freezing (Apr-Nov)	0.24 mg/L	0.50/0.30 mg/L	0.20 mg/L	0.10 mg/L
	Freezing (Dec-Mar)	0.23 mg/L	1.00/0.80 mg/L		
Total Ammonia as N	Non-Freezing (Apr-Nov)	0.61 mg/L	3.00/2.00 mg/L	1.50 mg/L	1.00 mg/L
	Freezing (Dec-Mar)	1.95 mg/L	5.00/4.00 mg/L	4.00 mg/L	2.00 mg/L
Fecal Coliforms as E. Coli		114 CFU/100 mg/L	200/150 CFU/100 mg/L	100 CFU/100 mg/L	50 CFU/100 mg/L
Total Suspended Solids		3.00 mg/L	10.00/5.00 mg/L	10.00 mg/L	5.00 mg/L
Dissolved Oxygen		7.80 mg/L	>4.00/ >5.00 mg/L	>6.00 mg/L	>6.00 mg/L
$cBOD_5$		3.30 mg/L	10.00/5.00 mg/L	10.00 mg/L	5.00 mg/L

To maintain a minimum dilution ratio in the receiver, an effluent discharge schedule which limits the volume of effluent which can be discharged each day was also prepared and approved (Table 3.2).

Table 3.2 Effluent Discharge Schedule for WWTP Expansion

Month	Discharge Limit m^3/d	Month	Discharge Limit m^3/d
Jan	3802	Jul	173
Feb	3715	Aug	605
Mar	4234	Sep	1123
Apr	6912	Oct	1210
May	3283	Nov	1814
Jun	1814	Dec	2678

3.2 Conceptual Process Outline

In order to achieve the new effluent criteria and accommodate the increased influent flows the plant will need to be upgraded in the following manner:

- Increased organic loadings will require the addition of aeration in the South Lagoon.
- The existing ISFs have historically produced effluent meeting the discharge criteria however they cannot operate during the freezing period. A TAN removal system, capable of nitrifying during the freezing period will be required to ensure the WWTP can consistently meet the effluent criteria and is able to discharge to the receiver when allowable discharge flows are the greatest.
- To meet the more stringent TP criteria, tertiary filtration will be required as well as a second alum addition point.
- To meet the more stringent E. Coli criteria, a disinfection process (ultraviolet disinfection) will be required.
- To store treated effluent during the summer/fall months when allowable discharge rates are lower, the North Lagoon and a new lagoon will be required to meet the volume requirements. A new pumping station serving the storage lagoons will be required to allow stored effluent to be returned to the various points in the treatment process for re-treatment and discharge.

Treatment will occur as such:

1. Influent will be routed to the South lagoon. Aeration will remove the majority of the BOD and solids will settle out. Alum will continue to be added upstream of the WWTP at the Sutton St. SPS.
2. Wastewater will then pass through the TAN removal process. This process may be located inside the South Lagoon or may be located within a dedicated tank.
3. Aerated and Nitrified wastewater will enter the existing wet well and be pumped to the tertiary filtration process. Alum will be added upstream of the tertiary filters to remove any remaining TP.
4. Filtered effluent will then pass through the UV disinfection process and out to the receiver.
5. During months when the influent flows are greater than the permitted effluent discharge rate (likely to occur in the summer and fall), excess effluent will be routed to one of the storage lagoons.
6. During months when the influent flows are less than the permitted effluent discharge rate (likely to occur in the winter and spring), stored effluent will be pumped from the storage cells to make up the deficit. Routing will be available so that re-treatment of the stored effluent can occur if needed.

A process flow diagram is presented in Figure 3.1.

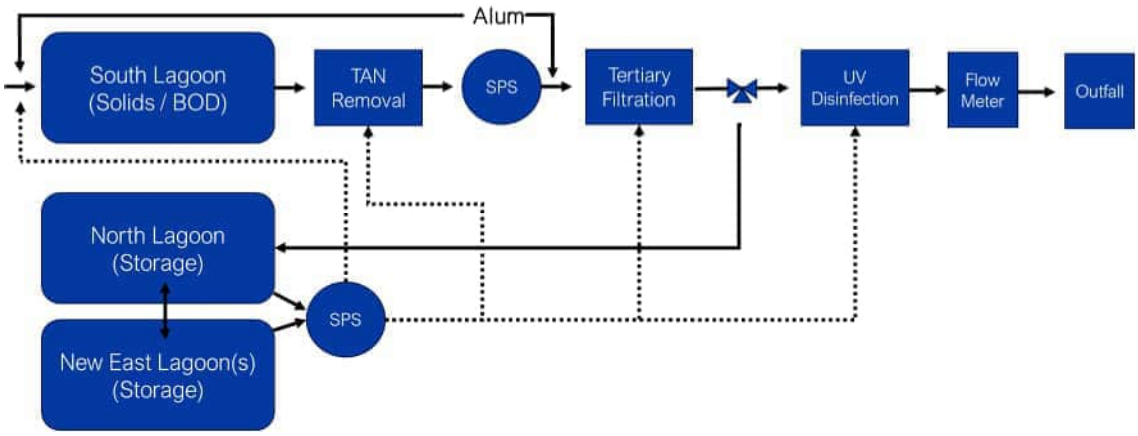


Figure 3.1 Conceptual Process Flow Diagram

3.3 Required Effluent Storage

3.3.1 Storage Volume

Due to the imposed effluent discharge schedule, the influent and effluent flows are disconnected from each other and effluent will need to be stored at some point in the treatment process.

When influent flows reach the WWTP's rated capacity (the design ADF) it is estimated that 271,637 m^3 of storage would be required as is presented in Table 3.3.

Table 3.3 Effluent Storage Requirements

Month	Discharge Limit	Days	Total	Storage*
-	m^3/d	-	m^3	m^3
Jan	3802	31	117,850	-
Feb	3715	28	104,026	-
Mar	4234	31	131,242	-
Apr	6912	30	207,360	-
May	3283	31	101,779	-
Jun	1814	30	54,432	23,568
Jul	173	31	5,357	75,243
Aug	605	31	18,749	61,851
Sep	1123	30	33,696	44,304
Oct	1210	31	37,498	43,102
Nov	1814	30	54,432	23,568
Dec	2678	31	83,030	-
		Sum (m^3/d):	949,450	271,637
		Average Daily Flow (m^3/d):	2,601	
**assumes an average daily influent flow of 2,600 m^3/d.*				

3.3.2 Storage Available

Based on the technology alternatives presented below for upgrading the WWTP, the majority of the southern lagoon will be required for treatment and therefore will have limited ability for storage. Several of the technologies proposed will prevent the level in the southern lagoon from being drawn down significantly and therefore it has been conservatively assumed that no storage will be available in this lagoon. Furthermore, it is proposed that any small amount of storage that is available in South Lagoon is utilized for the purposes of flow buffing to reduce the sizing of downstream equipment. The northern lagoon is determined to have an approximate storage volume of 117,700 m^3 available when the minimum drawdown depth, as well as an allowance for freeboard is considered (refer to Table 3.4. As a result, approximately 155,000 m^3 of additional storage will be required to store treated effluent at the WWTP.

Table 3.4 Northern Lagoon Storage Capacity

Parameter	Value	Unit	Notes
Top of Berm El.	261.7	m	Per Contract 950407-2009
Lagoon Bottom El.	258.88	m	Per Contract 950407-2009
Freeboard	0.5	m	
Minimum Drawdown Depth	0.3	m	MECP Guidelines
Storage Depth	2.02	m	
Lagoon Surface Area	58,276	m^2	XCG, 2011
Storage Volume	117,700	m^3	

3.3.3 Storage Staging

Required effluent storage volume rises linearly along with average flows to the WWTP as is presented in Figure 3.2. The influent flow projections prepared as a part of the Oxford County 2024 Water and Wastewater Master Plan were used to model the increase in ADF to the WWTP between 2026 and 2058 when the flows are projected to reach the proposed rated capacity of the WWTP (2,600 m^3/d) (RVA, 2024).

As flow projects, particular those that reach to the planning horizon are dependant on many factors, the County may choose to consider a staged approach to providing the require storage. Storage could be provided to accommodate projected growth to 2046 and plans could be prepared for the remaining storage volume required to accommodate the WWTPs rated capacity. Under this structure, the County would have upfront capital saving during the upgrade project and further operational saving due to the smaller volume of storage requiring maintenance. A two-stage storage structure is proposed and is presented in Table 3.5.

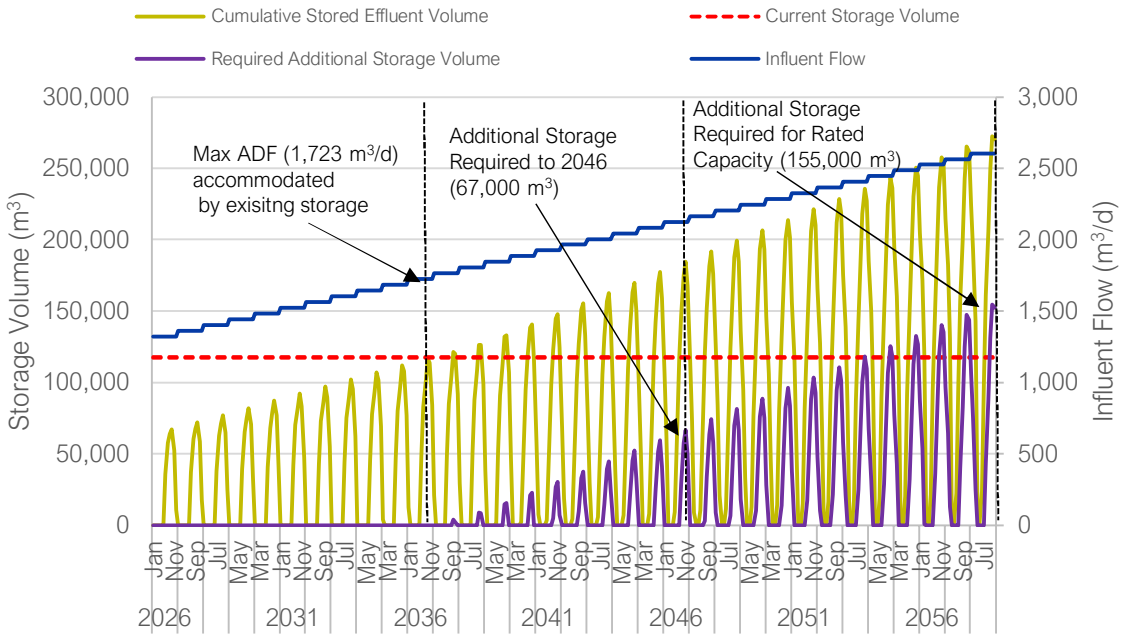


Figure 3.2 Required Effluent Storage Between Current and Future Rated ADFs

Table 3.5 Effluent Storage Staging

Stage	Period	Total Additional Storage Required	Volume to be Added
1	ADF of 2,124 m³/d (2046)	67,000 m³	67,000 m³
2	ADF of 2,600 m³/d (2058)	155,000 m³	88,000 m³

3.3.4 Effluent Storage Lagoon Layout

Area for storage exists to the south and east of the south lagoon. This maintains space near the existing intermittent sand filters for the new treatment facility expansion and avoids the existing woodlot. A concept showing the location of both effluent storage lagoon stages is presented in Figure 3.3. The layout has been completed assuming similar structure as the existing lagoons with 2 m of liquid storage depth in each.

