Otterbein Sanitary Sewer Pumping Station – Municipal Class Environmental Assessment

Project File Report

City of Kitchener

60551686

October 2022
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Revision History

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<td>July 14, 2022</td>
<td>SZ, PQ</td>
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<td>2</td>
<td>October 5, 2022</td>
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<td>Final Submitted for 30-day review</td>
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Executive Summary

Introduction and Background

AECOM Canada Ltd. (AECOM) has been retained by the City of Kitchener (the City) to complete a Schedule B Municipal Class Environmental Assessment study for improvements to the Otterbein Sanitary Sewage Pumping Station to select a preferred approach with a preliminary design for upgrades.

The Otterbein (formerly known as Forwell) Sanitary Sewer Pumping Station, as shown in Figure ES-1 located in the Grand River North area, was identified as an infrastructure upgrade project required for growth (e.g., increased pumping capacity) as part of the Kitchener Growth Management Plan. The Kitchener Growth Management Plan is prepared every two years and acts as an implementation tool to effectively manage the City’s growth for a better Kitchener. The timing of growth areas is balanced by considerations such as legislative objectives, land inventories, balanced growth, resource levels and agency input, capital budget/forecasting and other municipal strategic priorities, and the timing of sanitary sewage infrastructure improvements.

While the Otterbein Sanitary Sewer Pumping Station is considered to be in good condition overall, the Condition Assessments completed in 2012 and 2021 highlighted several upgrade requirements to maintain the pumping station in an acceptable condition. This current Municipal Class Environmental Assessment study has been completed to identify and evaluate various upgrade and expansion options to confirm a preferred solution for the Otterbein Sanitary Sewage Pumping Station and associated infrastructure that meets the needs of existing customers and future development in the area while considering environmental effects.

Study Area

The Study Area is in the northeast part of the City of Kitchener and generally follows the Otterbein Catchment Area boundary. The existing Otterbein Sanitary Sewer Pumping Station property is located at the corner of Otterbein Road and Brandy Crescent. Refer to Figure ES-1 for an overview of the Study Area.
Municipal Class Environment Assessment Process

This study was conducted in accordance with the planning and design process for Schedule B projects, as outlined in the Municipal Engineers Association’s Municipal Class Environmental Assessment manual (October 2000, as amended in 2007, 2011 and 2015), which is approved under the Ontario Environmental Assessment Act (R.S.O. 1990, c. E.18).

As a Schedule B project, the siting of a new sewage pumping station is subject to Phase 1 (Problem or Opportunity) and Phase 2 (Alternative Solutions) of the Municipal Class Environmental Assessment planning process.

Phase 1: Problem or Opportunity Statement

Phase 1 of the five-phase Municipal Class EA planning process requires the proponent of an undertaking (i.e., the City) to first document factors leading to the conclusion that the improvement is needed, and to develop a clear statement of the identified problems
or opportunities to be addressed. As such, the Problem/Opportunity Statement is the main starting point in the undertaking of a MCEA and becomes the central theme and integrating element of the Project. It also assists in setting the scope of the Project. The following problem or opportunity statement has been developed for this study:

- The intent of this study is to review upgrade and expansion requirements for the Otterbein Sanitary Sewer Pumping Station and associated infrastructure to address age and expected lifespan as well as to meet current standards. The Otterbein Sanitary Sewer Pumping Station is also currently operating without overflow event measures
- The objective is to determine a preferred solution for the Sanitary Sewer Pumping Station that meets the needs of existing customers and future development in the area while considering environmental effects

**Phase 2: Alternative Solutions**

Phase 2 of the Municipal Class Environmental Assessment process involves the identification and evaluation of reasonable alternative solutions to the problem (Phase 1), as well as consultation with review agencies, stakeholder, Indigenous Communities, and the public to solicit comment and input to inform the selection of the preferred solution.

The following sanitary sewer pumping station and expansion options have been identified and evaluated for this study:

- Option 1: Upgrade and Expand Existing Otterbein Sanitary Sewer Pumping Station without Emergency Storage Tank – onsite
- Option 2: Upgrade and Expand Existing Sanitary Sewer Pumping Station with new Emergency Storage Tank – onsite and adjacent site
- Option 3: Upgrade and Expand Existing Sanitary Sewer Pumping Station with new Emergency Storage Tank – onsite and private property
- Option 4: Extend sewers to new Sanitary Sewer Pumping Station with Emergency Storage Tank – private property

Based on a comparative evaluation of the above options (Section 6), Option 2, as shown in Figure ES-2, was identified and confirmed as the preliminary preferred solution based on the following key rationale:

- Requires minimal tree and vegetation removal and has a smaller carbon footprint due to less construction materials
- Can meet the City’s standards for emergency overflow requirements
- An Emergency Storage Tank mitigates spill and basement flooding
Figure ES-2: Preferred Solution – Option 2

Option 2: Upgrade & expand existing SSPS with new Emergency Storage Tank (EST) – onsite & adjacent site
The existing Otterbein Sanitary Sewer Pumping Station site and adjacent property are disturbed from an archaeological perspective (no further archaeological work anticipated). The associated outfall routing/connection will be confirmed during preliminary design. Once the area of project impacts has been determined, only the undisturbed land that will be impacted, if any, will require a Stage 2 archaeological assessment (and further assessments, as required) during the early stages of detailed design prior to any ground-disturbing construction activities.

During Preliminary design various options for the outfall routing/connection will be considered. If the preferred route does cross any land not previously disturbed, we will then undertake a Stage 2 AA accordingly in those areas.

Lower overall construction cost without the need to purchase additional property.

Compliant with Source Water Protection requirements which permit upgrades to existing facilities but not new facilities within vulnerable Wellhead Protection Areas (WHPAs).

The recommended preliminary preferred solution includes the required upgrades to the existing station to address deficiencies identified in the condition assessment, as well as to accommodate expanded capacity for future flow; furthermore, it provides additional security with emergency storage and an overflow which protects the community from sewer backups and the Kolb Creek area from spills in the extreme event of station failure.

Communications and Consultation Overview

As part of the Municipal Class Environmental Assessment Schedule B planning and design process, several steps have been undertaken to inform government agencies, Indigenous communities, the local community and the general public to solicit comments.

The Municipal Engineers Association Municipal Class Environmental Assessment manual outlines specific mandatory public and agency consultation contact points and methods. In order to properly communicate the Project details and to solicit feedback throughout the planning and design process, the following activities were undertaken:

- Development of a contact list at the onset of the Project to notify agencies, stakeholders, Indigenous Communities, and members of the public that requested to be kept informed.
- Distribution of the Notice of Commencement, Notice of Public Information Centre, and Notice of Completion.
• Posting of relevant project details on the City’s website
• Hosting an online Public information Centre, giving interested participants, including community members an opportunity to review the Project and provide feedback for consideration
• Outreach and information sharing with Indigenous Communities that may potentially be interested in the Project
• Individual meetings with relevant stakeholders and agencies, as required, or as opportunities arose

Potential Impacts and Proposed Mitigation Measures

Impacts related to Otterbein Sanitary Sewer Pumping Station Upgrades and a new Emergency storage tank on the adjacent municipally owned site will be largely limited to the duration and location of construction. Efforts to minimize impacts, such as land use disturbances and noise and vibration will be made by implementing standard construction and best management practices. Where adverse environmental effects cannot be avoided, appropriate measures have been developed to eliminate, or reduce to some degree, the negative effects associated with construction of Option 2.

The proposed works are within a vulnerable area with respect to Source Water Protection. The preferred solution is within a Wellhead Protection Area B (WHPA-B) with a vulnerability score of 8. As such, the applicable policies have been reviewed (Section 4.6) and further consultation will be undertaken, as needed, during preliminary and detailed design to confirm appropriate design materials and methods as well as during construction to ensure practices are followed to mitigate issues associated with groundwater protection.

The proposed mitigation measures as described in Section 8 will be further developed during the preliminary and detailed design phases by means of further studies and permit applications, where applicable.

Conclusions

This Municipal Class Environmental Assessment covers the processes required to ensure that the proposed Option 2: Upgrade and Expand Existing Sanitary Sewer Pumping Station with new Emergency Storage Tank – onsite and adjacent site meets the requirements of the Environmental Assessment Act. The preferred undertaking as described in Section 7 resolves the problem and opportunity statement (Section 5). The Municipal Class Environmental Assessment planning process has not identified any significant environmental concerns that cannot be addressed by incorporating best
management practices and established mitigation measures during construction as identified in Section 8.

Subject to the filing and clearance of this Municipal Class Environmental Assessment study, the City may proceed to complete the preliminary and detailed design phases of the Project, which includes permitting-approvals, and proceed to construction in 2025 (subject to council approval and funding) and beyond as per the preliminary project schedule (Section 7.7).
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Appendix D. Desktop Cultural Heritage Memorandum
Appendix E. Public Consultation Record
Appendix F. Agency and Stakeholder Consultation Record
Appendix G. Indigenous Consultation Record
1. Introduction

1.1 Background

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1.2 Study Area

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The existing Otterbein Sanitary Sewer Pumping Station property is located at the corner of Otterbein Road and Brandy Crescent. Refer to Figure 1-1 for an overview of the Study Area.
Figure 1-1: Study Area

Legend
- Watercourse
- Waterbody
- Parcel Fabric
- Study Area
- Catchment Area

Otterbein SSPS

Study Area

Otterbein SSPS Class EA

Study Area

Mar 10, 2022
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1.3 Study Team Organization

This Municipal Class Environmental Assessment study has been a collaborative effort between The City and AECOM. The City and Consultant Project Managers are listed below.

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Development Project Manager
City of Kitchener
200 King Street West, P.O. Box 1118
Kitchener, Ontario N2G 4G7
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Chris Gouett
Consultant Project Manager
AECOM Canada Ltd.
50 Sportsworld Crossing Road, Suite 290
Kitchener, Ontario N2P 0A4
Chris.gouett@aecom.com
2. Municipal Class Environmental Assessment Planning Process

2.1 Overview

All municipalities in Ontario are subject to the provisions of the Ontario *Environmental Assessment Act* and its requirements to prepare an Environmental Assessment for applicable public works projects. The Ontario Municipal Engineers Association “Municipal Class Environmental Assessment” manual (October 2000, as amended in 2007, 2011 and 2015) provides municipalities with a phased planning procedure, to plan and undertake all municipal sewage, water, stormwater management and transportation projects that occur frequently, are usually limited in scale and have a predictable range of environmental impacts and applicable mitigation measures.

In Ontario, infrastructure projects are subject to the Municipal Class Environmental Assessment process and must follow a series of mandatory steps as outlined in the Municipal Class Environmental Assessment Municipal Engineers Association manual. The Municipal Class Environmental Assessment manual consists of five phases and the application of the phases depends on the Municipal Class Environmental Assessment Schedule that applies to a project. The phases are summarized below:

- **Phase 1 – Problem or Opportunity:** Identify the problems or opportunities to be addressed and the needs and justification

- **Phase 2 – Alternative Solutions:** Identify alternative solutions to the problems or opportunities by taking into consideration the existing environment, and establish the preferred solution considering public, review agency, stakeholder and Indigenous Communities review and input.

- **Phase 3 – Alternative Design Concepts for the Preferred Solution:** Examine alternative methods of implementing the preferred solution based upon the existing environment, public and agency input, anticipated environmental effects and methods of minimizing negative effects and maximizing positive effects.

- **Phase 4 – Environmental Study Report:** Document in an Environmental Study Report, a summary of the rationale, planning, design, and consultation process for the project as established through Phases 1 to 3 above and make such documentation available for scrutiny by the public, review agencies, stakeholders and potentially impacted Indigenous Communities.

