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

PROUDLY 100% CANADIAN

RVA 258010

June 17, 2025

Municipality of North Middlesex
229 Parkhill Main Street
Parkhill, ON
N0M 2K0

Attention: Samuel Shannon
Director of Infrastructure and Operations

RE: Parkhill Wastewater Treatment Facility
Enhanced Lagoon Long-Term Treatment Options Feasibility Study

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R.V. Anderson Associates Limited (RVA) submits herein our proposal for Parkhill Lagoon Long-Term Treatment Options Feasibility Study. The purpose of this study is to review and expand on the recommended "Enhanced Lagoon Treatment" option presented in the December 2019 Parkhill Wastewater Treatment Facility (WWTF) Environmental Study Report (ESR) by Dillon Consulting.

1.0 BACKGROUND

The Parkhill Lagoon WWTF discharges seasonally into Parkhill Creek, which is limiting the Municipality's potential to develop and grow, due to storage limitations.

In December 2023, the Municipality of North Middlesex (Municipality) retained RVA to provide assistance in preparing a lagoon dredging tender package as well as a lagoon capacity study. The study aimed to identify the number of additional homes that can be built within the Parkhill area once the lagoon dredging is completed. Lagoon dredging activities are scheduled to be completed in September 2025 upon which an additional 372 homes can be built as a result of the dredging activities alone as per the Capacity Assessment Technical Memorandum prepared by RVA in March 14, 2024.

Previously, the ESR for the Parkhill WWTF of December 2019 recommended an "Enhanced Lagoon Treatment/Partial Mechanical Treatment" option as an alternate approach to treatment. The Municipality tendered a project in 2020 and the successful consultant (AECOM) designed a mechanical treatment plant with an estimated cost of construction of $30M. The cost of building the plant was higher than expected and therefore the Municipality is looking to revert

back to the partial mechanical treatment plant option. As noted in the ESR, the footprint for this approach is smaller than that for a full mechanical plant, which translates to lower capital costs and somewhat less operational needs. The purpose of this feasibility study is to engage with the MECP on this recommended option for the Parkhill Lagoon WWTF.

2.0 SCOPE OF WORK

The scope of work for this assignment is broken down to five sub-categories:

2.1 Background Information Review

For this task, RVA will review the Environmental Study Report prepared by Dillon in December 2019 as well as the Design Report prepared by AECOM for the design of the mechanical treatment plant. Table 2-4 below is from the ESR and it identifies the proposed discharge limits into Parkhill Creek. The discharge limits listed below will form the basis of technology selection for the Parkhill Lagoon WWTF.

Table 2-4: Summary of Discharge limits Based on Mass Balance Approach

Parameter	Proposed ECA Limit for Discharge to Parkhill Creek
BOD_5 (mg/L)	10
TSS (mg/L)	10
Total Phosphorus (mg/L)	0.3
Total Ammonia (mg/L)	2 (summer) 4 (winter)
pH	6.5-8.5

The ESR contains an Assimilative Capacity Study (ACS) that was used to establish the criteria below. Thus, an ACS is not part of the scope of work for this assignment.

1.2.1. Information Required from the Municipality

- 2019 ESR by Dillon including all relevant Appendices
- 2021 Design Report by AECOM
- Historical flow data for 10-year period (2014-2024)
- Assimilative Capacity Study for the Parkhill Lagoon
- Draft ECA application for the Mechanical Plant

1.2.2. Caveats

The focus of this Study is to establish treatability options that will utilize the lagoon as part of the treatment process. This is referred to Enhanced Lagoon Treatment or Partial Mechanical Treatment in the 2019 ESR.

It is important to understand that these enhanced lagoon treatment systems would be proprietary technologies, with performance and guarantees by the respective Manufacturers / Suppliers. In other words, RVA would have to obtain information such as treatment performance, life cycle costing, operational needs, etc., from the manufacturer / supplier of the treatment systems and use it as given, after checking any references from existing installations to complete the evaluation.

Furthermore, these systems may be impacted by the weather conditions, which vary every year and my cause the treated water discharge parameters to vary. Hence, it will be important to obtain some flexibility from the MECP, during the pre-approval discussions. This may not be given by the MECP.

2.2 Treatability Options Technical Memorandum – TM#1

For this TM, RVA will identify up to three proprietary enhanced lagoon treatment options. Please note that for all three options the Preliminary treatment and the Final Treatment components would be the same.