It should be noted that the proposed Stage 2 lagoon is shown in close proximity to neighbouring properties and businesses. Though stored effluent will have a low odour potential, it is recommended that impact of deeper designs on hydraulics and capitals costs be investigated during detailed design to minimize the surface area of the storage lagoons and add addition buffer space.

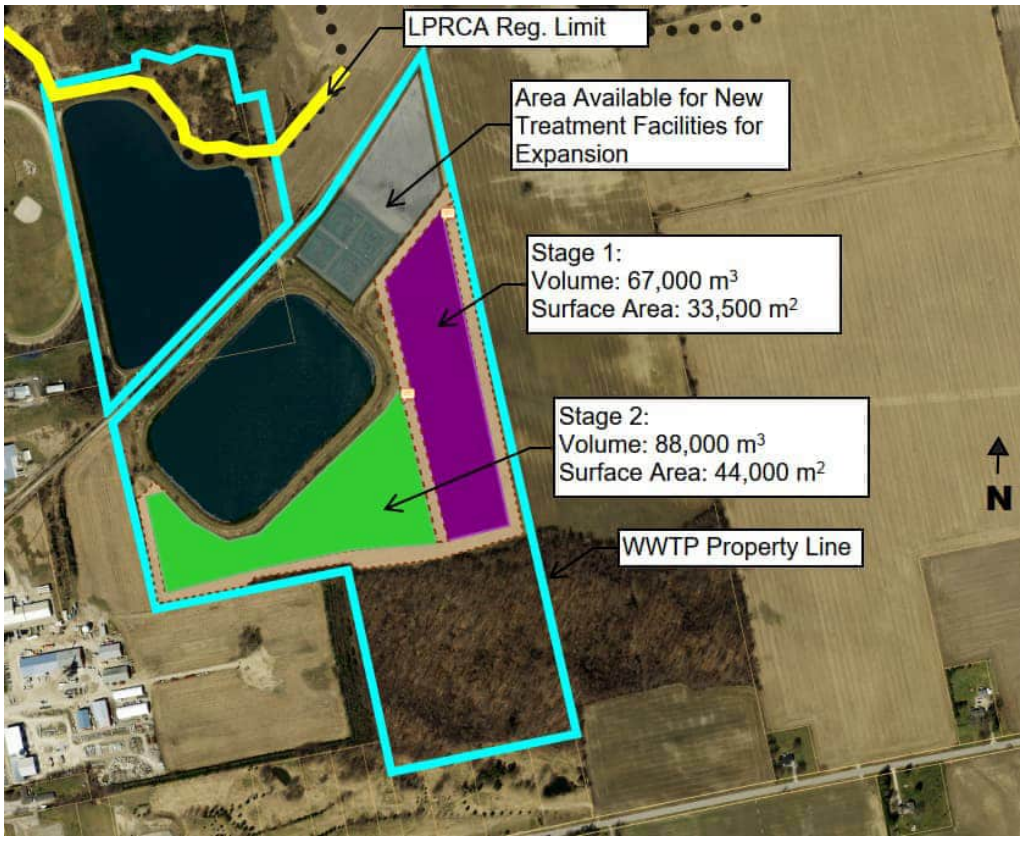


Figure 3.3 Effluent Storage Lagoons

3.3.5 Recirculation Considerations

Storage of effluent can lead to a degradation of quality, particularly with regards to total ammonia nitrogen (TAN) as well as total suspended solids (TSS). This degradation can be caused by factors such as algae or plant growth as well as settled sludges. It was confirmed by the MECP that the released mixture of treated and stored effluent must meet the effluent criteria, regardless of the quality of the effluent when it was originally stored. For this reason, the WWTP upgrades have been designed to recirculate stored effluent through the various treatment phases to ensure the TAN, TSS and TP limits are met.

It was determined that an April max month scenario in which the stored effluent did not meet the discharge requirements for TAN represented the highest loading conditions that would be experienced by the nitrification system.

As the allowable effluent discharge for the month of April (6,912 m^3/d) is above the design max monthly flow (4,680 m^3/d), the WWTP would discharge stored effluent at a rate of approximately 2,200 m^3/d to make use of the available discharge capacity and draw down the lagoons ensuring that storage capacity is available in the summer. During an average daily flow scenario, the higher volume of recirculated effluent would serve to dilute incoming sewage even further.

From December through March the effluent TAN limit is 4 mg/L and therefor any effluent stored during this time could have a TAN concentration of 4 mg/L. In April, the effluent TAN

limit drops to 1 mg/L and therefore any effluent stored during the winter would not meet the discharge limits and would need to be treated further.

For the purposes of these calculations, it was assumed that stored effluent will have a TAN concentration of 4 mg/L. This is a conservative assumption for several reasons:

- Effluent is primarily stored From June through November in which the effluent TAN concentration is 1 mg/L. This will serve to dilute any effluent added from December through March.
- The allowable discharge From December through March is above the design ADF of the WWTP and therefore little effluent will need to be stored during this time (restricted to limited peak days). It is more likely discharge of effluent will occur during this time.

Additionally, assuming a TAN concentration of 4 mg/L will also consider TAN which could be released by the anaerobic decomposition of sludge in the storage lagoons. This release will be mitigated in the following ways:

- The storage lagoon will be cleaned before use to remove any existing sludge.
- Only treated, filtered effluent will be stored thereby effectively reducing the quantity of solids entering the lagoon.

Finally, any solids, such as those resulting from a summertime algae bloom, will be managed by the tertiary filters and by drawing liquid from the bottom of the storage lagoons.

In addition to the influent flow and characterises presented in Sections 2.5 and 2.6, it is intended that the WWTP upgrades be designed to handle the extra loading induced by recirculation as presented in Table 3.6 below.

Table 3.6 Recirculation Loadings

Parameter	Units	$cBOD_5$	TAN	TP	TSS
Recirculation Flow	m^3/d	2,232			
Recirc. Conc.	mg/L	10	4	0.2	Varies[1]
Loading	Kg/d	22.3	8.9	0.4	

[1]*Assumed to be equal to the TSS level in the treatment lagoon.*

3.4 Technology Alternatives

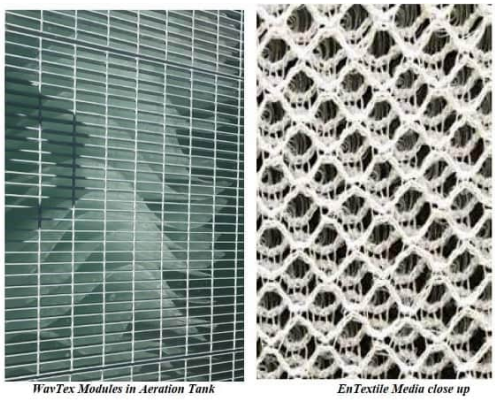
RVA sought to evaluate BOD and TAN treatment technologies and four alternatives were investigated. For each alternative, the required tertiary filtration, effluent pumping, storage, and disinfection was maintained constant. Information regarding these aspects of the designs are provided in 3.7. A discussion on each alternative is provided below.

3.4.1 Alternative 1 - Fixed Film Attached Growth

To achieve reliable nitrification, particularly during cold temperatures, a fixed film attached growth process (FFAG) provide a fixed media onto which biomass attaches itself preventing

washout and increasing the surface area on which treatment can occur. Increased biomass quantity allows nitrification can occur even when slowed by reduced water temperatures. Various suppliers of this technology are available, each with a proprietary media. Media can be attached to floats or mounted to the lagoon bottom. Example medias and a floating system are presented in Figure 3.4.

Aeration via diffusors would be provided in the South Lagoon to achieve BOD treatment. Aeration would also be provided locally at the fixed film modules to supply the biomass growing on the media directly with oxygen and encourage excess biomass to be sloughed from the media.



Bottom Mounted Fixed Film System Viewed From Above (left) and Media Close-Up (right) (Entex, 2024)

Floating Fixed Film System. Media hangs below the water surface (Ecofixe, 2024)

Figure 3.4 Fixed Film Treatment Examples

The system would be staged to achieve BOD and TAN removal in a staged manner. BOD is removed in the first half of the lagoon as autotrophic bacteria will outcompete the nitrifying bacteria if sufficient “food” is available. Nitrification can then take place assuming conditions are favourable for this slower process to occur. It is expected that a baffle would be installed across the lagoon reduce the possibility for short circuiting (refer to Figure 3.5).

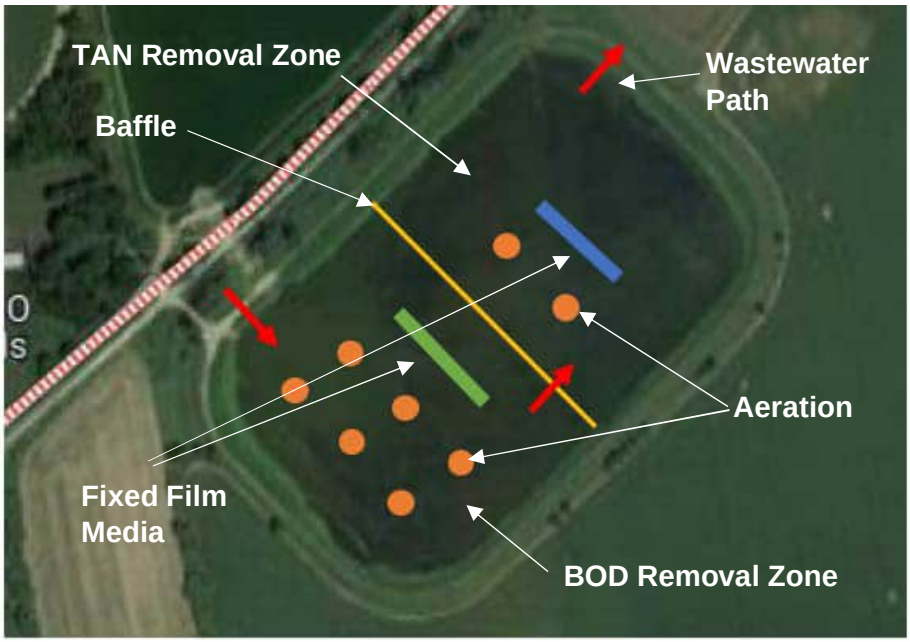


Figure 3.5 Fixed Film Treatment Example Layout

Fixed film system can be installed while the lagoon is in operation (full) however the lagoon should be cleaned prior to installation.

Following the fixed film process, wastewater would travel to the tertiary filters for removal of any remaining TSS and TP and then onto the disinfection process before being released to the receiver or stored.

A preliminary site layout is provided in Appendix 3-1.