- **Phase 5 – Implementation:** Complete contract drawings and documents, proceed to construction and operation, and monitor construction for adherence to environmental provisions and commitments. Also, where special conditions dictate, monitor the operation of the completed facilities.
Only Phases 1, 2 and 5 of the Municipal Class Environmental Assessment process apply to this project as it falls under the Schedule B project category. The Municipal Class Environmental Assessment process ensures that all projects are carried out with effectiveness, efficiency and fairness. The process serves as a mechanism for understanding economic, social and environmental concerns while implementing improvements to municipal infrastructure.

2.2 Project Planning Schedules

The Municipal Class Environmental Assessment defines four types of projects and the processes required for each (referred to as Schedule A, A+, B, or C). The selection of the appropriate schedule is dependent on the anticipated level of environmental impact, and for some projects, the anticipated construction costs. Projects are categorized according to their environmental significance and their effects on the surrounding environment. This study is categorized as a schedule B planning activity. The following describes the Municipal Class Environmental Assessment planning schedules:

- **Schedule A**: Projects are limited in scale, have minimal adverse environmental effects and include a number of municipal maintenance and operational activities. These projects are pre-approved and may proceed to implementation without following the full Municipal Class Environmental Assessment planning process.

- **Schedule A+**: The purpose of Schedule A+ is to ensure appropriate public notification for certain projects that are pre-approved under the Municipal Class Environmental Assessment. It is appropriate to inform the public of municipal infrastructure project(s) being constructed or implemented in their area.

- **Schedule B**: Projects have the potential for some adverse environmental effects. The proponent is required to undertake a screening process (Phases 1 and 2), involving mandatory contact with directly affected public and with relevant review agencies to ensure that they are aware of the project and that their concerns are addressed. If there are no outstanding concerns, then the proponent may proceed to implementation. At the end of Phase 2, a Project File documenting the planning process followed through Phases 1 and 2 shall be finalized and made available for public and agency review. However, if a concern is raised related to aboriginal and treaty rights which cannot be resolved, a Section 16 Order request may be requested and considered by the Minister of the Environment, Parks and Conservation. Alternatively, the proponent may elect voluntarily to plan the project as a Schedule C undertaking.

- **Schedule C**: Projects have the potential for significant adverse environmental effects and must proceed under the full planning and documentation
(Phases 1 to 4) procedures specified in the Municipal Class Environmental Assessment manual. Schedule C projects require that an Environmental Study Report be prepared and filed for review by the public and review agencies. If concerns related to aboriginal and treaty rights are raised that cannot be resolved then a Section 16 Order may be requested.

The Municipal Class Environmental Assessment process ensures that all projects are carried out with effectiveness, efficiency and fairness. This process serves as a mechanism for understanding economic, social and environmental concerns while implementing improvements to municipal infrastructure.

2.2.1 Otterbein Sanitary Sewer Pumping Station Municipal Class Environmental Assessment Schedule

As the Project described in this report involves upgrades and expansion to the existing sanitary sewer pumping facility, including new emergency storage tank (where equipment is located in a new building or structure), Phases 1 and 2 (Schedule B undertaking) of the Municipal Class Environmental Assessment planning process, as described above, apply to this study.

2.3 Communications and Consultation Overview

The Municipal Engineers Association Municipal Class Environmental Assessment manual outlines specific mandatory public and agency consultation contact points and methods for Schedule B undertakings. The following summarizes the consultation activities undertaken for this study:

- Development of a contact list at the onset of the Project to notify agencies, stakeholders, Indigenous communities and members of the public that requested to be kept informed
- Distribution of the Notice of Commencement, Notice of Public Information Centre, and Notice of Completion
- Posting of relevant project details on the City’s website
- Hosting an online Public information Centre, giving interested participants, including community members an opportunity to review the Project and provide feedback for consideration
- Outreach and information sharing with Indigenous Communities that may potentially be interested in the Project
- Individual meetings with relevant stakeholders and agencies, as required, or as opportunities arose
All comments received were considered and addressed to the extent possible. Refer to Section 9 for the overview of consultation completed for Phases 1 and 2 of this Municipal Class Environmental Assessment study.

2.4 Public Review of Project File and Next Steps

This Project File comprises the documentation for Schedule B requirements. Placement of the Project for public review completes Phase 2 of the Project.

The Project File is available for public review and comment for a period of 30 calendar days starting on October 14, 2022 and ending on November 12, 2022. The Notice of Completion was distributed to those on the mailing list, published in the local newspaper and posted on the City’s project webpage to notify affected landowners, the general public, stakeholders, agencies and Indigenous communities about the 30-day comment period. To facilitate public review of the Project File, the report will be available on the City’s website: kitchener.ca/development-and-construction/infrastructure-projects

Alternative arrangements to view the reports are available upon request.

Interested persons may provide written comments to our project team by November 12, 2022. All comments and concerns should be sent directly to the Project Managers:

- Trevor Jacobs, CET
  Development Project Manager
  City of Kitchener
  200 King Street West, P.O. Box 1118
  Kitchener, Ontario N2G 4G7
  Telephone: 519-741-2200 extension 7136
  Click here to email Trevor Jacobs at City of Kitchener

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  AECOM Canada Ltd.
  50 Sportsworld Crossing Road, Suite 290
  Kitchener, Ontario N2P 0A4
  Telephone: 519-650-8614
  Click here to email Chris Gouett at AECOM

In addition, a request may be made to the Ministry of the Environment, Conservation and Parks for an order requiring a higher level of study (i.e., requiring an individual/comprehensive Environmental Assessment approval before being able to proceed), or that conditions be imposed (e.g., require further studies), only on the grounds that the requested 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 kind of order is being requested (request for conditions or a request for an individual/comprehensive environmental assessment), how an order may prevent, mitigate or remedy potential adverse impacts on Aboriginal and treaty rights, and any information in support of the statements in the request. This will ensure that the ministry is able to efficiently begin reviewing the request.

The request should be sent in writing or by email to both:

- Minister of the Environment, Conservation and Parks
  Ministry of Environment, Conservation and Parks
  777 Bay Street, 5th Floor, Toronto, Ontario M7A 2J3
  Click here to email the Minister of the Environment, Conservation and Parks

- Director, Environmental Assessment Branch
  Ministry of Environment, Conservation and Parks
  135 St. Clair Avenue West, 1st Floor, Toronto, Ontario M4V 1P5
  Click here to email the Director of the Ministry of Environment, Conservation and Parks

Requests should also be copied to the City of Kitchener by mail or by email to:

- Trevor Jacobs, CET
  Development Project Manager
  City of Kitchener
  200 King Street West, P.O. Box 1118
  Kitchener, Ontario N2G 4G7
  519-741-2200 extension 7136
  Click here to email Trevor Jacobs at City of Kitchener

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3. Existing Conditions

3.1 Technical Environment

3.1.1 Otterbein Sanitary Sewer Pumping Station

The existing Otterbein Sanitary Sewer Pumping Station is located at 500 Otterbein Road at Brandy Crescent in the City of Kitchener. The site is adjacent to the Kolb Greenway and the Grand River.

The Otterbein Sanitary Sewer Pumping Station was built in 1987 as the ‘Forwell’ Station and services a catchment area of approximately 168 ha as shown in Figure 3-1.

The following key points summarize the current Sanitary Sewer Pumping Station condition:

- 3 vertical solid shaft pumps (2 duty, 1 standby)
- 6 minutes of emergency storage at design peak flow; pump failure could have direct negative impact to surrounding properties
- Receives flows from north 525 mm gravity sewer (receives flow from three upstream gravity sewers) and south 200 mm forcemain sewer from Breslau
- Existing 400 mm forcemain outlets to manhole at intersection of Ottawa St North and Old Chicopee Drive

The sanitary sewer pumping station permitted capacity is 126 L/s. The station’s actual firm capacity is currently 81 L/s.

Determination of the future design flows for the Otterbein Sanitary Sewer Pumping Station uses information from the calibrated sanitary sewer model and the Kitchener Growth Management Plan. The future peak flow estimate of 165 L/s considers an allowance for intensification in existing areas and proposed growth in residential and ICI areas.
Figure 3-1: Existing Catchment Area
3.1.2 Existing and Future Sanitary Flows

The objective of this Municipal Class Environmental Assessment is to include for all possible future flow contributions to the Otterbein Sanitary Sewer Pumping Station considering the following factors:

- Flow contributions from the current catchment area, including current flow patterns
- Sewage flow from Safety-Kleen
- Anticipated local sewer upgrades
- Future growth plans

The catchment area of the Otterbein Sanitary Sewer Pumping Station is 168 ha. The station’s firm capacity is 126 L/s in accordance with the ECA. However, the drawdown tests conducted in the 2021 Condition Assessment completed by Burnside indicated that the actual firm capacity is 88.7 L/s (based on combination of Pumps 1 and 2).

The existing flow was developed using the City’s calibrated wastewater collection model which was calibrated based on flow monitoring undertaken in the City including in the Otterbein Sanitary Sewer Pumping Station catchment area. Future flows are estimated using information regarding population in the model which is based on the City of Kitchener’s Growth Management Plan. The assumptions and details are included in a separate Technical Memorandum on Flow Basis, provided in Appendix A.

3.1.2.1 Existing Flow Estimate

Table 3-1 below summarizes the current flows relating to the Otterbein Sanitary Sewer Pumping Station based on the outputs from the City’s calibrated sanitary sewer model which incorporates population and industrial, commercial and institutional (ICI) area data from the Kitchener Growth Management Plan.

Table 3-1 indicates modelling results for the existing catchment area, which results in a current peak wet weather flow of 65.9 L/s (based on a 25-year return storm event). Compared to the actual firm capacity of 88 L/s, there is no immediate concern regarding pump capacity.
Table 3-1: Otterbein Sanitary Sewer Pumping Station Flow Estimate – Existing Conditions

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Existing (2016)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Average Flow</strong></td>
<td></td>
</tr>
<tr>
<td>Residential Population</td>
<td>2,773</td>
</tr>
<tr>
<td>Total flow rate per capita (L/day.cap)</td>
<td>196</td>
</tr>
<tr>
<td>Total flow (L/s)</td>
<td>6.29</td>
</tr>
<tr>
<td><strong>ICI Average Flow</strong></td>
<td></td>
</tr>
<tr>
<td>ICI flow (L/s)</td>
<td>3.41</td>
</tr>
<tr>
<td>Total Average Flow (L/s)</td>
<td>9.70</td>
</tr>
<tr>
<td>Peak Flow Factor (actual)</td>
<td>1.34</td>
</tr>
<tr>
<td>Total Dry Weather Peak Flow (L/s)</td>
<td>13.00</td>
</tr>
<tr>
<td>Infiltration and Inflow (L/s) (from model)</td>
<td>52.90</td>
</tr>
<tr>
<td>Total Catchment Area (ha)</td>
<td>168.09</td>
</tr>
<tr>
<td>Infiltration Rate (L/s/ha)</td>
<td>0.315</td>
</tr>
<tr>
<td>Total Wet Weather Peak Flow (L/s)</td>
<td>65.90</td>
</tr>
</tbody>
</table>

3.1.2.2 Future Flow Estimate

Determination of the future design flows for the Otterbein SPS also utilizes key information from the calibrated sanitary sewer model and the Kitchener Growth Management Plan.