Based on information obtained from the suppliers of the proprietary systems, we will evaluate the options based on treatment effectiveness in the climate conditions of the Municipality of North Middlesex, ease of operation, potential for expandability, operational complexity, feasibility of implementation, Class D capital cost (budgetary), O&M cost, and 20-year lifecycle operational costs.

Please note, that the new treatment approach will require increased daily involvement from the OCWA operators compared to current levels of operational involvement at the Parkhill Lagoon. This is in addition to the operational requirements of the preliminary and final mechanical treatment processes. Therefore, operator buy-in will be an important factor for either option presented above.

RVA will evaluate the three technologies that enhance lagoon performance and post-lagoon treatment process to provide nitrification. As noted above, these technologies are typically proprietary and therefore the performance guarantee for the preferred technology will need to be provided by the supplier. RVA will review the possibility of performance guarantees in the form of a bond/monetary holdback during discussions with the suppliers to establish a method to protect the Municipality's investment. The performance guarantee will form part of the evaluation of the technology.

The partial mechanical approach in the ESR identifies three components that are to be installed, regardless of lagoon enhancement option selected. They are the headworks facility (preliminary treatment), tertiary filtration, and disinfection. RVA will review and evaluate up to three options for each of these components, to select the preferred approach.

The preferred options for screening/headworks facilities, filtration and disinfection facilities will need to be implemented in conjunction with the lagoon enhancement preferred treatment option. Two workshops are included, as part of this task. The first workshop will be scheduled to discuss the treatment options (TM#1) and the second workshop will be scheduled to discuss the outcome of the Operator Questionnaire.

2.3 Operator Questionnaire/Interview

RVA will prepare a standard questionnaire with the help of the Municipality and OCWA and send it to facilities that operate the technologies selected for evaluation. The intent of this exercise would be to help get the operators familiar with the technology and the level of operator involvement required should this be implemented at the Parkhill Lagoon.

If RVA and the Municipality could not engage operators with a written questionnaire format, RVA will pivot and look to virtual interviews between the Municipality's team and operators of similar technologies in the province/Country.

The discussion will help provide the OCWA operators feedback on the efficacy of the treatment technology, and ability to meet required discharge limits, especially during the winter months.

2.4 Pre-Consultation Meeting with the MECP

Based on past projects, for this assignment, we have included two consultation meetings with the MECP:

1. Meeting 1: Following the completion of TM#1 to discuss the options presented in the TM and receive feedback from the MECP on their acceptance of the approach established. We will inquire with the MECP about potential flexibility of the treatment parameters, particularly during the winter months.
2. Meeting 2: Following completion of the feasibility study report which incorporates how feedback received from the first meeting was addressed.

The goal of this assignment is to get the MECP's buy-in for the partial mechanical treatment with lagoon enhancement approach. Since this approach does not deviate from the ESR recommended option, a Class EA addendum will not be required and hence, it is not included in our scope of work. If the MECP deems that an EA addendum is necessary for the next steps in the project, RVA will discuss the budget implications with the Municipality before proceeding.

2.5 Feasibility Study Report

Following the first meeting with the MECP, RVA will prepare and submit to the Municipality a Feasibility Study Report with recommendations for the next steps. The Report will summarize RVA's findings from TMs 1 , as well as the feedback received from the MECP, feedback from the operator questionnaire.and a Class D cost estimate for the preferred alternative.

3.0 KEY PERSONNEL

RVA assembled a team of highly qualified wastewater treatment experts for this project. Our team is led by Amro Miqdadi, who is very familiar with the Municipality's Staff, the operators

from OCWA who manage and operate the facility, as well as the MECP local district staff who will be engaged during the study. The team is complemented by the following RVA team members (resumes available upon request).

Project Manager – Amro Miqdadi

Amro is an Associate and Assistant Regional Manager (London Office) with 15 years of experience in design and construction of water / wastewater, environmental assessments, and municipal infrastructure projects. He has done design, tendering, preparation of contract documents, contract administration and construction supervision for water/wastewater treatment plants and pump stations, and municipal infrastructure including watermains, sewers, Low Impact Development (LIDS) facilities, water and wastewater treatment plants, and pump stations. Amro was the project manager for the ongoing lagoon dredging project with the Municipality of North Middlesex.

Project Director – Rina Kurian

Rina is a Project Manager and Principal of the firm with significant experience in wastewater projects. Her capabilities include project management, design, approval / permit acquisition, site inspection and contract administration for wastewater treatment, pumping station, and biosolids projects.

Constructability and Risk Advisor – Zoran Filinov

Zoran is the Chief Operating Officer and Principal of the firm. He has over 36 years of experience in project management, design, construction supervision for environmental and municipal projects, including commissioning, training, and troubleshooting for water and wastewater treatment plants and pumping stations.