Following installation of the IFAS modules, maintenance will be limited to periodic increases in airflow rate to scour excess biomass from the media as well as maintenance of the associated blowers and aeration system. It is not anticipated that the modules would require removal from the lagoon, except if required during de-sludging the lagoon. During de-sludging of the lagoon, floating IFAS modules can be floated out of the way if needed.

3.4.2 Alternative 2 - Moving Bed Bioreactor (MBBR)

As with Alternative #1, aeration would be provided in the South Lagoon to achieve BOD treatment. To achieve reliable nitrification, MBBR system are similar to FFAG systems in that both provide surface area for nitrifying bacteria to proliferate while protected from washout in a favourable environment.

Following removal of the majority of the BOD in the south lagoon, effluent would flow into the MBBR tank for nitrification.

The MBBR tank (shown in Figure 3.6) is filled with plastic media which provides significant surface area for the growth of biomass. Aeration is provided to the tank to supply the biomass with oxygen as well as provide mixing to keep the media suspended and encourage excess biomass to be sloughed from the media. Stainless sieves retain the

media in the tanks and allow wastewater to pass through for further treatment. A cover, floating or fixed, is typically included to conserve heat.

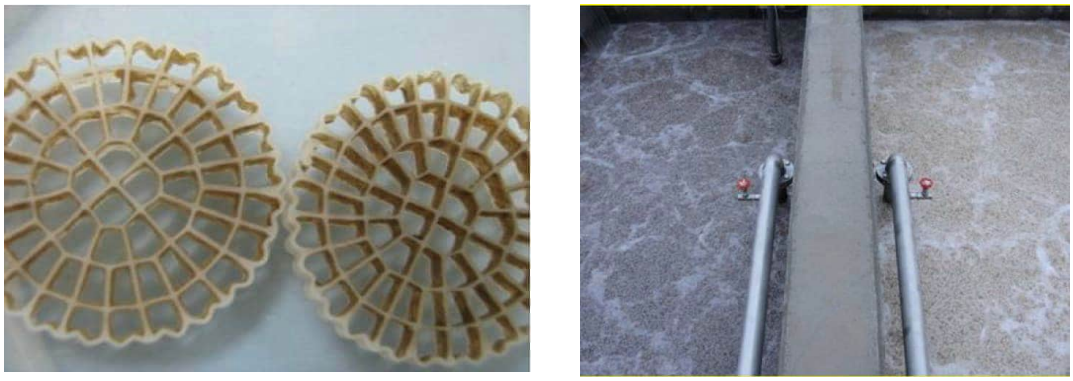


Figure 3.6 MBBR Media (left) and Reactor (right)

Following the MBBR process, wastewater would travel to the tertiary filters for removal of any remaining TSS and TP and then onto the disinfection process before being released to the receiver or stored.

A preliminary site layout is provided in **Appendix 3-1**.

Maintenance will be limited to the associated blowers and aeration system. Media is maintained in the MBBR tank and is designed last for the lifespan of treatment plant. Unlike the FFAG system, the MBBR system will not need to be moved during lagoon desludging.

3.4.3 Alternative 2a – Nitrox Moving Bed Bioreactor (NMBBR)

Nitrox, a proprietary system developed by TriplePoint Environmental, uses a MBBR system, as described in Section 3.4.2 above, for the treatment of TAN. The system is equipped with a backup thermal regulation heat exchanger to ensure the temperature of wastewater entering the Nitrox reactor can be increased to a minimum of 4 – 5^{0}C if needed. This provides contingency during extreme weather events and under exceptional conditions where nitrification is impaired. As nitrification is highly dependant on temperature, a small amount of heating can have a significant impact on the performance of the system. A Nitrox installation in Desoto Iowa, is shown in Figure 3.7.

As with Alternative 2, BOD removal would occur in the southern lagoon via aeration with wastewater passing to a smaller NMBBR tank for the removal of TAN.

Following the NMBBR process, wastewater would travel to the tertiary filters for removal of any remaining TSS and TP and then onto the disinfection process before being released to the receiver or stored.

A preliminary site layout is provided in **Appendix 3-1**.

As with the MBBR system, maintenance will include the associated blowers and aeration system. It is anticipated that some additional maintenance of the heat exchange system would be required however the system is an electric emersion unit and is therefore a simple system as compared to a natural gas/boiler style system. Media is maintained in the

NMBBR tank and is designed last for the lifespan of treatment plant. Unlike the FFAG system, the NMBBR system will not need to be moved during lagoon desludging.

Additional electrical costs associated with heating of effluent are challenging to predict and would be expected infrequently during the period of December through March as indicated by a review of historical effluent temperature data.

Nitrox Tanks in DeSoto Iowa (TriplePoint Environmental)

Figure 3.7 Nitrox System Installation

3.4.4 Alternative 3 – Submerged Attached Growth Reactor (SAGR)

The SAGR system is a proprietary design developed by Nexom which uses clear stone media to host biomass. This reactor is located below grade and is covered with a layer of insulating mulch to conserve heat. Aeration is delivered the media bed via diffusors. Example beds from an installation located in Brights Grove Ontario and a cross section is provided in Figure 3.9.

In this way, a large quantity of biomass can be maintained on the media ensuring that nitrification can be completed even when reaction rates are reduced due to cold wastewater temperatures.

As with the MBBR/Nitrox systems, BOD removal would occur in the southern lagoon via aeration with wastewater passing into the SAGR system for the removal of TAN.

Figure 3.8 SAGR Beds in Brights Grove Ontario

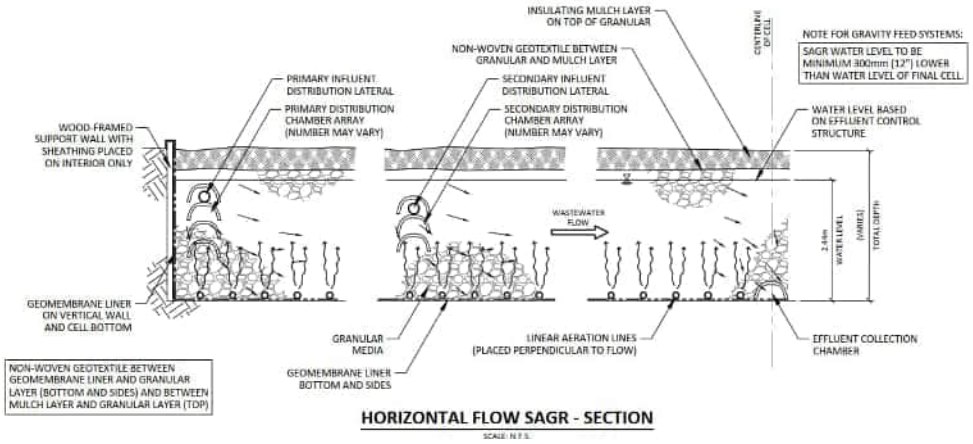


Figure 3.9 SAGR System Installation (Top) and Cross Section (Bottom)

Following the SAGR process, wastewater would travel to the tertiary filters for removal of any remaining TSS and TP and then onto the disinfection process before being released to the receiver or stored.

A preliminary site layout is provided in Appendix 3-1.

Maintenance of the SAGR system is limited as the system is designed not to be accessed once constructed. As with previous alternative maintenance will be limited to the associated blowers and aeration system. Unlike the FFAG system, the SAGR system will not need to be moved during lagoon desludging.

3.5 Cost Opinion

3.5.1 Level of Cost Opinions in this MCEA Study

ASTM E 2516 (Standard Classification for Cost Estimate Classification System) provides a five-level classification system based on several characteristics, with the primary characteristic being the level of project definition (i.e., percentage of design completion).

The ASTM standard, shown in Table 3.7, illustrates the typical accuracy ranges that may be associated with the general building industries.

Table 3.7 ASTM E2516 Accuracy Range of Cost Opinions for General Building Industries

Cost Estimate Class	Expressed as % of Design Completion	Anticipated Accuracy Range as % of Actual Cost
5	0-2	-30 to +50
4	1-15	-20 to +30
3	10-40	-15 to +20
2	30-70	-10 to +15
1	50-100	-5 to +10

The cost estimates developed in this report would be best described as a Class 5 Cost Estimate which is typically used for high level study project.

In some cases, project cost estimates were supplied with greater levels of accuracy based on MCEA Study conceptual design, detailed designs, etc.

3.5.2 Alternative Cost Opinion

For each of the presented alternatives a cost opinion was developed and is presented in Table 3.8 below.

Table 3.8 Design Alterative Cost Opinions

Parameter	Unit	ALTERNATIVES			
		IFAS (ECOFIXE)	MBBR	MBBR - Nitrox	SAGR
Process Equipment	CAD	$5,120,000.00	$6,850,000.00	$ 7,960,000.00	$10,810,000.00
New Filter Building	CAD	$2,100,000.00	$2,100,000.00	$2,100,000.00	$ 2,100,000.00
New Lagoon Construction	CAD	$4,000,000.00	$4,000,000.00	$4,000,000.00	$ 4,000,000.00
Subtotal	CAD	$11,220,000.00	$12,950,000.00	$14,060,000.00	$16,910,000.00
Overhead (10%)	CAD	$1,122,000.00	$1,295,000.00	$1,406,000.00	$ 1,691,000.00
Range	%	-30% to +50%			
Engineering (15%)	CAD	$1,683,000.00	$1,942,500.00	$2,109,000.00	$2,536,500.00
Total - High	**CAD**	$21,037,500.00	$24,281,250.00	$26,362,500.00	$31,706,250.00
Total - Low	**CAD**	$9,817,500.00	$11,331,250.00	$12,302,500.00	$ 14,796,250.00

3.6 Technology Evaluation

The County Public Works and RVA team reviewed and evaluated the three design alternatives detailed previously (IFAS, MBBR/MBBR – Nitrox, and SAGR). Input as to the considerations and their weighting were developed based on the County's experience in the planning, construction and operation of wastewater treatment facilities. The Design Alternatives were reviewed based upon the following criteria:

1. Operational Considerations
    a. Reliability and Resilience - System's ability to maintain performance under varying conditions and loads.
    b. Ease of Maintenance - Frequency and complexity of required maintain
    c. Generator Requirements.
    d. Operator Training and Skill Requirements - Training and qualifications needed for operation.
    e. Scalability and Flexibility - Ease of future expansion or adaptation to increased demand.
    f. Lagoon Cleanout considerations.
2. Economic Considerations
    a. Capital Costs - Initial investment required for installation and construction
    b. Operational and Maintained (O&M) Cost - ongoing costs for energy, staffing, repairs, and chemical use.
    c. Funding Eligibility - Potential for grants, subsidies, or incentives that could
3. Environmental Considerations
    a. Energy Efficiency - Energy use/requirements of treatment technology. Ability to assist County with meeting energy use targets.
    b. Footprint and Land Use - Land requirements and impact on surrounding areas.
    c. Greenhouse Gas(GHG) Emissions - Estimated emissions associated with construction and operation.
    d. Effluent Quality and Compliance - Ability to meet or exceed regulatory limits for effluent quality.
    e. Sludge Generation - Volume and characteristics of sludge produced.
    f. Will the technology protect Oxford's water?
4. Social & Cultural Considerations
    a. Social

i. Community acceptance - Anticipated community support or concerns.
ii. Noise and Odor Control - Potential impacts on nearby residents.
iii. Health and Safety - Impact on the health and safety of plant workers and the public.

b. Cultural
i. Alignment with Community Values - Degree to which the technology aligns with the community's environmental and cultural goals
ii. Indigenous Considerations - Potential impacts on Indigenous lands, rights, and cultural sites
iii. Cultural Heritage and Aesthetic Impact - Visual impact and potential effects on local historical and cultural sites
iv. What level of direct & indirect new employment will derive from the scenario?