The design flow for both existing and future conditions is indicated to demonstrate the conservative nature of this estimate. For existing conditions, the design flow of 99.5 L/s is significantly greater than the actual existing flow.
Table 3-2: Otterbein Sanitary Sewer Pumping Station Design Flow Estimate to Buildout (2031)

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Existing (2016)</th>
<th>Growth to 2031</th>
<th>Total Future (Build-Out)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Residential Average Flow</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residential Population</td>
<td>2,773</td>
<td>2,006</td>
<td>4,779</td>
</tr>
<tr>
<td>Per capita flow rate (L/cap.day)</td>
<td>196</td>
<td>305</td>
<td></td>
</tr>
<tr>
<td>Residential flow (L/s)</td>
<td>6.29</td>
<td>7.08</td>
<td>13.37</td>
</tr>
<tr>
<td><strong>ICI Average Flow</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICI Floor area (m²)</td>
<td>34,397</td>
<td>177,087</td>
<td>211,484</td>
</tr>
<tr>
<td>ICI flow rate (L/s/ha)</td>
<td></td>
<td>0.6</td>
<td></td>
</tr>
<tr>
<td>ICI flow (L/s)</td>
<td>3.41</td>
<td>10.63</td>
<td>14.04</td>
</tr>
<tr>
<td><strong>Subtotal Average Flow (L/s)</strong></td>
<td>9.70</td>
<td>17.71</td>
<td></td>
</tr>
<tr>
<td>Intensification allowance - 25%</td>
<td></td>
<td>2.43</td>
<td></td>
</tr>
<tr>
<td><strong>Total Average Flow (L/s)</strong></td>
<td>12.13</td>
<td>17.71</td>
<td>29.83</td>
</tr>
<tr>
<td>Peak Flow Factor – Babbit equation</td>
<td>3.83</td>
<td></td>
<td>3.09</td>
</tr>
<tr>
<td>Total Dry Weather Peak Flow (L/s)</td>
<td>46.44</td>
<td>67.82</td>
<td>92.18</td>
</tr>
<tr>
<td>Infiltration &amp; Inflow (L/s) (from model)</td>
<td>52.90</td>
<td></td>
<td>71.10</td>
</tr>
<tr>
<td>Total Catchment Area (ha)</td>
<td>168.09</td>
<td></td>
<td>168.09</td>
</tr>
<tr>
<td>Infiltration Rate (L/ha/s)</td>
<td>0.315</td>
<td></td>
<td>0.423</td>
</tr>
<tr>
<td><strong>Total Wet Weather Peak Flow (L/s)</strong></td>
<td>99.34</td>
<td></td>
<td>163.28</td>
</tr>
</tbody>
</table>

3.1.2.3 Recommendation

The method used for estimating future flows considers the existing developed area within the catchment with an allowance for intensification and provides some additional contingency in the form of a higher peaking factor than is found through the City’s calibrated model. This also provides a conservative approach for future flows by applying the population projections and proposed ICI area that were developed through the City’s sanitary sewerage model which incorporates build-out growth per the Growth Management Plan.
Therefore, it is recommended that the alternatives considered for upgrades to, or replacement of the existing Otterbein Sanitary Sewer Pumping Station are based on a total future capacity of 165 L/s.

### 3.1.3 Emergency Storage

The existing station does not have sufficient emergency storage. Per the City of Kitchener Design Standards and best engineering practices from other jurisdictions, one hour of emergency storage at peak flow conditions is recommended.

### 3.1.4 Existing Conveyance System

The capacities of the collection system and discharge forcemain were evaluated for existing and future flows for the Otterbein catchment area through use of the City’s wastewater hydraulic model.

The Otterbein Sanitary Sewer Pumping Station discharges into a 400 mm diameter forcemain, which ends at MH# 301625 at Ottawa Street and Old Chicopee Drive. At current firm pumping capacity the flow velocity from the Otterbein Sanitary Sewer Pumping Station is approximately 0.64 m/s in the forcemain, and therefore, it can be concluded that the forcemain is currently oversized. At the future design flow of 165 L/s the flow velocity is approximately 1.3 m/s in the forcemain, and therefore, it can be concluded that the forcemain is appropriately sized for the future Otterbein Sanitary Sewer Pumping Station flows (i.e., between 0.6 m/s and 2.5 m/s).

### 3.1.5 Previous Assessments

The most recent condition assessment of the Otterbein Sanitary Sewer Pumping Station was completed in 2021 (Burnside, 2021). The report summarizes that the overall station appears to be in acceptable condition. Several deficiencies were noted and recommendations for improvements included the following:

- Health and safety – need for protective grating beneath access hatches in wet well; need for exit light and smoke sensor
- Code compliance – Arc flash labels, increased separation distance from exhaust fan to disconnect
- Process piping and equipment – severe rust and corrosion noted on piping and valves; pumps need new impellers; operations staff also noted need for new muffin monster grinders as the existing grinder is discontinued
Electrical and Instrumentation & Control – safety items listed above; need level indicating transmitter; operators requested a separate cam lock connection for load testing on generator

Building mechanical – some deterioration on building louvres; operators requested addition of air conditioning and a new wet well fan for better ventilation

Building architectural – wet well hatch and access ladder require replacement

Site works – improvements to parking area asphalt

The recommendations for improvements are carried forward in the proposed alternatives and the associated budget included in the capital cost estimates.

3.1.6 Utilities

Utilities within the Study Area include:

- Stormwater Sewers – there is a local stormwater infiltration system and outfall located at the adjacent municipal site which may be impacted; alternatives will consider replacement if necessary. Nearby stormwater sewers will be considered for potential connection to overflow in lieu of direct discharge to Kolb Creek or the Grand River.

- Sanitary Wastewater Sewers – depth of incoming sewers will be reviewed with consideration for emergency storage and outfall to ensure sewage does not back up into the collection system

- Municipal Water – there is a valve chamber in close proximity to the site

- Regional Municipal Wells – the existing Otterbein Sanitary Sewer Pumping Station is located within the WHPA-B for the Pompeii/Forwell Well Supply (K70 – K75) as shown on Map 9-81 of the current Grand River SPA Assessment Report (Nov, 2015). The site is assigned a vulnerability score of 10 as shown on Map 10.15 of the Grand River Source Protection Plan (Nov, 2015). It is also located within the WHPA-E for GUDI well K82, and is assigned a vulnerability score of 7.2 as shown on Map 9-95 (GRSPA Assessment Report). The Region of Waterloo Official Plan has a separate set of source protection areas used for planning purposes, and the site falls within the Wellhead Protection Sensitive Area 2 (WPSA 2). Furthermore, the Mannheim water intake has Intake Protection Zones upstream of it, and the site falls within the IPZ-3, but this zone does not have any effect on activities or land-use planning (only IPZ-1 and IPZ-2 affect site activities)
Other utilities including Hydro (overhead and underground), Natural Gas and Telecommunications will be confirmed, and any impacts will be coordinated during preliminary design. Existing drawings indicate the following:

- A watermain valve chamber (VC) is located to the southeast with sump pump is powered from the utility cabinet on the south face of the station; it is sandwiched between two different storm outlets; the water service out of the VC is capped east of the chamber for future extension down Ottawa Street.
- Telephone (Bell) is available on the west side of Otterbein Road
- Hydro to the Otterbein Sanitary Sewer Pumping Station is fed from a pole on Otterbein Road beside station driveway entrance
- Water service to the Otterbein Sanitary Sewer Pumping Station is from Otterbein Road northwest of the Ottawa Street easement crossing
- The recent topographic survey also identified a vault on Brandy Crescent that is not shown on the Otterbein Sanitary Sewer Pumping Station Record Drawings.

### 3.2 Natural Environment

A review of background information, in addition to field investigations completed in November 2021 were conducted to assist in characterizing the existing Natural Heritage features and functions within the Study Area. This information was used to evaluate the Otterbein Sanitary Sewer Pumping Station upgrade and expansion options presented in Section 6. Refer to Appendix B for the complete Natural Environment Existing Conditions Report.

#### 3.2.1 Aquatic Conditions

None of the Otterbein Sanitary Sewer Pumping Station Upgrade and Expansion Options evaluated in Section 6 require in water works of a watercourse. Kolb Creek, a tributary of the Grand River, flows within unevaluated wetland and adjacent to the study area.

#### 3.2.2 Terrestrial Conditions and Wildlife

##### 3.2.2.1 Vegetation Communities

Vegetation communities within the study area were observed, assessed, and defined into Ecological Land Classification units as per the MNDMNRF guidelines. This classification system provides a standard for comparing similar situations across Ontario and includes methods for classifying vegetation communities through the
completion of multilayer (canopy, sub-canopy, ground cover) vegetation inventories. Ecological Land Classification units communities are shown in Figure 3-2.

There are no natural heritage features present on the existing Otterbein Sanitary Sewer Pumping Station property and adjacent site as it primarily consists of manicured open space with planted Norway spruce trees. The mowed lawn area has occurrences of Kentucky bluegrass (*Poa pratensis*), smooth brome (*Bromus inermis*), dandelion (*Taraxacum officinale*), broadleaf plantain (*Plantago major*), English plantain (*Plantago lanceolata*), Virginia strawberry (*Fragaria virginiana*), heal-all (*Prunella vulgaris*), and white clover (*Trifolium repens*). Due to the maintained nature of the site, it does not have a corresponding ELC community and is classed as Mowed lawn.

The study area includes Kolb Creek, a tributary of the Grand River. A narrow area with steep treed slopes leading from the Creek to the current Otterbein Sanitary Sewer Pumping Station location was assessed.

The Kolb Creek riparian community is classified as a *FOD7-3: Fresh – Moist Willow Lowland Deciduous Forest Type*. The canopy is dominated by hybrid crack willow (*Salix X rubens*), Manitoba maple, eastern cottonwood, Freeman’s maple (*Acer X freemanii*), white ash (*Fraxinus americana*), and common hackberry (*Celtis occidentalis*). There is little to no sub-canopy and the shrub layer is dominated by common buckthorn (*Rhamnus catharnica*), Tartarian honeysuckle (*Lonicera tatarica*), common lilac (*Syringa vulgaris*) on the edges. The ground cover is sparse and primarily forget-me-not (*Myosotis scorpiodes*), garlic mustard (*Alliaria petiolate*), reed canary grass (*Phalaris arundinacea*), and giant hogweed (*Heracleum mantegazzianum*).

Adjacent natural area to the south of the Otterbein Sanitary Sewer Pumping Station includes CUM1-1: Dry-Moist Old Field Meadow Type with CUT1: Cultural Mineral Thicket Ecosite inclusion.

The southwest portion of the study area consists of cultural meadow community, adjacent to woodland and wetland vegetation communities. This area also includes valley slope and erosion hazard area associated with the Grand River and within the Grand River Conservation Authority Regulation Limit.

Refer to the **Natural Environment Existing Conditions Report (Appendix B)** for the results and discussion specific to each Otterbein Sanitary Sewer Pumping Station Upgrade and Expansion Option.
Figure 3-2: Ecological Land Classification
3.2.3 Wildlife

Incidental wildlife observations, as well as the identification of preferred wildlife habitat conditions were documented during the November 18, 2021 field investigations conducted by AECOM. The following incidental wildlife identified in Table 3-3 was observed during the field investigation:

Table 3-3: Incidental Wildlife Observations

<table>
<thead>
<tr>
<th>Category</th>
<th>Wildlife</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birds</td>
<td>Mallard</td>
</tr>
<tr>
<td>Birds</td>
<td>Gull</td>
</tr>
<tr>
<td>Birds</td>
<td>House Sparrow</td>
</tr>
<tr>
<td>Mammals</td>
<td>Gray Squirrel</td>
</tr>
<tr>
<td>Mammals</td>
<td>Raccoon</td>
</tr>
<tr>
<td>Mammals</td>
<td>White-Tailed Deer</td>
</tr>
</tbody>
</table>

Habitat for wildlife was limited with species observations common to areas heavily influenced by human disturbance.