Quality Assurance Review – Scott Hall

Scott Hall is a Wastewater Specialist of the firm with experience in the design, operation and maintenance of wastewater treatment facilities. Scott's career is built on three decades of experience at one of the largest wastewater treatment facilities in Canada. He was involved in various capital development projects including planning, conceptual design, detailed design and construction. In his previous role at the ROPEC secondary wastewater treatment facility, Scott was responsible for engineering work carried out by consultants which included design and construction review. Most importantly he has overseen commissioning projects valued at around $200M. He has extensive experience translating operational and maintenance requirements to the design, construction, and commissioning of projects in wastewater facilities. His responsibility has grown from that of a Junior Process Engineer to Senior Process Operations Engineer. He brings a wealth of knowledge and experience gained over thirty years at a 545 MLD secondary treatment plant. His efforts have been geared to delivering well-engineered projects that facilitate consistent operations and maintenance.

Wastewater Modelling – Austin Bender

Austin is a Process Engineer and Project Manager with experience in water and wastewater treatment projects, including project coordination, process design, environmental assessments,

technology evaluations, process optimization, sludge management, odour treatment, commissioning and capacity assessments. He has experience working with a wide variety of treatment technologies including lagoons, SBRs, activated sludge processes as well as sludge thickening, stabilization and dewatering.

Wastewater Treatment Senior Advisor – Melody Johnson

Melody has 20 years of experience in wastewater process engineering, optimization, and modelling for MCEA, optimization, and re-rating studies and conceptual / preliminary designs. She is familiar with the unique challenges associated with co-treatment of winery wastewater through her Ph.D. research and subsequent projects.

Process Engineer – Darika Sharma

Darika is a Process Engineer with experience in design and construction of water / wastewater, municipal infrastructure and utility projects. She has completed design and tendering, prepared contract documents, provided contract administration and construction supervision for water/wastewater treatment plants and pump stations. Darika has worked on development of process control philosophies, operations manuals, technical reports, environmental assessment reports and Masterplans.

4.0 PROFESSIONAL FEES

4.1 Professional Fees

The total fee estimated for the proposed scope of work is $72,700. These fees exclude HST but include disbursements. A fee breakdown is provided in the attached Time Task Matrix (TTM).

Invoices will be submitted monthly, and payment is due 28 days from the client's receipt of the invoice. Interest will be charged at the annual rate of six percent on unpaid invoices, commencing 29 days after receipt of the invoice.

RVA's proposal is based on the current market climate, delivery timelines, supplier availability and material costs. Due to the ongoing trade dispute between Canada and the United States, the unpredictable nature and application of tariffs may impact the construction markets, as well as the administration of the contract, schedule, and associated costs, beyond RVA's control. RVA will endeavour to consult with and advise our clients of any such unforeseen impacts to the project.

4.2 Basis of Remuneration

Professional fees for services rendered on this project will be reimbursed on a time and expense basis, to an upset limit as identified in the TTM.

4.3 Hourly Rates

Hourly rates for our key personnel are attached. RVA reviews its billing rates annually. Some changes to our billing rates will occur at the beginning of each calendar year; however, billings

will be within the total upset limit quoted in this proposal for the proposed scope of work. Extra work will be undertaken at the rates in effect at that time.

4.4 Disbursements

Standard disbursements are included in our billing rates and will not be submitted for reimbursement. Standard disbursements also include long distance and cell/telephone charges, facsimiles, printing and reproductions, photography, courier charges, and mileage less than 20 km (one way).

4.5 Other Direct Costs

Our fee includes a 5% administrative mark-up, associated with managing risks attributed to cybersecurity, confidential data management, communication, and mobile data accessibility.

5.0 ENGINEERING AGREEMENT

A copy of the standard MEA-ACEC agreement is attached. If this proposal is acceptable to you and we have received your written authorization to proceed, the agreement will be provided for your signatures.

6.0 CONCLUSION

We look forward to working together on this project. Please contact the undersigned at 519 694 2062 if you have any questions.

Yours very truly,

R.V. ANDERSON ASSOCIATES LIMITED

Digitally signed by Vince Grande
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Vince Grande, P.Eng., PMP
Associate Vice President, Water

Amro Miqdadi
2025.06.17 15:10:44 -04'00'

Amro Miqdadi, M.Eng., P.Eng.
Assistant Regional Manager (London)

Attachments:

Time Task Matrix (TTM)

Standard Agreement (MEA-ACEC)