The criteria was weighted for a perfect scope being 100 points. Table 3.9 summarizes the review and ranking of the Design Alternatives. Appendix 3-2 provides the detailed review and ranking of alternatives that was developed.

Table 3.9 Design Alterative Ranking

Parameter	Maximum Score	1: Fixed Film Attached Growth	2: MBBR	3: SAGR
Operational Considerations	33.3	24.2	26.1	28.2
Economic Considerations	15.2	13.2	13.4	11.1
Environmental Considerations	27.3	18.2	20.6	20.9
Social & Cultural Considerations	24.2	12.4	14.2	17.3
TOTAL	100	68.1	74.4	77.4
RANKING		3rd	2nd	1st

3.7 Key Treatment Processes

The remaining treatment processes, following the TAN/BOD treatment are presented below:

3.7.1 New Tertiary Treatment Building

A new building will be constructed to house the tertiary filters, UV system, aeration blowers, alum doing system and tank and all associated controls and electrical panels. All wastewater will be pumped to the facility and therefore the building is assumed to be a single storey and constructed on grade.

For the purpose of this investigation a 19 m X 25 m building was assumed which would include separate tertiary filtration/UV disinfection, blower, and electrical rooms. An unclassified space has been assumed.

3.7.1.1 Tertiary Filtration

Several tertiary treatment technologies are available on the market and are capable of meeting the effluent TSS and TP effluent criteria as well as integrating with any of the proposed BOD/TAN removal technologies.

The suppliers consulted for this investigation have indicated that the effluent TP effluent objective of 0.1 mg/L is achievable with a cloth media filtration unit. Achieving concentrations below this level would require upgrading to media filtration which would require a larger footprint and come at a higher cost.

For the purpose of this investigation a cloth media tertiary filter, complete with duty and standby units, was selected for sizing and costing purposes. During detailed design it is anticipated a review of available technologies would be completed to determine the best technology for the application.

3.7.1.2 Disinfection

For the purpose of this investigation a UV disinfection system, complete with a duty and standby UV banks and automatic cleaning system was selected for sizing and costing purposes.

3.7.2 Existing Control Building and Wet Well Upgrades

The existing control building is equipped with two (1 duty / 1 standby) self priming Gorman-Rupp effluent pumps which supply the ISFs and recirculate between the lagoons.

The pumps are rated for 119 L/s at 8.6 m of total dynamic head which is close to the design MDF of 10,660 m^3/d (123 L/s). It is possible that by attenuating peak flows via the lagoon system, modifying the pump impeller, or reducing the required head the existing pumps could be reused for the WWTP upgrade. It is not known what condition the pumps are in and if replacement is warranted. For this investigation it was been assumed that the pumps will be replaced with two new self priming Gorman-Rupp effluent pumps capable of pumping the MDF.

A connection to the existing 300 mm South lagoon outlet will be made to divert flow by gravity to the TAN treatment process. It is anticipated that the existing wet well, used for recirculating effluent from the ISFs back to the lagoons will be used to collected effluent from the TAN treatment process (SAGR, MBBR system, etc.) for pumping to the new tertiary filtration building. The existing recirculation line will be maintained for commissioning and for future process upsets.

Existing suction and discharge piping will be assessed for re-use and forcemain piping to the ISFs will be demolished and replaced with piping to the filter building. The filtration building will then be connected to the existing effluent flow meter to allow discharge to the receiver.

A markup of the existing wet well flow diagram is provided in Figure 3.10.

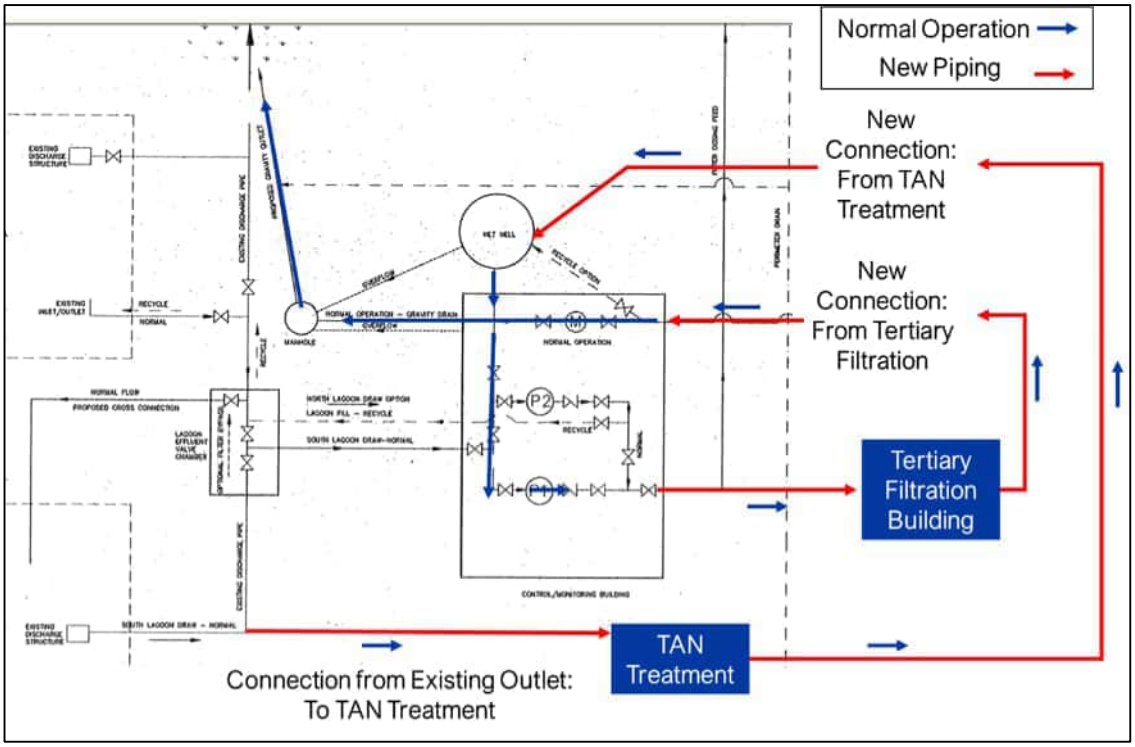


Figure 3.10 Existing Wet Well Upgraded Routing

3.7.3 Effluent Storage and Pumping

For costing purposes, the excavation of the depth was adjusted such that the fill removed for the lagoon can be used in the berms thereby eliminating the majority of excess soils created. To maintain the effluent in the lagoon, a geomembrane liner has to be considered. In detailed design a clay liner could also be considered depending on local availability.

To return stored effluent to the treatment process, a new effluent pumping station will be installed near the new storage lagoons. It has been assumed that the new pumping station will consist of a pre-cast maintenance hole structure which will house a duty and standby submersible pumps. Pump controls and starters will be located nearby in the tertiary filter building.

Piping and valving will be available to route effluent to TAN Treatment, tertiary filtration and UV disinfection as required by the quality of the stored effluent.

4.0 IMPLEMENTATION

The County will initiate this project when it is required to be implemented due to growth in wastewater flows.

4.1 Project Initiation

As part of undertaking the MCEA process, an Ontario Form 0478e *Criteria for Evaluating Archaeological Potential A Checklist for the Non-Specialist*. Based upon the review of this form, it is indicated that the undisturbed portions of the property do have archaeological potential as it is within 300 m of Otter Creek. As part of the MCEA process and as reflected in the ESR document, the County has committed itself to undertake a Phase 1/2 Archaeological Assessment (and any required subsequent assessments) of the previously undisturbed areas of its property which will be disturbed by the expansion of lagoon storage prior to construction impacting these areas.

4.2 Phasing

To keep the existing treatment plant online while the upgrade is occurring, the following preliminary construction sequencing has been developed:

1. Draw down wastewater in North and South lagoons as far as possible via discharge to ISF and to receiver.
2. Begin construction of new blower/filter/UV building
3. Begin construction of new effluent storage cell and new effluent pumping wet well.
4. De-sludge South Cell (if required) and add new connection and isolation valve to outlet line.
5. Install aeration system in South Cell and new outlet structure and begin allowing wastewater to enter south lagoon again.
6. Upgrade existing filter pumps to higher capacity units and connect effluent forcemain to new filter building.
7. Begin routing filtered effluent to new storage cell. Nitrification may be sufficient in summer months to permit release to receiver.
8. Demolish ISFs. May be accomplished in a sequential nature to continue to allow discharge of effluent to the receiver.

9. Construct TAN removal technology in place of ISFs (or near ISFs). Depending on chosen technology, TAN technology to be constructed at a separate location and can be completed while ISFs are still in operation. Connect to South Lagoon outlet. Connect TAN treatment outlet to existing wet well.
10. Begin normal operation, recycling any stored effluent, as necessary.
11. Pump stored wastewater in North Lagoon into South Lagoon and de-sludge. Install new outlet, connect to new effluent pumping wet well and return to service.

4.3 Detailed Design Considerations

4.3.1 Peak Flow Antennation

Unlike convention mechanical treatment plants, lagoons can use their large volume to attenuate peak flows to protect downstream processes.

The maximum allowable discharge of 6,912 m^3/d is below the design MDF of 10,660 m^3/d which provides the opportunity to buffer the MDF. Receiving the MDF for three days in a row while only treating 6,912 m^3/d would only result in a level increase of approximately 18 cm.

Implementing a modulating valve and a flowmeter on the outlet line to the TAN treatment technology would permit the County to set the maximum flow received by processes downstream of the South Lagoon and reduce the required capacities.

4.3.2 Berm Construction

Based on preliminary investigations, the new storage lagoons will be located at a lower elevation than the existing lagoons. Without proper controls, water from the South Lagoon could travel through the ground to the new lagoon(s) and cause berm failure or damage the liner. A dewatering trench and clay plug system has been considered to prevent migration however other alternatives such as sheet piles should be reviewed during detailed design.

4.3.3 Algae Prevention

Though the system as presented above is designed with the ability to recirculate stored effluent should its quality be degraded, methods of preserving quality should be reviewed during detailed design.

It is expected that algae or plant growth will be the main source of degraded effluent quality and so options to deter growth such as floating covers and aeration could be considered.

The designer should review records from similar plants such as the Tavistock WWTP which also store effluent and better gauge the potential for algae growth.

4.3.4 Lagoon De-sludging

The North and South lagoons should be de-sludged as a part of the upgrade or immediately prior. De-sludging the south lagoon will ensure the entire volume is available for treatment

and maximize the length of time before subsequent de-sludging is required as this process will be more involved with the addition of aeration equipment. De-sludging the north lagoon will prevent nutrients from accumulated sludge from leaching back into the stored effluent.