3.2.4 Species at Risk

Prior to field investigations, a background review was conducted to determine the historical presence of Endangered Species Act species. This assessment was completed to determine the need for Species at Risk specific surveys.

From a review of the available data, a total of 33 SAR species were identified as potentially occurring within the natural environment study area. Of these species, seven are listed as Endangered (END), nine as Threatened (THR) and seventeen as Special Concern (SC). A preliminary screening exercise was conducted to determine the number of species with potentially suitable habitat within the study area. Potentially suitable habitat was determined by comparing existing conditions on site to habitat descriptions of each SAR species.

The full table of SAR identified through the background review and probability of occurrence is included in Appendix A of the Natural Environment Existing Conditions Report (Appendix B).
Through the completion of field investigations, potential suitable habitat for many of the listed SAR identified within the study area were deemed unsuitable due to factors such as limited size of suitable communities, vegetation composition or distance to developed areas. In conclusion, potentially suitable habitat for seven Species at Risk was identified within the study area. These species and habitat descriptions are provided below:

- **Barn Swallow** (*Hirundo rustica*) – This species is listed as Threatened in Ontario. Barn Swallows occur in close association with human-made structures, building their cup-shaped mud nests almost exclusively on structures such as open barns, under bridges and in culverts (MECP, 2019). Anthropogenic structures that may provide suitable nesting habitat are present within the study area. Suitable habitat is present within the study area.

- **Bank Swallow** (*Riparia riparia*) - This species is listed as Threatened in Ontario. Bank Swallows nest in burrows in natural and human-made settings where there are vertical faces in silt and sand deposits. Many nests are on banks of rivers and lakes, but they are also found in active sand and gravel pits or former ones where the banks remain suitable. The birds breed in colonies ranging from several to a few thousand pairs. Suitable habitat is present within the study area.

- **Eastern Meadowlark** (*Sturnella magna*) – This species is listed as Threatened in Ontario. Eastern Meadowlark feed and nest in native grasslands, farm fields, pastures, hay, alfalfa fields, wet fields, and shrubby overgrown fields. Cultural meadow with shrubby area present within the study area of Options 3 and 4. Suitable habitat is present within the study area.

- **Bobolink** (*Dolichonyx oryzivorus*) - This species is listed as Threatened in Ontario. Bobolink feed and nest in native grasslands, farm fields, lightly grazed pastures, young hayfields, alfalfa fields, wet fields, and old fields that have been abandoned by cultural meadows (MNRF, 2013). Suitable habitat is present within the study area.

- **Monarch** (*Danaus plexippus*) – This species is listed as Special Concern in Ontario. Throughout their life cycle, Monarchs use different types of habitat. Only the caterpillars feed on milkweed plants and are confined to meadows and open areas where milkweed grows. Adult butterflies can be found in more diverse habitats where they feed on nectar from a variety of wildflowers. Cultural meadow area present within the study area of Options 3 and 4. Suitable habitat is present within the study area.
- **Little Brown Myotis** (*Myotis lucifugus*), END – During the day they roost in trees and buildings and are active at night. They often select buildings for summer maternal colonies. They hibernate in caves or abandoned mines that are humid and remain above freezing. In Ontario their habitat is found in ELC communities identified as Cultural Woodland (CUW), Cultural Plantation (CUP), all forest communities (FO), and all swamp communities (SW). Suitable habitat exists within the riparian area of the Kolb Creek (FOD7). Suitable habitat was not identified within the proposed Otterbein Sanitary Sewer Pumping Station Upgrade and Expansion Options.

- **Northern Myotis** (*Myotis septentrionalis*), END – Northern Myotis is found in forested areas, where they roost under loose bark and in tree cavities. They most often in caves or abandoned mines. In Ontario their habitat is found in ELC communities identified as Cultural Woodland (CUW), Cultural Plantation (CUP), all forest communities (FO), and all swamp communities (SW). Suitable habitat exists within the riparian area of the Kolb Creek (FOD7). Suitable habitat was not identified within the proposed Otterbein Sanitary Sewer Pumping Station Upgrade and Expansion Options.

- **Tri-colored Bat** (*Perimyotis subflavus*), END – Tri-colored Bat lives in older forested habitats, forming day roosts and maternity colonies within foliage or in high tree cavities. This species forages over water and along streams in forests. This bat overwinters in caves or mines, typically individually instead of as a group. In Ontario their habitat is found in ELC communities identified as Cultural Woodland (CUW), Cultural Plantation (CUP), all forest communities (FO), and all swamp communities (SW). Suitable habitat exists within the riparian area of Kolb Creek (FOD7). Suitable habitat was not identified within the proposed Otterbein Sanitary Sewer Pumping Station Upgrade and Expansion Options.

### 3.2.5 Assessment of Significance

The species and features found in the study area have been assessed using federal, provincial and municipal ranking and evaluation systems outlined by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), the Ontario Ministry of Environment Conservation and Parks (MECP), Grand River Conservation Authority (GRCA), and the Waterloo Region. The following hereafter provides a summary of the identified significant features found within the study area.
3.2.5.1 Provincially Ranked Species & Features

No provincially ranked features or species were observed in the study area; however, the following presents a list of species potentially located in the study area based on the presence of preferred habitat conditions.

- **Monarch** (*Danaus plexippus*) - This species is listed as Special Concern in Ontario it was not observed during survey however may use cultural meadow (CUM) communities within the study area. Common milkweed (*Asclepias syriaca*) was observed within cultural meadow (CUM) communities during field investigations. Habitat for these species is considered Significant Wildlife Habitat and is afforded protection under the Provincial Policy Statement.

3.2.5.2 Regionally Ranked Species & Features

No regionally ranked features or species were observed in the study area.

3.3 Geotechnical Characteristics

A geotechnical and hydrogeological investigation will be completed for the preliminary preferred site to determine structural design requirements, as well as construction needs (e.g., dewatering quantities). Any information gleaned from this work that impacts the recommended preliminary preferred solution will be incorporated into the recommendation as the Project proceeds through preliminary and detailed design phases of the Project.

3.4 Socio-Economic Environment

3.4.1 Existing Land Use

The City of Kitchener Official Plan designates the Otterbein Sanitary Sewer Pumping Station property as Low Rise Residential. Lands to the south of the study area are primarily designated Natural Heritage Conservation.

Residential dwellings north and east of the pumping station form part of the Grand River North planning community.

The Walter Bean Grand River Trail is located east of Otterbein Sanitary Sewer Pumping Station property.

3.4.2 Future Land Use

As shown in **Figure 3-1**, lands north of the pumping station include future build out with some of this area currently under construction.
There is an easement located south of the station for a possible future extension of Ottawa Street North. This will be considered in the design of any new linear infrastructure crossing this easement.

### 3.5 Cultural Heritage Environment

#### 3.5.1 Archaeological Resources

**Stage 1 Archaeological Assessment (Appendix C)** has been completed as part of this study to evaluate the archaeological potential within the Study Area of the Project Alternatives presented in **Section 6**. A Stage 1 archaeological assessment consists of a review of geographic, land use and historical information for the property and the relevant surrounding area and contacting MHSTCI to find out whether, or not, there are any known archaeological sites on or near the property. Its purpose is to identify areas of archaeological potential and further archaeological assessment (e.g., Stage 2-4) as necessary.

AECOM’s Stage 1 archaeological assessment report background study has determined that the potential for the recovery of pre- and post-contact First Nation and 19th century Euro-Canadian archaeological resources is high. Based on these findings, Stage 2 archaeological assessment is recommended for all areas of potentially undisturbed land within the study area limits (see **Figure 3-3**).

Once the area of project impacts has been determined for the preferred solution during the preliminary and detailed design phase of the Project, only the undisturbed land that will be impacted by this project will require a Stage 2 archaeological assessment, if any.

The Stage 2 archaeological assessment must be conducted by a licensed archaeologist and must follow the requirements set out in the Standards and Guidelines for Consultant Archaeologists (Ontario Government 2011), including:

- The standard test pit survey method at 5 m intervals is to be conducted in all areas that will be impacted by the project where ploughing is not feasible (e.g., woodlots, overgrown areas, manicured lawns, small sections of agricultural land)
- Pedestrian survey at 5 m intervals where ploughing is possible (e.g., agricultural fields). This assessment will occur when agricultural fields have been recently ploughed, weathered by rain, and exhibit at least 80% surface visibility.

Poorly drained areas, areas of steep slope, and areas of confirmed previous disturbance (e.g., building footprints, roadways, areas with identifiable underground infrastructure) are to be mapped and photo-documented but are not recommended for Stage 2 survey as they possess low to no archaeological potential.
Figure 3-3: Results of the Stage 1 Archaeological Assessment
3.5.2 Built Heritage Resources and Cultural Heritage Landscapes

A Desktop Cultural Heritage Screening Memorandum (Appendix D) has been completed to evaluate potential impacts of the preferred solution on the built heritage resources and cultural heritage landscapes. This screening followed the process outlined in the Ministry of Heritage, Sport, Tourism and Culture Industries’ Criteria for Evaluation Potential for Built Heritage Resources and Cultural Heritage Landscapes (2016; hereafter Ministry of Heritage, Sport, Tourism and Culture Industries Criteria Checklist).

Based on a detailed review of aerial photographs, historic mapping, a review of several municipal, provincial, and federal registers/inventories and consultation with the City of Kitchener, it can be concluded that there are no Built Heritage Resources or Cultural Heritage Landscapes within the vicinity of the preferred solution. Therefore, no further cultural heritage studies are required.
4. **Provincial and Local Planning Context**

4.1 **Provincial Policy Statement**

The Provincial Policy Statement (Provincial Policy Statement; 2020) provides provincial policy direction on matters related to land use planning and development that affect communities, such as ensuring the appropriate infrastructure is available to accommodate current and future needs. The Provincial Policy Statement applies to any land use planning decisions made under the Planning Act by municipal councils, local boards, planning boards, provincial ministers, provincial government, and agency officials. Regional and municipal planning decisions are to be consistent with the policies of the Provincial Policy Statement.

The key sections of policies relevant to the Project are as follows:

- 1.1 Managing and Directing Land Use to Achieve Efficient and Resilient Development and Land Use Patterns
- 1.2 Coordination
- 1.6 Infrastructure and Public Service Facilities
- 2.1 Natural Heritage
- 2.6 Cultural Heritage and Archaeology
- 3.0 Protecting Public Health and Safety

**Relevance to this Study:** Subsection 1.6.6 of the Provincial Policy Statement outlines the policies for sewage. Policy 1.6.6.1 states “Planning for sewage and water services shall:

   a) direct and accommodate expected growth or development in a manner that promotes the efficient use and optimization of existing:

   1. municipal sewage services and municipal water services; and
   2. private communal sewage services and private communal water services, where municipal sewage services and municipal water services are not available;

   b) ensure that these systems are provided in a manner that:

   1. can be sustained by the water resources upon which such services rely;
   2. is feasible, financially viable and complies with all regulatory requirements; and
   3. protects human health and the natural environment;
c) promote water conservation and water use efficiency;

d) integrate servicing and land use considerations at all stages of the planning process; and

e) be in accordance with the servicing hierarchy outlined through policies 1.6.6.2, 1.6.6.3, 1.6.6.4 and 1.6.6.5

Consistent with Provincial Policy Statement Policy 1.6.6.1, this Municipal Class Environmental Assessment has evaluated various upgrade and expansion options, including optimization of the existing Otterbein Sanitary Sewer Pumping Station. The alternatives were also reviewed on the basis of their feasibility, cost and compliance with regulatory requirements.