Based on discussions with the County costs for de-sludging have not been included in the cost opinions presented in Table 3.8 as it is likely this activity would be completed as a part of regularly scheduled maintenance. However, given the magnitude of the cost involved, $3M or more depending on sludge depths, the County should endeavor to ensure cleaning is conducted as close to the time of upgrade as possible to prevent cleaning being required as part of the construction project.

5.0 REFERENCES

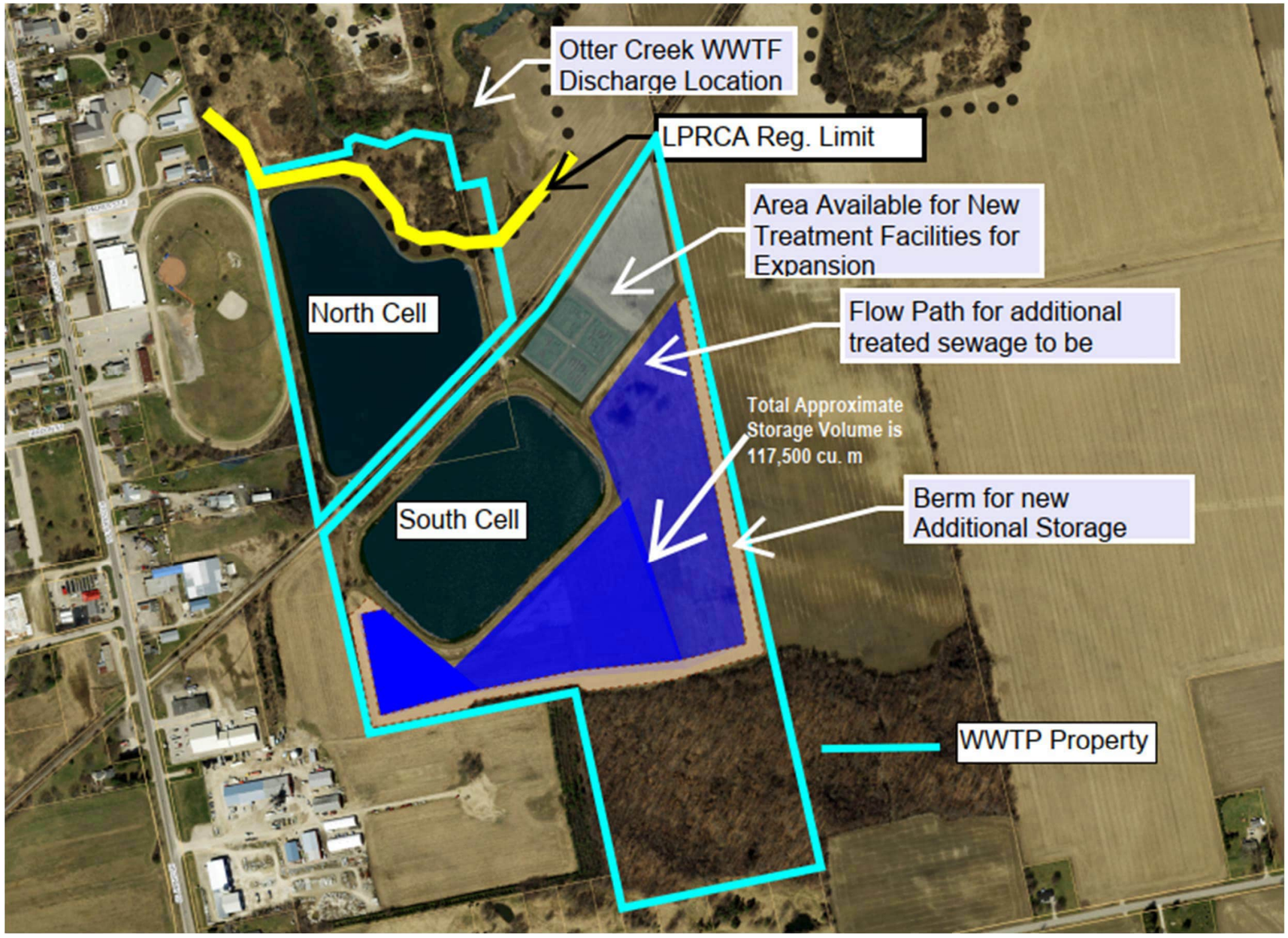
RVA. (2024). *2024 Oxford County Water and Wastewater Master Plan.*

XCG. (2011). *NORWICH WASTEWATER TREATMENT PLANT CLASS EA - TECHNICAL MEMORANDUM #2 - FUTURE DESIGN FLOWS AND LOADINGS .*

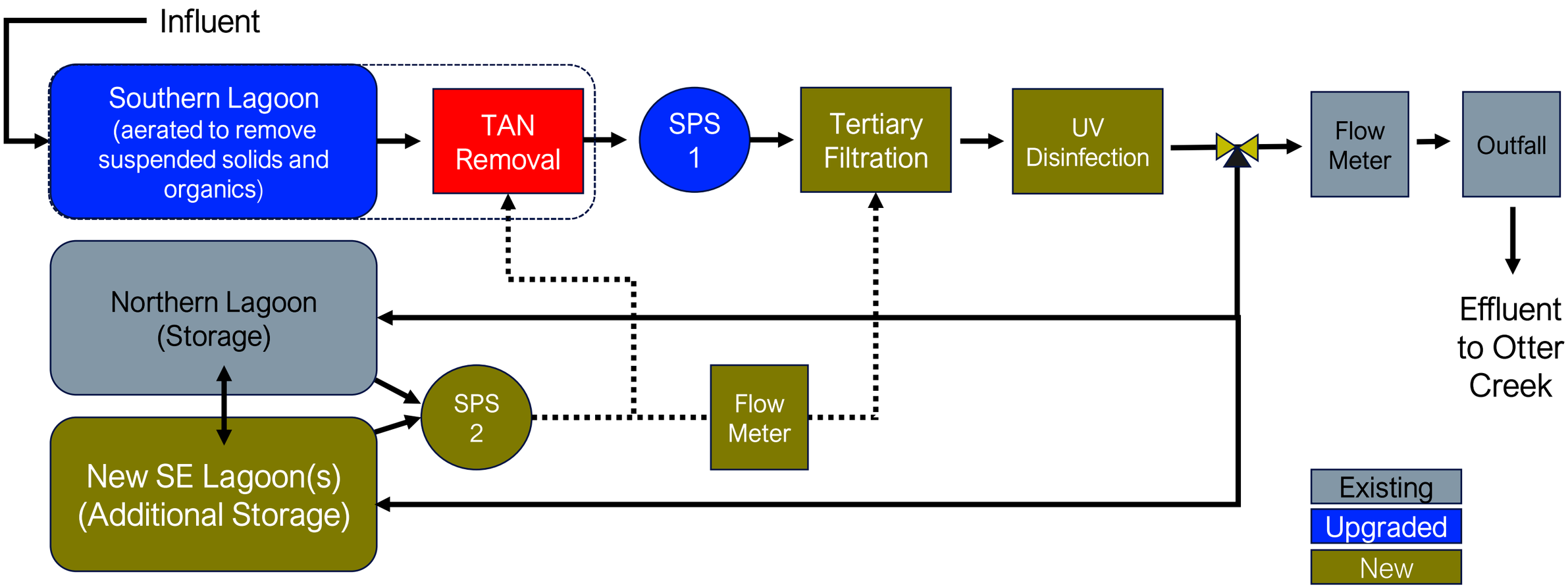
APPENDIX 3-1

Preliminary Site Layout

Norwich Lagoon WWTP Overall Site



Process Description – Lagoon Upgrade



Option 1 Fixed Film Attached Growth

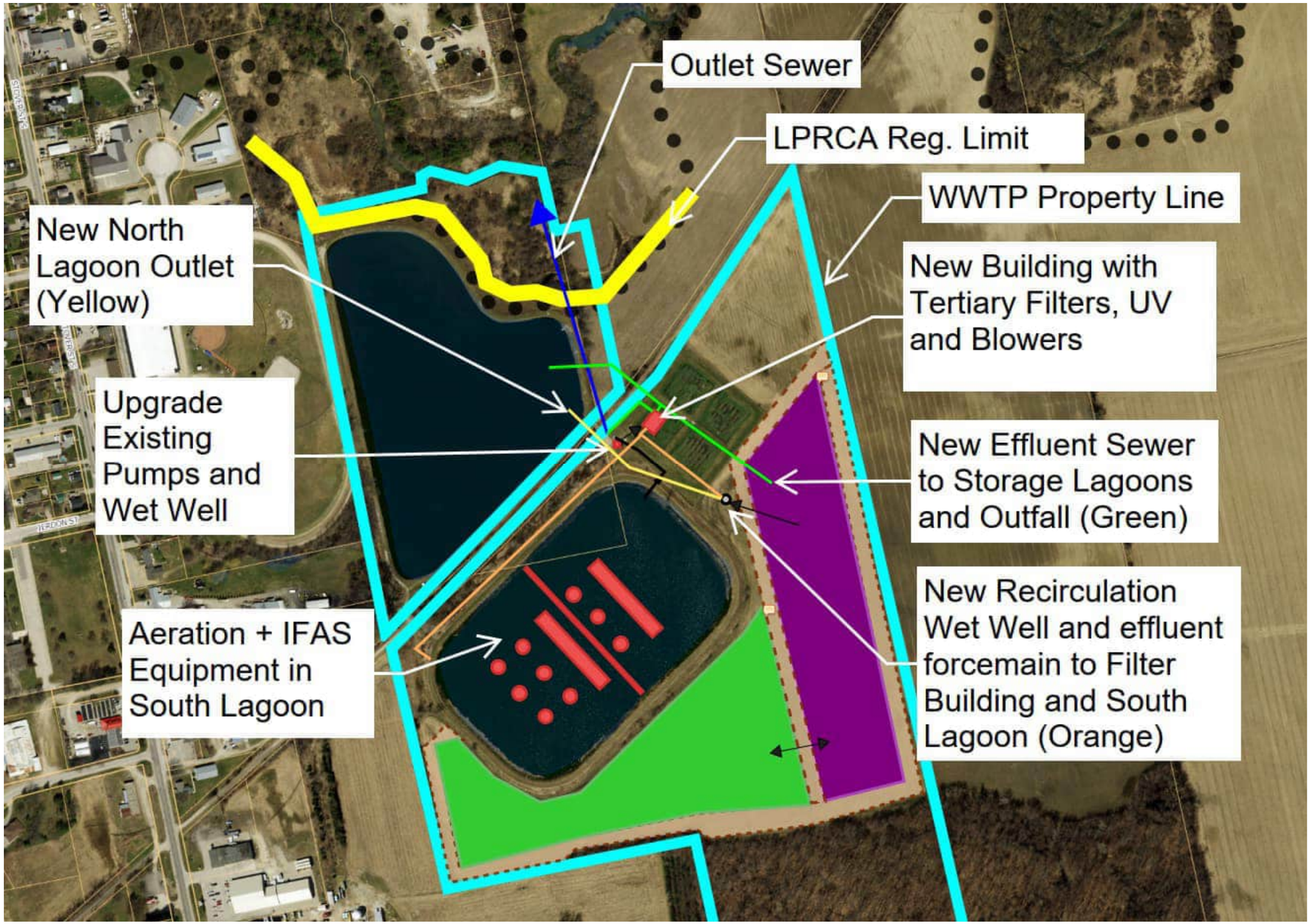
- Fixed films processes provide a fixed media onto which biomass grows
  - Prevents washout and greatly increasing the surface area on which treatment can occur.
  - More biomass means that nitrification can occur, even if it is slowed by reduced water temperatures.
- BOD is removed first, followed by TAN
- Aeration is provided in the lagoon by diffusors and to the fixed media

Peterborough WWTP IFAS System

WavTex Modules in Aeration Tank

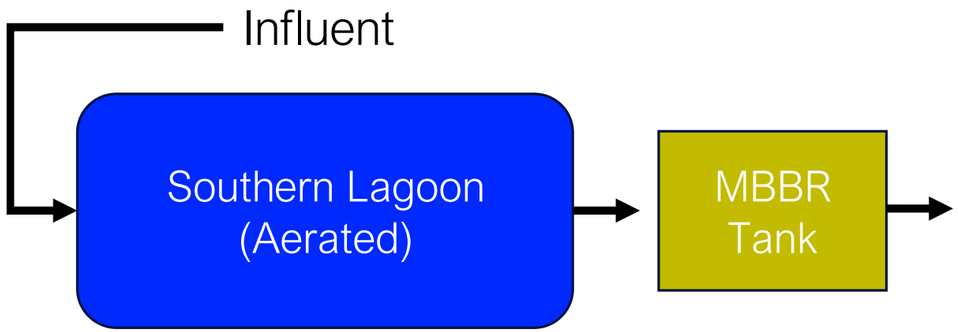
EnTextile Media close up

Preliminary Layout Option 1



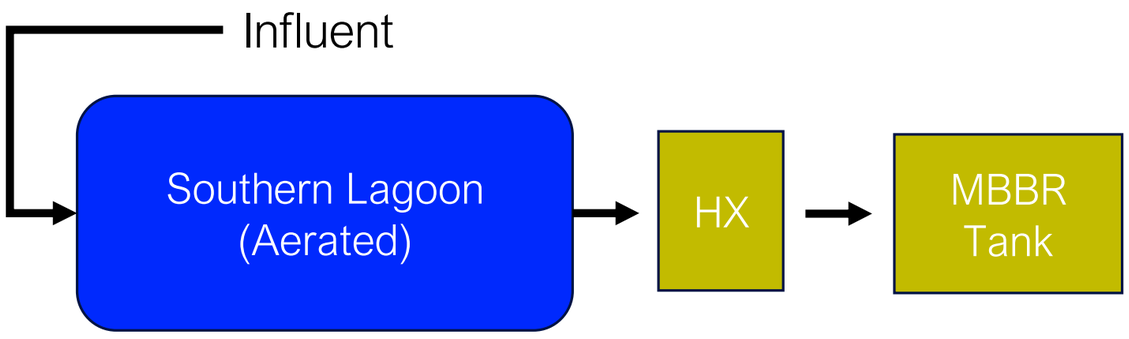
Option 2 Moving Bed Bioreactor (MBBR)

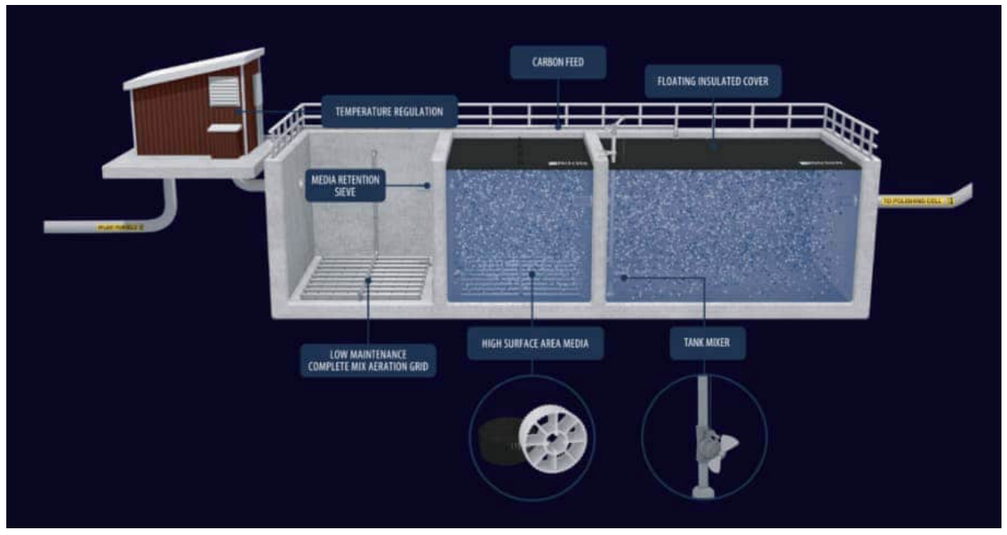
- MBBR systems are similar to fixed film systems:
  - Both provide surface area for nitrifying bacteria to proliferate while protected from washout in a favourable environment.
  - MBBR carrier media are contained and aerated in a small tank
  - Screens maintain media as wastewater passes through for further treatment



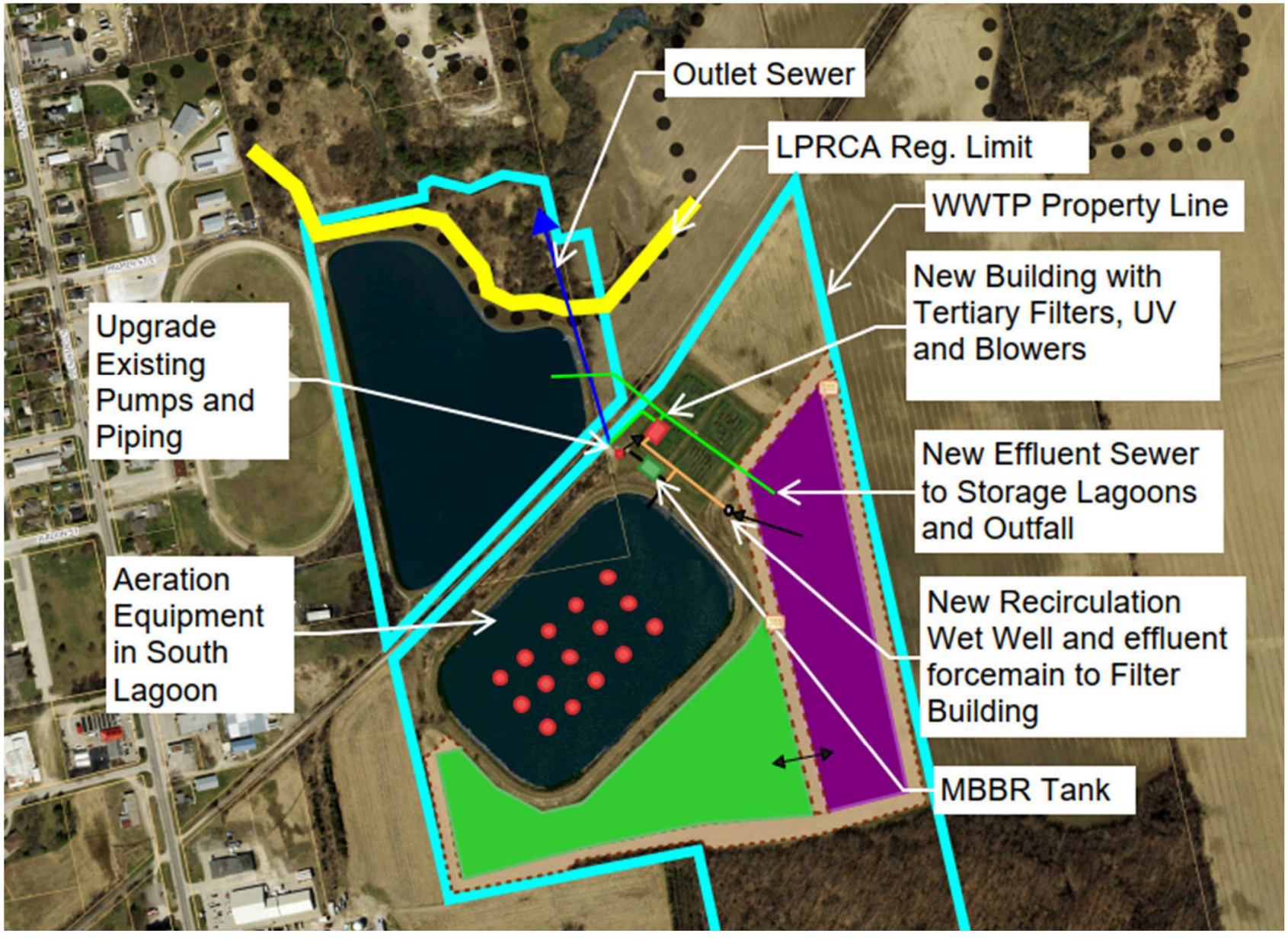
Option 2a Nitrox MBBR

- Triplepoint's Nitrox system uses a MBBR system but can include an influent heating system as contingency :
  - Heater ensures influent is maintained at 4C or higher (used only under extreme conditions)
  - Allows a slightly smaller MBBR tank to be used
  - Dundalk WWTF (ON) Class EA (April 2024) recently selected this technology for their upgrade.