Section 2.1 of the Provincial Policy Statement outlines policies that provide legislative protection for the natural environment. In general, the Natural Heritage policies speak to the importance of maintaining, restoring and improving the connectivity of natural heritage systems. More specifically, these policies prohibit development and site alteration within Provincially Significant Wetlands, habitat of endangered species and threatened species, and fish habitat. Development and site alteration may only be permitted as well as within or adjacent to significant wildlife habitat, significant woodlands, significant valley lands, and significant areas of natural and scientific interest if it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions. There are no permits to be obtained under the Provincial Policy Statement for this project, however, mitigation measures and best management practices will reduce the likelihood of, or minimize effects on identified significant wildlife habitat. As noted in Section 3.2.5.1, habitat for Monarch (Danaus plexippus) may use cultural meadow (CUM) communities within the study area and are considered Significant Wildlife Habitat, and as such, are afforded protection under the Provincial Policy Statement.

4.2 A Place to Grow: Growth Plan for the Greater Golden Horseshoe

A Place to Grow: Growth Plan for the Greater Golden Horseshoe (2020) provides a long-term framework which aims to manage growth, build complete communities, curb urban sprawl and protect the natural environment. A Place to Grow designates Downtown Kitchener as an Urban Growth Centre. Section 2.2.3 describes how urban growth centres will be planned as focal points for accommodating population and employment growth.
Pursuant to sub-section 2.2.3 of the Growth Plan, Downtown Kitchener will be planned to achieve, by 2031 or earlier, a minimum density target of 200 residents and jobs combined per hectare. The Plan recognizes the continued revitalization of urban growth centres as meeting places, locations for cultural facilities, public institutions, and major services and transit hubs with the potential to become more vibrant, mixed-use, transit-supportive communities.

Sub-section 3.2.6 of the Growth Plan outlines policies specific to wastewater systems. Municipal wastewater systems will be planned, designed, constructed, or expanded in accordance with, among others, opportunities for optimization and improved efficiency within existing systems will be prioritized and supported by strategies for energy and water conservation and water demand management.

**Relevance to this Study:** The Study Area is located within the built up area of the Greater Golden Horseshoe Growth Plan Area. The Study Area does not traverse the designated Downtown Kitchener Urban Growth Centre boundary. The Growth Plan was considered in the evaluation of upgrade and expansion options.

## 4.3 Region of Waterloo Official Plan

On Dec. 22, 2010, the Province of Ontario approved the new Regional Official Plan with modifications. The new Regional Official Plan is the Region of Waterloo’s guiding document for directing growth over the next 20 years.

All future land-use development, transportation and infrastructure within Waterloo Region, must conform to the policies, goals and objectives of the Regional Official Plan.

The following chapters of the Regional Official Plan are relevant to the Project:

- Chapter 5. Addressing Waterloo Region’s Infrastructure Needs
- Chapter 7. The Greenlands Network
- Chapter 8. Source Water Protection

**Relevance to this Study:** An objective in Chapter 5 is to “plan and manage municipal wastewater systems to reduce future treatment capacity requirements, optimize the use of existing wastewater treatment plants and protect, improve or restore water quality and quantity in receiving waters”. This study has evaluated upgrade and expanding the existing Otterbein Sanitary Sewer Pumping Station to optimize use of existing infrastructure.
The Study Area is located within the Built-Up Area and Urban Designated Greenfield Areas as per Map 3a (Urban Area). The existing Otterbein Station property is within the Built-Up Area.

The upgrade and expansion options are adjacent to Significant Valleys and Core Environmental Features as per Map 4 (Greenlands Network).

Pursuant to Map 6a (Urban Area Source Water Protection Areas), the Study Area falls within the Wellhead Protection Sensitive Area 2 (WPSA 2):

“Wellhead Protection Areas are the total area of land which contributes water to a municipal drinking-water supply well. Within each Wellhead Protection Area, one or more Wellhead Protection Sensitivity Areas (WPSA) may be delineated. The purpose of these designations is to prevent land uses involving hazardous chemicals and/or substances, disease causing organisms and land uses that increase the vulnerability of groundwater from becoming water quantity and/or quality risks to municipal drinking-water supply wells.”

As per the Regional Official Plan WPSA 2 delineates high sensitivity areas found within the two-year time of travel to a municipal drinking-water supply well. Development applications within the WPSA 2 designation will comply with, among others, the following: (d) individual wastewater treatment systems, private wells, pipelines, sewers, stormwater management ponds (or other ponds) and plans of subdivision or vacant land condominiums may be permitted subject to further study in accordance with Policy 8.A.4.

Because the Otterbein Sanitary Sewer Pumping Station is an existing facility, proposed upgrades should fall within amendments to the Environmental Compliance Approval. Furthermore, all proposed upgrades have the intent of mitigating the possibility of future spills and is therefore seen as a positive change with respect to The Region’s source water protection policies.
4.4 City of Kitchener Official Plan

The City of Kitchener Official Plan, as approved, with modifications by the Region of Waterloo on November 19, 2014 along with The City’s growth management strategy, provide the framework for managing and addressing future growth, land uses and environmental protection.

The following sections of the Official Plan are relevant to the Project:

- Section 3. Kitchener Structure
- Section 6. Public Health and Safety
- Section 7. Natural Heritage and Environmental Management
- Section 14. Servicing and Utilities

Relevance to this Study: The City’s Official Plan policies were considered in the evaluation of alternatives. Key objectives of Section 14, among others, are:

- “14.1.1. To provide infrastructure, municipal services and utilities in a coordinated, efficient and cost-effective manner to meet the City’s current and projected needs.
- 14.1.2. To maximize the use of existing municipal services and utilities before consideration is given to extending and/or developing new municipal services.”

Planning estimates have been confirmed as part of the background work for this study and upgrade and expansion options have been evaluated to identify a preferred solution that meets the needs of existing customers and future development in the catchment area while also considering environmental effects.

Pursuant to Section 14 Policy 14.C.1.18, the City will direct and accommodate growth and development in a manner that promotes the efficient use and optimization of existing municipal sanitary services and minimize the number of pumping stations required. This study has evaluated various upgrade and expansion options.

Section 14 Policy 14.C.1.2 indicates that municipal services and utilities which are required to service the public will be permitted to locate in any land use designation. The City of Kitchener Official Plan designates the Otterbein Sanitary Sewer Pumping Station property as Low Rise Residential in accordance with Map 3 (Land Use) with adjacent land use consisting of Natural Heritage Conservation.

According to the City of Kitchener Official Plan Map 6 (Natural Heritage System), the Study Area east and south of the Otterbein Sanitary Sewer Pumping Station include
Kitchener Core Natural Heritage Features. The Study Area also includes One Zone Flood Plain Policy Area and Slope Erosion Hazard area as per Map 7 (Natural Hazards).

As per Section 14, Policy 14.C.1.3 “Notwithstanding Policy 14.C.1.2, where construction of a road on a new right-of-way, widening or upgrading of an existing roadway, construction or upgrading of a trunk sewer, trunk watermain, gas pipeline or electrical transmission line, wastewater treatment facility, waste management facility or groundwater taking project is proposed within or on lands adjacent to designated Natural Heritage Conservation, the submission of an Environmental Impact Study, or other appropriate study, in accordance with the policies in Section 17.E.11 will be required.” The existing Otterbein Sanitary Sewer Pumping Station is not adjacent to the Natural Heritage Conservation lands, however; Options 3 and 4 evaluated through this study are on lands directly adjacent to Natural Heritage Conservation lands.

The Walter Bean Grand River Trails traverses along Kolb Creek and is designated as a Secondary Multi-Use Pathway/Connection (Type 2) in accordance with Map 11 (Integrated Transportation System).

Pursuant to Section 7 Policy 7.C.1.1, Source Water Protection Areas are designated in the Regional Official Plan and identified on Map 8 and policies that are applied to them are in the Regional Official Plan. These policies and their relevance to this project are discussed in Section 4.3. Map 8 (Source Water Protection Areas) shows the Otterbein Sanitary Sewer Pumping Station is located within the Wellhead Protection Sensitive Area 2 (WPSA 2).

4.5 Conservation Authorities Act

The Grand River Conservation Authority is authorized by the Development, Interference with Wetlands and Alterations to Shorelines and Watercourse Regulation (Ontario Regulation 152/06 also known as the “Generic Regulation”). These Regulations, passed under the Conservation Authorities Act, regulate natural and hazardous areas such as areas within and adjacent to rivers or stream valleys, areas that are subject to the hazards of flooding and erosion, and areas within and adjacent to wetlands areas.

Relevance to this Study: Grand River Conservation Authority mapping indicates that portions of the Study Area are within the Regulation Limit associated within the floodplain to the Grand River and Kolb Creek, regulated watercourses, wetland, and slope valley areas. A Permit under Ontario Regulation 150/06 is required as the proposed works fall within the Grand River Conservation Authority regulated area.
4.6 Grand River Source Protection Area

An update of the Grand River Source Protection Plan came into effect on February 15, 2022. The Plan consists of two volumes. Volume 1 provides the history of source protection planning and the Clean Water Act, plan objectives, and description of the watershed. Volume 2 contains the policies applicable to each municipality.

Relevance to this Study: The Study Area is located within the Grand River Source Protection Plan and as such, source water protection was reviewed and considered as part of this Municipal Class Environmental Assessment study. Volume 2: Chapter 10 contains policies applicable to Region of Waterloo, including Policy RW-MC-12 (Sewage System or Sewage Works – Sanitary Sewers and Related Pipes).
5. **Phase 1: Problem or Opportunity Statement**

Phase 1 of the five-phase Municipal Class EA planning process requires the proponent of an undertaking (i.e., the City) to first document factors leading to the conclusion that the improvement is needed, and to develop a clear statement of the identified problems or opportunities to be addressed. As such, the Problem/Opportunity Statement is the main starting point in the undertaking of a MCEA and becomes the central theme and integrating element of the Project. It also assists in setting the scope of the Project. The following problem or opportunity statement has been developed for this study:

- The intent of this study is to review upgrade and expansion requirements for the Otterbein Sanitary Sewer Pumping Station and associated infrastructure to address age and expected lifespan as well as to meet current standards. The Otterbein Sanitary Sewer Pumping Station is also currently operating without overflow event measures.

- The objective is to determine a preferred solution for the Sanitary Sewer Pumping Station that meets the needs of existing customers and future development in the area while considering environmental effects.
6. Phase 2: Alternative Solutions

6.1 Identification of Alternatives

Phase 2 of the Municipal Class Environmental Assessment process involves identifying and assessing reasonable alternative upgrade and expansion options for the Otterbein Sanitary Sewer Pumping Station and associated infrastructure in order to recommend a preferred solution that addresses the Phase 1 Problem or Opportunity Statement.

The following conceptual Sanitary Sewer Pumping Station and expansion options have been identified for this study:

- Option 1: Upgrade and Expand Existing Otterbein Sanitary Sewer Pumping Station without Emergency Storage Tank – onsite
- Option 2: Upgrade and Expand Existing Sanitary Sewer Pumping Station with new Emergency Storage Tank – onsite and adjacent site
- Option 3: Upgrade and Expand Existing Sanitary Sewer Pumping Station with new Emergency Storage Tank – onsite and private property
- Option 4: Extend sewers to new Sanitary Sewer Pumping Station with Emergency Storage Tank – private property

6.2 Approach to Sanitary Sewer Pumping Station Siting Options

Potential sites for a new sanitary sewage pumping station and/or emergency storage tank were reviewed with the City in developing possible alternatives for further review. Candidate sites were required to accommodate the structures along with ancillary works and be in close proximity to the existing station to avoid the need for repumping (i.e., downgradient to the end point of the collection system). This resulted in two possible geographic areas – the existing and adjacent municipal property and private property located to the south as captured in in the options identified in Section 6.1. The alternatives were further delineated to include consideration for an emergency storage tank to separately evaluate the additional land requirements and associated cost.

6.3 Evaluation Criteria and Methodology

To identify the preliminary recommended preferred solution, criteria (Table 6-1) have been developed to evaluate the alternative solutions.
### Table 6-1: Evaluation Criteria

<table>
<thead>
<tr>
<th>Category</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Use</td>
<td>- Potential effects on existing or approved/planned land uses&lt;br&gt;- Potential for conforming with provincial and municipal plans and policies&lt;br&gt;- Anticipated Site Plan approval and land acquisition requirements</td>
</tr>
<tr>
<td>Technical</td>
<td>- Constructability&lt;br&gt;- Impact on operations and maintenance&lt;br&gt;- Access and maintenance&lt;br&gt;- Future infrastructure coordination opportunities or implementation risks&lt;br&gt;- Traffic impacts during construction, including expected lane/sidewalk closures and disruption to public transit</td>
</tr>
<tr>
<td>Natural Environment</td>
<td>- Potential effects on terrestrial habitat and species&lt;br&gt;- Potential effects on aquatic habitat and species&lt;br&gt;- Potential effects on species at risk and their habitat&lt;br&gt;- Potential effects on surface and groundwater&lt;br&gt;- Potential to encounter soil and water contamination&lt;br&gt;- Anticipated environmental permitting and approval considerations</td>
</tr>
<tr>
<td>Socio-Economic Environment</td>
<td>- Disruption to residences, institutions, businesses, and recreational facilities during construction (noise, air, vibration, access)</td>
</tr>
<tr>
<td>Climate Change</td>
<td>- Potential carbon footprint (e.g., energy usage, use of construction materials, construction methods and operations).&lt;br&gt;- Potential resilience to extreme weather events</td>
</tr>
<tr>
<td>Cultural Environment</td>
<td>- Potential effects on archaeological resources&lt;br&gt;- Potential effects on built heritage resources and cultural heritage landscapes</td>
</tr>
<tr>
<td>Cost</td>
<td>- Cost of construction, including property acquisition&lt;br&gt;- Cost of operations and maintenance</td>
</tr>
</tbody>
</table>

A comparative evaluation was completed for each project component using the noted criteria. Alternatives were rated based on their potential constraints relative to the other alternatives as follows:

- High Constraints (Less Preferred)
- Medium Constraints (Moderately Preferred)
- Low Constraints (More Preferred)

The evaluation was completed using professional judgement and was informed through the existing conditions (Section 3). Input solicited from the public, agencies, stakeholders and Indigenous Communities was also considered and incorporated, as applicable.
6.4 Evaluation of Sanitary Sewer Pumping Station Upgrade and Expansion Options

Table 6-2 details the comparative evaluation for Options 1, 2, 3 and 4. The Sanitary Sewer Pumping Station Upgrade and Expansion siting options are conceptually shown in Figure 6-1.
Table 6-2: Evaluation of Alternative Upgrade and Expansion Options

<table>
<thead>
<tr>
<th>Category</th>
<th>Option 1: Upgrade and Expand Existing SSPS without EST – onsite</th>
<th>Option 2: Upgrade and Expand Existing SSPS with new EST – on-site and adjacent site</th>
<th>Option 3: Upgrade and Expand Existing SSPS with new EST – on-site and private property</th>
<th>Option 4: Extend sewers to new SSPS with EST – private property</th>
</tr>
</thead>
<tbody>
<tr>
<td>Details</td>
<td>Upgrade pumps, piping, and associated electrical and instrument components</td>
<td>Upgrade pumps, piping, and associated electrical and instrument components</td>
<td>Construct new sewer to/from existing SSPS to new EST</td>
<td>Extend existing gravity sewer to new SSPS site with EST. Construct new forcemain Overflow to Grand River</td>
</tr>
<tr>
<td>Land Use</td>
<td>No potential effects on existing or approved/planned land uses.</td>
<td>No potential effects on existing or approved/planned land use</td>
<td>No potential effects on existing or approved/planned land use</td>
<td>Use of this property impacts potential for alternate uses Use of this property impacts potential for alternate uses</td>
</tr>
<tr>
<td>Land Use</td>
<td>Proposed upgrades and expansion conforms with approved plans and policies Provides additional capacity for future community growth</td>
<td>Proposed upgrades and expansion conforms with approved plans and policies Provides additional capacity for future community growth and improved service to existing community through provision of emergency storage</td>
<td>Proposed upgrades and expansion conforms with approved plans and policies Provides additional capacity for future community growth and improved service to existing community through provision of emergency storage</td>
<td>Proposed new SSPS conforms with approved plans and policies Provides additional capacity for future community growth and improved service to existing community through provision of emergency storage</td>
</tr>
<tr>
<td>Land Use Evaluation</td>
<td>Low Constraints (More Preferred)</td>
<td>Low Constraints (More Preferred)</td>
<td>Medium Constraints (Moderately Preferred)</td>
<td>High Constraints (Less Preferred)</td>
</tr>
<tr>
<td>Ranking</td>
<td>No Site Plan approval required No land acquisition required</td>
<td>Site Plan approval may be required No land acquisition required</td>
<td>Site Plan approval required Requires land acquisition</td>
<td>Site Plan approval required for a new SSPS with EST Requires land acquisition</td>
</tr>
<tr>
<td>Technical Environment</td>
<td>Constructability Will not meet City’s standards for emergency storage/overflow requirements Requirement to maintain pumping via bypass pumping; upgrades to process, civil, mechanical, electrical, and instrumentation will require scheduling</td>
<td>Can meet the City’s standards for emergency storage/overflow requirements Requirement to maintain pumping via bypass pumping; upgrades to process, civil, mechanical, electrical, and instrumentation will require scheduling</td>
<td>Requires EST at greater depth of excavation and sewer to convey to this location and back Need to intercept and extend gravity sewer; new overflow Private property has concerns with slope erosion</td>
<td>Requires wetwell and EST at greater depth of excavation to convey to this location Need to intercept and extend gravity sewer; new forcemain connection; new overflow Construction more readily accommodated by constructing entirely in new location Private property has concerns with slope erosion</td>
</tr>
<tr>
<td>Technical Environment</td>
<td>Impact on operations and maintenance Expanded facility will address operations and maintenance issues and existing deficiencies</td>
<td>Expanded facility will address operations and maintenance issues and existing deficiencies</td>
<td>Additional operations and maintenance related to two separate facilities and additional gravity sewer length</td>
<td>Additional operations and maintenance related to additional gravity sewer length</td>
</tr>
<tr>
<td>Technical Environment</td>
<td>Access and maintenance Provides for good access Upgrade and expansion of existing Otterbein SSPS; limited need for significant maintenance in short term</td>
<td>Provides for good access Upgrade and expansion of existing Otterbein SSPS with new EST; limited need for significant maintenance in short term</td>
<td>Provides for good access Upgrade and expansion of existing Otterbein SSPS with new EST; limited need for significant maintenance in short term</td>
<td>Provides for good access New SSPS and EST; limited need for significant maintenance in short term</td>
</tr>
<tr>
<td>Category</td>
<td>Criteria</td>
<td>Option 1: Upgrade and Expand Existing SSPS without EST – onsite</td>
<td>Option 2: Upgrade and Expand Existing SSPS with new EST – onsite and adjacent site</td>
<td>Option 3: Upgrade and Expand Existing SSPS with new EST – onsite and private property</td>
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<td>--------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Technical Environment</td>
<td>Future infrastructure coordination opportunities or implementation risks</td>
<td>No infrastructure coordination opportunities identified</td>
<td>No infrastructure coordination opportunities identified</td>
<td>Requires coordination with future extension of Ottawa Street North</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Implementation risks related to maintaining pumping via bypass pumping</td>
<td>Implementation risks related to maintaining pumping via bypass pumping</td>
<td>Implementation risks related to maintaining existing Otterbein SSPS during tie-ins to new EST</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Less extensive construction (upgrades to Otterbein SSPS) requiring less time</td>
<td>Less extensive construction (upgrades to Otterbein SSPS and new EST) requiring less time</td>
<td>More extensive below grade infrastructure installation with new EST and sewer; risk that buried conditions may impact schedule and cost</td>
</tr>
<tr>
<td>Technical Environment</td>
<td>Implementation timing-ability to meet fast in-service date.</td>
<td>No traffic impacts anticipated during construction</td>
<td>No traffic impacts anticipated during construction</td>
<td>More time anticipated to be required to accommodate more extensive construction (emergency storage tank and new sewer)</td>
</tr>
<tr>
<td>Technical Environment</td>
<td>Traffic impacts during construction, including expected lane/sidewalk closures and disruption to public transit.</td>
<td>Potential for traffic impacts anticipated during construction with construction of new sewer in right-of-way</td>
<td>Potential for traffic impacts anticipated during construction with construction of new sewer in right-of-way</td>
<td>Potential for traffic impacts anticipated during construction with extension of gravity sewer and forcemain</td>
</tr>
<tr>
<td>Technical Environment Evaluation Ranking</td>
<td>-</td>
<td>Medium Constraints (Moderately Preferred)</td>
<td>Low Constraints (More Preferred)</td>
<td>High Constraints (Less Preferred)</td>
</tr>
<tr>
<td>Natural Environment</td>
<td>Potential effects on terrestrial/aquatic habitat and species.</td>
<td>No potential for effects to aquatic habitat</td>
<td>Low potential for effects to aquatic habitat</td>
<td>No potential for effects to aquatic habitat</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low potential for effects to natural environment - potential tree and vegetation removal</td>
<td>Low potential for effects to natural environment - potential tree and vegetation removal</td>
<td>Low potential for effects to natural environment - potential tree and vegetation removal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Existing SSPS property consists primarily of manicured open space and some trees.</td>
<td>Existing SSPS property and adjacent site consists primarily of mowed lawn and planted Norway spruce trees.</td>
<td>New EST is adjacent to woodland and wetland vegetation communities. The proposed location is also within a valley slope and erosion hazard area associated with the Grand River and within the GRCA Regulation Limit. A watercourse is also present at the north end of this location</td>
</tr>
<tr>
<td>Category</td>
<td>Criteria</td>
<td>Option 1: Upgrade and Expand Existing SSPS without EST – onsite</td>
<td>Option 2: Upgrade and Expand Existing SSPS with new EST – onsite and adjacent site</td>
<td>Option 3: Upgrade and Expand Existing SSPS with new EST – onsite and private property</td>
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<td>-----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Natural Environment</td>
<td>Potential effects on species at risk (SAR) and SAR habitat.</td>
<td>• No potential to effect SAR or SAR habitat on the existing property</td>
<td>• No potential to effect SAR or SAR habitat on the existing property</td>
<td>• No potential to impact SAR or SAR habitat within the CUM1-1 vegetation community.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Low potential to impact SAR or SAR habitat in the nearby riparian areas within Kolb Creek</td>
<td>• Low potential to impact SAR or SAR habitat in the nearby riparian areas within Kolb Creek</td>
<td>• Low to medium potential to impact SAR or SAR habitat within the CUM1-1 vegetation community.</td>
</tr>
<tr>
<td>Natural Environment</td>
<td>Potential to encounter soil and water contamination and waste disposal.</td>
<td>• Low potential to encounter soil and water contamination – to be confirmed during geotechnical investigation</td>
<td>• Low potential to encounter soil and water contamination – to be confirmed during geotechnical investigation</td>
<td>• Low potential to encounter soil and water contamination – to be confirmed during geotechnical investigation</td>
</tr>
<tr>
<td>Natural Environment</td>
<td>Anticipated environmental permitting and approval considerations.</td>
<td>• Located in GRCA Regulation Limits</td>
<td>• Located in GRCA Regulation Limits</td>
<td>• Located in GRCA Regulation Limits</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• No environmental permitting anticipated for the work on Otterbein Rd SSPS property</td>
<td>• GRCA permit may be required for overflow to Grand River</td>
<td>• GRCA permit may be required for overflow to Grand River</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Authorization under the Endangered Species Act, 2007 may be required for the following SAR if habitat identified within the CUM1-1 (Dry - Moist Old Field Meadow Type) community cannot be avoided with regards to the overflow connection:</td>
<td>• Authorization under the Endangered Species Act, 2007 may be required for the following SAR if habitat identified within the CUM1-1 (Dry - Moist Old Field Meadow Type) community cannot be avoided:</td>
<td>• Authorization under the Endangered Species Act, 2007 may be required for the following SAR if habitat identified within the CUM1-1 (Dry - Moist Old Field Meadow Type) community cannot be avoided:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Bobolink</td>
<td>• Bobolink</td>
<td>• Bobolink</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Eastern Meadowlark</td>
<td>• Eastern Meadowlark</td>
<td>• Eastern Meadowlark</td>
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<tr>
<td></td>
<td></td>
<td>• Barn Swallow</td>
<td>• Barn Swallow</td>
<td>• Barn Swallow</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Monarch</td>
<td>• Monarch</td>
<td>• Monarch</td>
</tr>
</tbody>
</table>