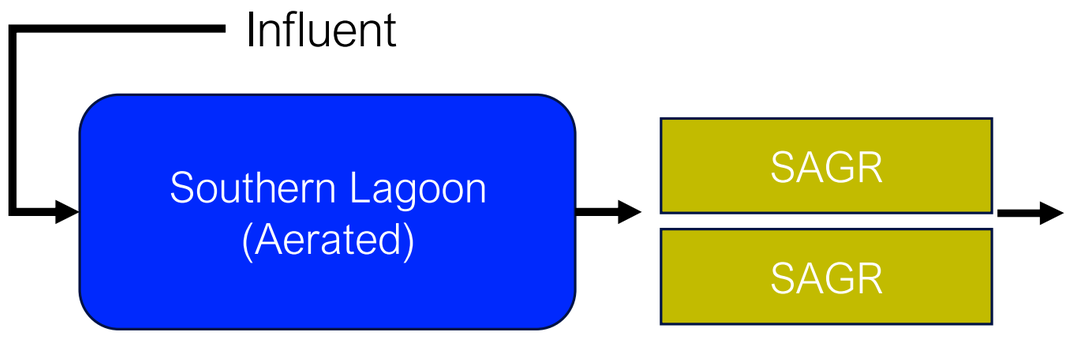
Preliminary Layout Option 2

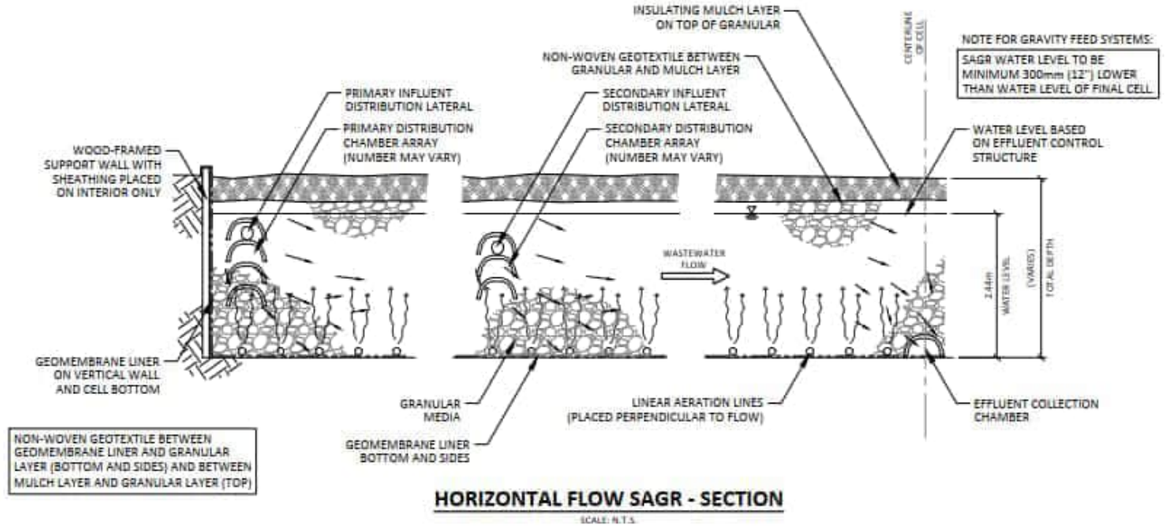


Option 3 Submerged Attached Growth Reactor

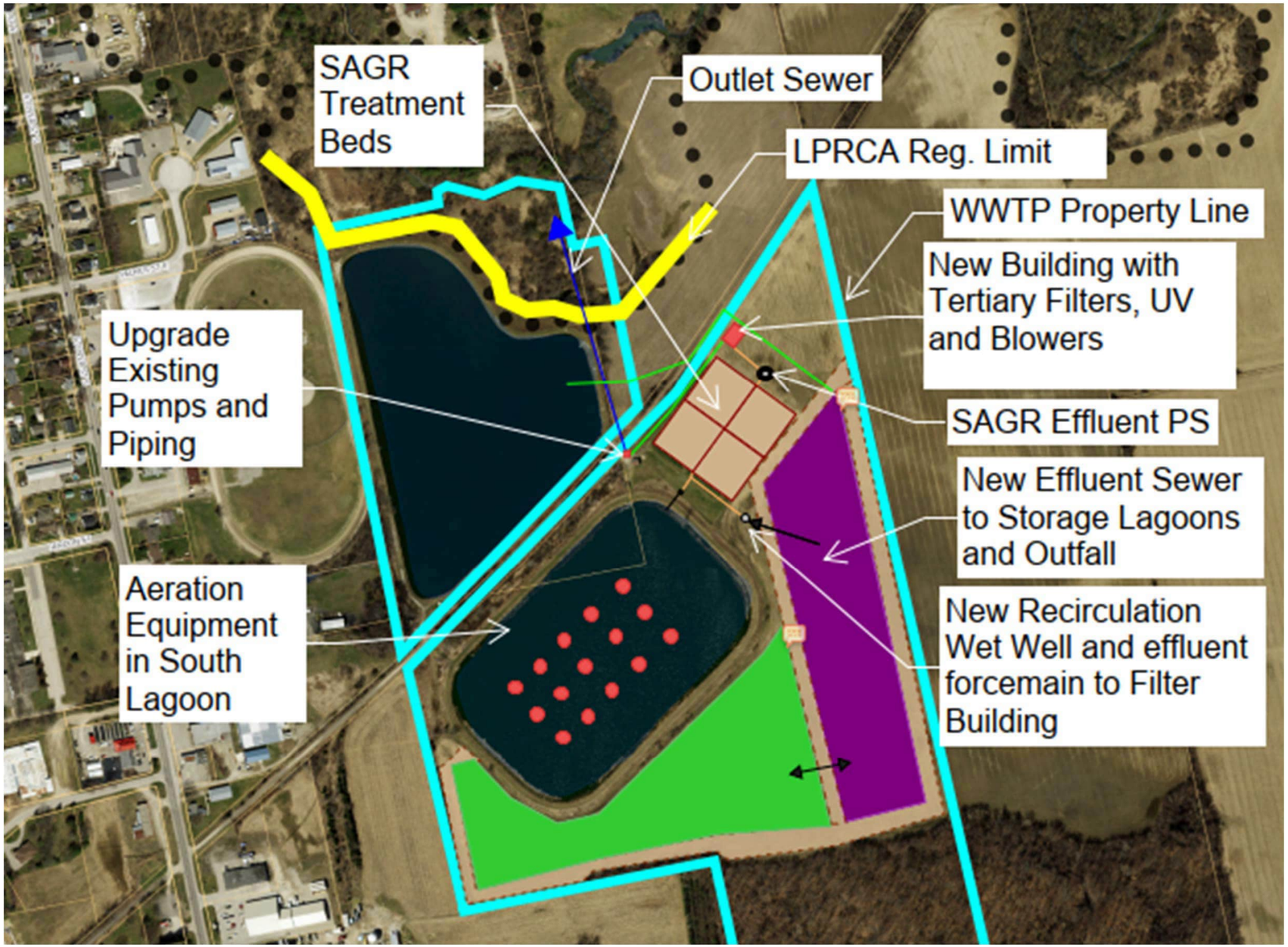
- BOD is removed via aeration in Lagoon, TAN is removed in the SAGR.
- Uses clear stone media to host biomass. This reactor is located below grade and is covered with a layer of insulating mulch to conserve heat.
- Aeration is delivered the media bed via diffusors.

Brights Grove WWTP SAGR Beds





Preliminary Layout Option 3



APPENDIX 3-2

Review of Design Alternatives

	Evaluation Criteria	Maximum Achievable Total	Weight (A)	Scoring Guidance	Alternative 1: Fixed Film AG			Alternative 2: MABR			Alternative 3: SAGR		
					Score (B): Scenario 1	Justification	Total (AxB): Scenario 1	Score (B): Scenario 2	Justification	Total (AxB): Scenario 2	Score (B): Scenario 4	Justification	Total (AxB): Scenario 4
Grand Total		**100.2**					**68.2**			**74.4**			**77.5**
Operational		**33.3**					**24.2**			**26.1**			**28.2**
1		**33.3**					**24.2**			**26.1**			**28.2**
1.1	Reliability and Resilience - System's ability to maintain performance under varying conditions and loads	9.1	1.8	1: Highly vulnerable to high loadings and flows- Effluent quality at risk during adverse conditions 2.5: Average resilience to high loadings and flows- Effluent quality typically met during adverse conditions 5:Highly resilient to high loading and flows - Reliably maintains effluent quality through adverse conditions.	3.0	All systems will be designed to meet the effluent criteria at a variety of design flows and loadings (ADF, PDF, MMF, effluent recirculation). Lagoon system can offer some buffering to peak flows. In a fixed film system all BOD/TAN removal processes would occur within the south lagoon .Sludge build up and/or high influent flows could result in short-circuiting though the lagoon and insufficient contact time with the fixed film media resulting in increased TAN concentrations. Careful design of baffles would be required to mitigate short-circuiting. Fixed film modules are fully subject to cold temperatures in the lagoon.	5.5	4.0	All systems will be designed to meet the effluent criteria at a variety of design flows and loadings (ADF, PDF, MMF, effluent recirculation). Lagoon system can offer some buffering to peak flows. Flows from the south lagoon are routed through the MBBR resulting in reduced opportunity for short-circuiting. MBBR tank is covered for resistance to cold temperatures and can be equipped with a heater if requested.	7.3	4.5	All systems will be designed to meet the effluent criteria at a variety of design flows and loadings (ADF, PDF, MMF, effluent recirculation). Lagoon system can offer some buffering to peak flows. Flows from the south lagoon are routed through the SAGR resulting in reduced opportunity for short-circuiting. SAGR is located underground and is covered with a layer of mulch for resistance to cold temperatures, no heater is required.	8.2
1.2	Ease of Maintenance - Frequency and complexity of required maintain	6.1	1.2	1. Requires significant maintenance over a year 3. Requires moderate maintenance over a year 5. Requires minor maintenance over a year	4.0	Supplier has indicated that operations will need to increase the airflow of the modules' integrated diffusers every 4-6 weeks to scour / clean the modules and the media to prevent clogging. Maintenance of the fixed film modules will be minimal however will require staff to enter the lagoon. Aeration diffusors cleaning and/or membrane replacement every 5 to 7 years for units in the lagoon depending on the specific supplier selected). Blower maintenance requirements (oil changes, belts, filters) will be common between all alternatives.	4.8	4.0	Supplier has indicated that the MBBR system requires little maintenance only attributed to any sensors in the MBBR tank and care of the emersion heater (depending on supplier). County indicated that standard process of draining and inspecting tanks each would require extra work to manage MBBR media. Aeration diffusors cleaning and/or membrane replacement every 5 to 7 years for units in the lagoon and MBBR (depending on the specific supplier selected). Blower maintenance requirements (oil changes, belts, filters) will be common between all alternatives.	4.8	5.0	Supplier has indicated that the SAGR system requires little, if any, maintenance with the exception of topping up the mulch layer as needed. Aeration diffusors cleaning and/or membrane replacement every 5 to 7 years for units in the lagoon (depending on the specific supplier selected). Blower maintenance requirements (oil changes, belts, filters) will be common between all alternatives.	6.1
1.3	Generator Requirements	3.0	0.6	1. Generator required 3. Generator may be required 5. No generator required	3.0	Dedicated generator capacity may be required for the Fixed Film system. Fixed Film system is tied for the highest installed blower capacity (~270 kW) which would result in theoretically a slightly larger generator.	1.8	3.0	Dedicated generator capacity may be required for the MBBR system to prevent media settlement and freezing during winter conditions. MBBR has the lowest installed blower capacity (~140 kW) would theoretically result a slightly smaller generator.	1.8	4.0	Dedicated generator capacity is likely not be required for the SAGR system as system is located underground and risk of freezing is low. SAGR is tied for the highest installed blower capacity (~298 kW) which would result in theoretically a slightly larger generator.	2.4
1.4	Operator Training and Skill Requirements - Training and qualifications needed for operation	6.1	1.2	1. Highly specialized training and qualifications required. Continuous oversight of the process required. 3. Similar training, qualifications and operational requirements compared to Tavistock WWTP. 5. Low training and qualifications requirements. Minimal operational oversight needed.	4.0	System requires very little training and qualifications to operate, similar to Tavistock	4.8	3.5	System requires very little very little training and qualifications to operate. Few operational parameters which require adjustment.	4.2	4.0	System requires very little very little training and qualifications to operate. Few operational parameters which require adjustment.	4.8
1.5	Scalability and Flexibility - Ease of future expansion or adaptation to increased demand	6.1	1.2	1. Requires construction of new parallel process 2 - 4. Requires construction/upsizing of a portion of the process 5. Minimal changes required to existing process	3.5	Increased TAN loading can be accommodated by increasing the number of fixed film modules however this will be limited spatially by the lagoon size. Increased BOD loading will require more aeration in the lagoon. More volume could be required to increase HRT depending on the flow increase. Effluent storage will be the most challenging thing to accommodate given the spatial constraints on the site and is common to all alternatives.	4.2	5.0	Increased TAN loading can be accommodated by increasing the media fill fraction to a point and then will require additional MBBR reactors. Increased BOD loading will require more aeration in the lagoon. More volume could be required to increase HRT depending on the flow increase. Effluent storage will be the most challenging thing to accommodate given the spatial constraints on the site and is common to all alternatives.	6.1	4.0	Increased TAN loading can be accommodated by adding SAGR bed(s). Increased BOD loading will require more aeration in the lagoon. More volume could be required to increase HRT depending on the flow increase. Effluent storage will be the most challenging thing to accommodate given the spatial constraints on the site and is common to all alternatives.	4.8
1.6	Lagoon Cleanout Consideration	3.0	0.6	1. Floating or ground mounted aeration equipment and Fixed Film Media 3. Floating or ground mounted aeration equipment 5. Empty lagoon with minimal obstructions	1.0	Fixed Film System includes floating or fixed media modules which must be moved or removed from the lagoon to allow cleaning to take place.	3.0	3.0	MBBR system includes aeration equipment which must be moved or removed from the lagoon for cleanout to take place.	1.8	3.0	SAGR system includes aeration equipment which must be moved or removed from the lagoon for cleanout to take place.	1.8
Economical		**15.2**					**13.2**			**13.4**			**11.1**
1		**15.2**					**13.2**			**13.4**			**11.1**
1.1	Capital Costs - Initial investment required for installation and construction	6.1	1.2	Brackets based on Cost - Linear Ranking of available points base - 5 for least expensive	5.0	Capital Cost Opinion: $17,890,000 Includes: Fixed film modules, lagoon aeration equip and baffle, process building (containing blowers, tertiary filters, UV system and chemical dosing system), effluent storage lagoons and pumping station, effluent pump upgrade.	6.1	4.8	Capital Cost Opinion: $18,480,000 Includes: Concrete MBBR tank and media, lagoon aeration equip and baffle, process building (containing blowers, tertiary filters, UV system and chemical dosing system), effluent storage lagoons and pumping station, effluent pump upgrade.	5.9	4.3	Capital Cost Opinion: $20,930,000 Includes: SAGR bed (stone media, mulch, aeration and influent distribution piping, geo-membrane), lagoon aeration equip and baffle, process building (containing blowers, tertiary filters, UV system and chemical dosing system), effluent storage lagoons and pumping station, effluent pump upgrade.	5.2
1.2	Operational and Maintained (O&M) Cost - ongoing costs for energy, staffing, repairs, and chemical use	6.1	1.2	Yearly O&M costs brackets - Linear Ranking of available points base - 5 for least expensive	4.7	O&M Cost Opinion: $204,400 Includes: Aeration power and replacement parts, WW pumping power, UV disinfection power and Alum.	5.6	5.0	O&M Cost Opinion: $189,450 Includes: Aeration power and replacement parts, WW pumping power, UV disinfection power and Alum.	6.1	3.6	O&M Cost Opinion: $264,600 Includes: Aeration power and replacement parts, WW pumping power, UV disinfection power and Alum.	4.4
1.3	Funding Eligibility - Potential for grants, subsidies, or incentives that could offset costs	3.0	0.6	Average Score provided to all. No technology more eligible for funding.	2.5	Average Score	1.5	2.5	Average Score	1.5	2.5	Average Score	1.5