**Option 1:**
- Located in GRCA Regulation Limits
- No environmental permitting anticipated for the work on Otterbein Rd SSPS property
- GRCA permit may be required for overflow to Grand River
- Authorization under the Endangered Species Act, 2007 may be required for the following SAR if habitat identified within the CUM1-1 (Dry - Moist Old Field Meadow Type) community cannot be avoided with regards to the overflow connection:
  - Bobolink
  - Eastern Meadowlark
  - Barn Swallow
  - Monarch

**Option 2:**
- Located in GRCA Regulation Limits
- GRCA permit may be required for the work on Otterbein Rd SSPS and adjacent property, including emergency overflow connection
- May require a tree inventory to document required removals based on the construction footprint and for use in consideration of replacement plantings
- Emergency overflow may potentially traverse CUM1-1 directly south of the Otterbein Rd SSPS
- Authorization under the Endangered Species Act, 2007 may be required for the following SAR if habitat identified within the CUM1-1 (Dry - Moist Old Field Meadow Type) community cannot be avoided:
  - Bobolink
  - Eastern Meadowlark
  - Barn Swallow
  - Bank Swallow
  - Monarch
- Requires a detailed environmental monitoring plan

**Option 3:**
- Located in GRCA Regulation Limits
- GRCA permit may be required for the work on Otterbein Rd SSPS and adjacent property, including emergency overflow connection
- May require a tree inventory to document required removals based on the construction footprint and for use in consideration of replacement plantings
- Due to the proximity of natural heritage features, there is potential for the SAR and SOCC and their habitat to be present, as well as the potential for impacts to these species and their habitat to occur as a result of development. Target species surveys may be required
- Authorization under the Endangered Species Act, 2007 may be required for the following SAR if habitat identified within the CUM1-1 (Dry - Moist Old Field Meadow Type) community cannot be avoided:
  - Bobolink
  - Eastern Meadowlark
  - Barn Swallow
  - Bank Swallow
  - Monarch
- Requires a detailed environmental monitoring plan

**Option 4:**
- Located in GRCA Regulation Limits
- Permit will be required from the GRCA
- May require a tree inventory to document required removals based on the construction footprint and for use in consideration of replacement plantings
- Due to the proximity of natural heritage features, there is potential for the SAR and SOCC and their habitat to be present, as well as the potential for impacts to these species and their habitat to occur as a result of development. Target species surveys may be required
- Authorization under the Endangered Species Act, 2007 may be required for the following SAR if habitat identified within the CUM1-1 (Dry - Moist Old Field Meadow Type) community cannot be avoided:
  - Bobolink
  - Eastern Meadowlark
  - Barn Swallow
  - Bank Swallow
  - Monarch
- Requires a detailed environmental monitoring plan

- Option 2 is the preferred solution.
- Option 3 may potentially require a tree inventory.
- Option 4 may potentially require a detailed environmental monitoring plan.
<table>
<thead>
<tr>
<th>Category</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Environment</td>
<td>Potential effects on surface water and groundwater.</td>
</tr>
<tr>
<td>Natural Environment Evaluation</td>
<td>Low Constraints (More Preferred)</td>
</tr>
<tr>
<td>Socio-Economic Environment</td>
<td>Disruption to residences, institutions, businesses and recreational facilities during construction (noise, air, vibration, access)</td>
</tr>
<tr>
<td>Socio-Economic Evaluation</td>
<td>Low Constraints (More Preferred)</td>
</tr>
<tr>
<td>Climate Change</td>
<td>Potential carbon footprint (e.g., energy usage, use of construction materials, construction methods and operations)</td>
</tr>
<tr>
<td>Climate Change</td>
<td>Proposed works are within regulated floodplain (poses risk of flooding)</td>
</tr>
<tr>
<td>Cultural Environment</td>
<td>Potential effects on archaeological resources</td>
</tr>
<tr>
<td>Cultural Environment Evaluation</td>
<td>Stage 2 archaeological assessment is required for Option 3 for all areas of potentially undisturbed land within the construction footprint</td>
</tr>
</tbody>
</table>

## Option 1: Upgrade and Expand Existing SSPS without EST – onsite

- No impacts on surface water anticipated
- Located within WHPA-Wellhead Protection Area-B
- Potential for dewatering during construction – to be confirmed during hydrogeological investigation
- Located within WHPA-Wellhead Protection Area-B
- Potential for dewatering during construction – to be confirmed during hydrogeological investigation
- Located within WHPA-Wellhead Protection Area-B

## Option 2: Upgrade and Expand Existing SSPS with new EST – onsite and adjacent site

- Potential for dewatering during construction – to be confirmed during hydrogeological investigation
- Located within WHPA-Wellhead Protection Area-B
- Potential for dewatering during construction – to be confirmed during hydrogeological investigation
- Located within WHPA-Wellhead Protection Area-B
- Potential for dewatering during construction – to be confirmed during hydrogeological investigation
- Located within WHPA-Wellhead Protection Area-B

## Option 3: Upgrade and Expand Existing SSPS with new EST – onsite and private property

- Temporary disruptions (noise, potential lane closures) to surrounding residents anticipated during construction of a new SSPS and extension of gravity sewer and forcemain
- No disruptions to residential accesses
- Potential for temporary disruption to Grand Valley Trail and Walter Bean Grand River Trail users
- Potential for temporary disruption to Grand Valley Trail and Walter Bean Grand River Trail users
- Temporary disruptions (noise, potential lane closures) to surrounding residents anticipated during construction of a new SSPS and extension of gravity sewer and forcemain
- No disruptions to residential accesses
- Potential for temporary disruption to Grand Valley Trail and Walter Bean Grand River Trail users
- Potential for temporary disruption to Grand Valley Trail and Walter Bean Grand River Trail users

## Option 4: Extend sewers to new SSPS with EST – private property

- Temporary disruptions (noise, potential lane closures) to surrounding residents anticipated during construction of a new SSPS and extension of gravity sewer and forcemain
- No disruptions to residential accesses
- Potential for temporary disruption to Grand Valley Trail and Walter Bean Grand River Trail users
- Potential for temporary disruption to Grand Valley Trail and Walter Bean Grand River Trail users
- Temporary disruptions (noise, potential lane closures) to surrounding residents anticipated during construction of a new SSPS and extension of gravity sewer and forcemain
- No disruptions to residential accesses
- Potential for temporary disruption to Grand Valley Trail and Walter Bean Grand River Trail users
- Potential for temporary disruption to Grand Valley Trail and Walter Bean Grand River Trail users
<table>
<thead>
<tr>
<th>Category</th>
<th>Criteria</th>
<th>Option 1: Upgrade and Expand Existing SSPS without EST – onsite</th>
<th>Option 2: Upgrade and Expand Existing SSPS with new EST – onsite and adjacent site</th>
<th>Option 3: Upgrade and Expand Existing SSPS with new EST – onsite and private property</th>
<th>Option 4: Extend sewers to new SSPS with EST – private property</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultural Environment</td>
<td>Potential for disruption of built heritage resources and cultural heritage landscapes</td>
<td>￭ There is no potential for disruption to built heritage resources or cultural heritage landscapes ￭ The existing SSPS does not constitute as a built heritage resource as it is not over 40 years of age and does not have design/physical value, associative value or contextual value</td>
<td>￭ There is no potential for disruption to built heritage resources or cultural heritage landscapes ￭ The existing SSPS does not constitute as a built heritage resource as it is not over 40 years of age and does not have design/physical value, associative value or contextual value</td>
<td>￭ Low potential for disruption to built heritage resources and cultural heritage landscapes</td>
<td>￭ Low potential for disruption to built heritage resources and cultural heritage landscapes</td>
</tr>
<tr>
<td>Cultural Environment</td>
<td>◼ Potential for disruption of built heritage resources and cultural heritage landscapes</td>
<td>◼ There is no potential for disruption to built heritage resources or cultural heritage landscapes</td>
<td>◼ There is no potential for disruption to built heritage resources or cultural heritage landscapes</td>
<td>◼ Low potential for disruption to built heritage resources and cultural heritage landscapes</td>
<td>◼ Low potential for disruption to built heritage resources and cultural heritage landscapes</td>
</tr>
<tr>
<td>Cultural Environment</td>
<td>Evaluation Ranking</td>
<td>Low Constraints (More Preferred)</td>
<td>Low Constraints (More Preferred)</td>
<td>Medium Constraints (Moderately Preferred)</td>
<td>Medium Constraints (Moderately Preferred)</td>
</tr>
<tr>
<td>Cost</td>
<td>Cost of construction, including property acquisition</td>
<td>Lowest cost of all Options: $1,950,000</td>
<td>Second lowest cost of all options: $3,670,000</td>
<td>Second highest cost to address deficiencies and construct new EST $4,260,000</td>
<td>Highest cost of all options to construct new SSPS and EST: $8,800,000</td>
</tr>
<tr>
<td>Cost</td>
<td>◼ Cost of operation / maintenance</td>
<td>Same as existing</td>
<td>Slight increase to Option 1 with maintenance of EST</td>
<td>Increased with 2 facilities in separate locations and additional sewer</td>
<td>Similar to Option 2</td>
</tr>
<tr>
<td>Cost Evaluation Ranking</td>
<td>◼ Cost of operation / maintenance</td>
<td>◼ Same as existing</td>
<td>◼ Slight increase to Option 1 with maintenance of EST</td>
<td>◼ Increased with 2 facilities in separate locations and additional sewer</td>
<td>◼ Similar to Option 2</td>
</tr>
<tr>
<td>Preferred Alternative?</td>
<td>◼ No</td>
<td>◼ Yes</td>
<td>◼ No</td>
<td>◼ No</td>
<td>◼ No</td>
</tr>
</tbody>
</table>