	Evaluation Criteria	Maximum Achievable Total	Weight (A)	Scoring Guidance	Alternative 1: Fixed Film AG			Alternative 2: MABR			Alternative 3: SAGR		
					Score (B): Scenario 1	Justification	Total (AxB): Scenario 1	Score (B): Scenario 2	Justification	Total (AxB): Scenario 2	Score (B): Scenario 4	Justification	Total (AxB): Scenario 4
Grand Total		**100.2**					**68.2**			**74.4**			**77.5**
Environment		**27.3**					**18.2**			**20.6**			**20.9**
1		**27.3**					**18.2**			**20.6**			**20.9**
1.1	Energy Efficiency - Energy use/requirements of treatment technology. Ability to assist County with meeting energy use targets	6.1	1.2	Linear ranking by installed power of major duty equipment. Includes: Blowers, Pumps, Filters, UV system, Heating/Ventilation	3.3	Major Equipment Power: 380 kW	4.0	5.0	Major Equipment Power: 250 kW	6.1	3.0	Major Equipment Power: 410 kW	3.6
1.2	Footprint and Land Use - Land requirements and impact on surrounding areas	3.0	0.6	1:Requires more footprint that existing system 3:Same footprint as the existing system (Or fits within the existing footprint) 5:Requires less footprint that existing system	5.0	System can be accommodated in the South Cell only	3.0	3.0	System can be accommodated in the South Cell and ISF Footprint	1.8	4.0	System can be accommodated in the South Cell and ISF Footprint. Manufacturers indicates some of the South Cell can be used for additional storage.	2.4
1.3	Greenhouse Gas(GHG) Emissions - Estimated emissions associated with construction and operation	3.0	0.6	GHGs are difficult to quantify at this level of detail. GHGs will likely be driven by the construction of the effluent storage lagoons (significant earth moving) and process building which are common. Operationally it is likely that the blowers will use the larger fractions of electricity	2.5	Provided Average Score	1.5	3.0	Provided higher that average score due to reduction in aeration energy usage and therefor associated emissions.	1.8	2.5	Provided Average Score	1.5
1.4	Effluent Quality and Compliance - Ability to meet or exceed regulatory limits for effluent quality	6.1	1.2	2.5 (Average) - System reliably meets the required effluent limit. 5 - System can achieve effluent limits under adverse conditions and/or provide higher quality under average conditions.	3.0	System will be able to meet the effluent criteria. Lagoon system can offer some buffering to peak flows.	3.6	4.0	System will be able to meet the effluent criteria. Lagoon system can offer some buffering to peak flows and MBBR design offers more protection against short-circuiting and cold weather (covered tank).	4.8	4.5	System will be able to meet the effluent criteria. Lagoon system can offer some buffering to peak flows and SAGR design offers more protection against short-circuiting and cold weather (located underground).	5.5
1.5	Sludge Generation - Volume and characteristics of sludge produced	6.1	1.2	All system will produce filter sludge which will be recycled back to the lagoons. 2.5 - (Average) - Lagoon Quality (30 mg/L) 5 - Secondary Effluent Quality (10-15 mg/L)	2.5	Effluent TSS assumed to be similar to MBBR (30 mg/L). Assumed similar to typical lagoon effluent.	3.0	2.5	MBBR effluent to be approx. 30 mg/L per manufacturer	3.0	4.0	SAGR effluent <20 mg/L per manufacturer	4.8
1.6	Will the technology protect Oxford's water?	3.0	0.6	5 - All -As a part of the ACS effluent criteria were developed which are protective of the environment. All alternatives are capable of achieving these limits under typical conditions.	5.0		3.0	5.0		3.0	5.0		3.0
Social &Cultural		**24.4**					**12.5**			**14.3**			**17.4**
1		**12.1**					**6.4**			**7.9**			**10.3**
1.1	Community acceptance - Anticipated community support or concerns	3.0	0.6	1: Significant community concerns 5: Community concerns not anticipated.	4.5	Some community concern due to more novel technology with limited similar installations in Ontario. New effluent storage lagoon could cause concerns though this is common for all alternatives	2.7	5.0	Similar installations in North America. New effluent storage lagoon could cause concerns though this is common for all alternatives	3.0	5.0	Similar installations in Ontario and North America. New effluent storage lagoon could cause concerns though this is common for all alternatives	3.0
1.2	Noise and Odor Control - Potential impacts on nearby residents	6.1	1.2	New effluent storage lagoon could cause concerns though this is common for all alternatives 2.5 (Average Score) - provided for typical wastewater odour/noise concerns. 5 - Significant reduction of odour and noise concerns.	2.5	Lagoons could cause odours if septicity occurs (typical).Noise from blowers will be common from for all alternatives and controlled with enclosures.	3.0	2.5	Open tankage could cause odours if septicity occurs (typical). Noise from blowers will be common from for all alternatives and controlled with enclosures.	3.0	4.0	Completely located underground therefore mitigating odour concerns with SAGR system. Noise from blowers will be common from for all alternatives and controlled with enclosures.	4.8
1.3	Health and Safety - Impact on the health and safety of plant workers and the public	3.0	0.6	All alternatives will be designed to be safe for staff and the public. Some process have safety features intrinsic to their design. 1 - More Safety Procedures and/or PPE required 2.5 - Some hazards eliminated through the alternative's design 5 - Hazards eliminated through the alternative's design	1.0	All processes are in the South Lagoon and would require entry into the lagoon if maintenance was required.	0.6	3.0	MBBR system is contained in a aeration tank. Aeration system is located in South Lagoon	1.8	4.0	SAGR system is completely underground and does not require/allow operators to enter. Aeration system is located in South Lagoon	2.4
2		**12.3**					**6.1**			**6.4**			**7.1**
2.1	Alignment with Community Values - Degree to which the technology aligns with the community's environmental and cultural goals	3.0	0.6	Average Score provided to all. All technologies would protect the County's environment.	2.5		1.5	2.5		1.5	2.5		1.5
2.2	Indigenous Considerations - Potential impacts on Indigenous lands, rights, and cultural sites	3.2	0.6	New process will be contained within existing plant footprint therefore limiting the impacts to Indigenous land and cultural sites. Average score provided to all.	2.5		1.6	2.5		1.6	2.5		1.6
2.3	Cultural Heritage and Aesthetic Impact - Visual impact and potential effects on local historical and cultural sites	3.0	0.6	New process will be contained within existing plant footprint. Average Score provided to all.	2.5	New process will be contained within existing plant footprint.	1.5	2.5	New process will be contained within existing plant footprint.	1.5	2.5	New process will be contained within existing plant footprint.	1.5
2.4	What level of direct & indirect new employment will derive from the scenario?	3.0	0.6	1 - Only Local Labour 3 - Local Labour and some local materials 5 - Local Labour and some local materials	2.5	Local Labour may be used for construction	1.5	3.0	Local Labour may be used for construction	1.8	4.0	Significant volume of local Materials (stones, mulch) would be required to construct the SAGR beds. Local Labour may be used for construction	2.4
Grand Total		**100**					**68.2**			**74.4**			**77.5**

- Excess Soils Management Planning Documents, including Assessment of Past Use, Soil Sampling Analysis Plan, Soil Characterization Report, and Fill Management Plan.

The timing of some of these approvals will depend on when the project is undertaken. Additional approvals may be required as the project progresses with further investigations, detailed design, and construction.