Note: “Do Nothing” was not evaluated in detail as it does not address the problem or opportunity statement
6.5 Preferred Solution and Rationale

The preferred solution is Option 2: Upgrade and Expand Existing Sanitary Sewer Pumping Station with new Emergency Storage Tank – onsite and adjacent site. The rationale for selecting Option 2, as conceptually shown in Figure 6-2, as the preliminary preferred solution is based on a combination of the following key factors:

- Requires minimal tree and vegetation removal and has a smaller carbon footprint due to less construction materials
- Can meet the City's standards for emergency overflow requirements
- An Emergency Storage Tank mitigates spill & basement flooding
- The existing Otterbein Sanitary Sewer Pumping Station site and adjacent property are disturbed from an archaeological perspective (no further archaeological work anticipated). The associated outfall routing/connection will be confirmed during preliminary design. Once the area of project impacts has been determined, only the undisturbed land that will be impacted, if any, will require a Stage 2 archaeological assessment (and further assessments, as required) during the early stages of detailed design prior to any ground-disturbing construction activities.
- Lower overall construction cost without the need to purchase additional property
Figure 6-2: Preferred Solution

Option 2: Upgrade & expand existing SSPS with new Emergency Storage Tank (EST) - onsite & adjacent site
7. **Preferred Undertaking – Project Description**

7.1 **Design Considerations**

7.1.1 **Pumping Station**

Option 2 involves upgrades to the existing Otterbein Sanitary Sewer Pumping Station including:

- New pumps to provide firm capacity of 165 L/s
- Upgrades to piping and valves to address existing condition
- Standby power replacement
- New grinders on incoming sewer line
- Re-implementation of odour control management system
- Health and safety upgrades
- Electrical, instrumentation and SCADA upgrades; addition of air conditioning unit; new wet well ventilation fan
- Structural and building repairs; aesthetic improvements
- Site improvements
- New emergency storage tank on adjacent property
- Relocation of existing stormwater infrastructure on adjacent property
- Emergency overflow connection to existing stormwater pipe

The location of the proposed emergency storage tank and the two potential overflow connections being considered are conceptually shown in **Figure 7-1**.

7.1.2 **Emergency Storage Tank**

The City of Kitchener Design Standards state that the emergency response time in the event of an overflow is a minimum of one hour at peak flow. Option 2 includes the addition of emergency storage on the site adjacent to the Otterbein Sanitary Sewer Pumping Station property which will provide, at minimum, one hour of storage at the peak flow of 165 L/s. The exact location and tank dimensions will be determined during preliminary design.
Figure 7-1: Proposed Otterbein Sanitary Sewer Pumping Station Site Layout
7.1.3 Emergency Overflow

Ontario Design Guidelines for Sewage Pumping Stations suggest provision of a controlled, high-level wet well overflow to supplement alarm systems and emergency power generation for use during possible periods of extensive power outages, mandatory power reductions, or uncontrollable emergency conditions. It also recommends that where a high level overflow is utilized, consideration should also be given to the installation of storage/detention tanks.

Therefore, in addition to the emergency storage tank, a high level overflow will be installed at the station and is anticipated to only be used as a last resort in unanticipated and extreme emergency conditions. It is noted that there are several intermediary measures in place to help prevent the possibility of overflows; these include:

- Level transmitters with alarms at high levels; as well as backup devices to the primary devices
- Pumping equipment redundancy to accommodate equipment failure
- Standby power to address any electrical outages – which are maintained and exercised on a regular basis
- Operator response to implement bypass pumping to the forcemain; or alternatively hauling sewage to other facilities

Therefore, implementation of a high level overflow is intended as a last resort to prevent sewage backups in the system (and spills to basements) as well as spills to the environment. The local (adjacent site) stormwater outfall discharges to the Kolb Creek system. It was determined preferable to connect the overflow to the stormwater system on Otterbein Road that discharges directly to the Grand River. Figure 7-1 shows the preferred alignment for the proposed overflow pipe, as well as a possible alternative route. The point of connection to this system will be confirmed during preliminary design.

7.1.4 Property and Easement Requirements

The Otterbein Sanitary Sewer Pumping Station and adjacent property on which the Emergency storage is proposed are both City-owned lands.
7.1.5 Climate Change Considerations

Climate change considerations included ensuring that the station upgrades include resiliency to more extreme storm events. These include:

- Implementation of emergency storage
- Installation of new standby power to support the higher capacity pumps and support the station’s ability to maintain service under power outages
- Per Ontario Design Guidelines for Sewage Pumping Stations, ensuring pumping station structures and electrical and mechanical equipment are protected from physical damage by the 100-year design flood event. Sewage pumping stations should remain fully operational and accessible during the 25-year flood event.

In addition, climate mitigation includes reduction of carbon emissions both during construction and over the long-term operation of the station; these considerations include:

- Maintenance of construction equipment to ensure exhaust emissions are within industry standards
- Design of pumping units for optimal energy usage
- Use of energy efficiency features in the station (e.g., LED lighting fixtures)

7.2 Cost Estimate

The preliminary estimated cost of the preferred undertaking is $6.4M. A more detailed breakdown is provided in Table 7-1.

<table>
<thead>
<tr>
<th>Component</th>
<th>Amount</th>
<th>Unit</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Replace the existing pumps with three new pumps for future flows</td>
<td>3</td>
<td>EA</td>
<td>$288,600</td>
</tr>
<tr>
<td>VFDs</td>
<td>3</td>
<td>EA</td>
<td>$124,800</td>
</tr>
<tr>
<td>Process upgrades (gate valves/piping)</td>
<td>1</td>
<td>LS</td>
<td>$57,200</td>
</tr>
<tr>
<td>Grinder in inlet sewer</td>
<td>1</td>
<td>LS</td>
<td>$825,500</td>
</tr>
<tr>
<td>Instrumentation</td>
<td>1</td>
<td>LS</td>
<td>$11,700</td>
</tr>
<tr>
<td>MCC &amp; electrical</td>
<td>1</td>
<td>EA</td>
<td>$222,300</td>
</tr>
<tr>
<td>Component</td>
<td>Amount</td>
<td>Unit</td>
<td>Total</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>--------</td>
<td>------</td>
<td>-----------</td>
</tr>
<tr>
<td>Replace the existing generator and diesel tank, and upgrade control panel to digital system</td>
<td>1</td>
<td>LS</td>
<td>$275,600</td>
</tr>
<tr>
<td>Building</td>
<td>1</td>
<td>LS</td>
<td>$59,800</td>
</tr>
<tr>
<td>HVAC</td>
<td>1</td>
<td>LS</td>
<td>$117,000</td>
</tr>
<tr>
<td>Install overflow</td>
<td>1</td>
<td>EA</td>
<td>$54,000</td>
</tr>
<tr>
<td>Landscaping - fencing, asphalt</td>
<td>1</td>
<td>EA</td>
<td>$110,500</td>
</tr>
<tr>
<td>Construct Emergency storage tank</td>
<td>1</td>
<td>LS</td>
<td>$1,471,000</td>
</tr>
<tr>
<td>Relocate existing infiltration trench</td>
<td>1</td>
<td>LS</td>
<td>$30,000</td>
</tr>
<tr>
<td>Relocate Safety Kleen Inlet Sewer</td>
<td>1</td>
<td>LS</td>
<td>$15,000</td>
</tr>
<tr>
<td>Subtotal</td>
<td>-</td>
<td>-</td>
<td>$3,663,000</td>
</tr>
<tr>
<td>Temporary pumping (contingency)</td>
<td>-</td>
<td>-</td>
<td>$200,000</td>
</tr>
<tr>
<td>Mobilization / Demobilization</td>
<td>1%</td>
<td>-</td>
<td>$36,630</td>
</tr>
<tr>
<td>Insurance</td>
<td>2.50%</td>
<td>-</td>
<td>$91,575</td>
</tr>
<tr>
<td>Subtotal</td>
<td>-</td>
<td>-</td>
<td>$3,991,000</td>
</tr>
<tr>
<td>Engineering</td>
<td>20%</td>
<td>-</td>
<td>$798,000</td>
</tr>
<tr>
<td>Contractor O/H and profit</td>
<td>10%</td>
<td>-</td>
<td>$399,000</td>
</tr>
<tr>
<td>Contingency</td>
<td>30%</td>
<td>-</td>
<td>$1,197,000</td>
</tr>
<tr>
<td>Total</td>
<td>-</td>
<td>-</td>
<td>$6,385,000</td>
</tr>
</tbody>
</table>

### 7.3 Approvals and Permits

The anticipated permits and approvals required prior to construction are summarized in Table 7-2. Permitting requirements will be confirmed during the preliminary and detailed design phases of the Project and where required, will require additional consultation with the applicable regulatory agencies.
Table 7-2: Anticipated Permits and Approvals

<table>
<thead>
<tr>
<th>Permit / Approval</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Plan approval and a building permit.</td>
<td>Detailed Design</td>
</tr>
<tr>
<td>Ministry of Environment, Conservation and Parks Environmental Compliance Approval</td>
<td>Detailed Design</td>
</tr>
<tr>
<td>A Permit to Take Water under the Ontario Water Resources Act (OWRA) may be required. A Permit to Take Water is required for any water takings that exceed 50,000 Litres per 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 Environmental Activity and Sector Registry (EASR) instead of a Permit to Take Water.</td>
<td>Detailed Design</td>
</tr>
<tr>
<td>Contravention of the Migratory Birds Convention Act, 1994 is not anticipated provided any vegetation removal occurs outside of the breeding bird season (April 1 to August 31).</td>
<td>Not applicable</td>
</tr>
<tr>
<td>There are no permits to be obtained under the Provincial Policy Statement, 2020; however, mitigation measures and best management practices will reduce the likelihood of, or minimize effects on identified Significant Wildlife Habitat.</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>
| Authorization under the Endangered Species Act, 2007 may be required for the following Species at Risk if habitat identified within the CUM1-1 community cannot be avoided:  
  - Bobolink  
  - Eastern Meadowlark  
  - Barn Swallow  
  - Bank Swallow  
  - Monarch  
| A Permit under Ontario Regulation 150/06 is required as the proposed works fall within Grand River Conservation Authority regulated area.                               | Detailed Design |

7.4 Additional Studies and Commitments

The following additional future work should be completed during the preliminary or detailed design stage for the preferred option:

- Development of an Erosion and Sediment Control Plan should be prepared during Detailed Design for the works which includes required monitoring of the protective measures.
- Completion of a tree inventory to document required removals based on the construction footprint and for use in consideration of replacement plantings, if any.
Completion of a Stage 2 archaeological assessment (and any further assessments), if required. Indigenous Communities interested in participating should be engaged prior to undertaking any future archaeological assessments.

Consult with Grand River Conservation Authority and Ministry of the Environment, Conservation and Parks regarding Source Water Protection requirements, as needed. Preliminary comments have been received and reviewed from the Region of Waterloo.

7.5 Preliminary Project Schedule

Following completion and approval of this Municipal Class Environmental Assessment study, the City will complete the preliminary design and detailed design phases of the Project, including securing permits and approvals. This will take place in 2023-2024.

Construction is to commence in 2025 with the upgraded Otterbein station anticipated to be in operation by late 2025 / early 2026.

Please note that timing is subject to Council approval and funding.
8. Potential Environmental Effects, Mitigation Measures and Commitments

8.1 Potential Effects and Mitigation Measures

Potential effects related to construction of the proposed upgrade and expansion of the existing Otterbein Sanitary Sewer Pumping Station with new emergency storage tank – onsite and adjacent site (Option 2) will be limited to the duration and location of construction. Based on the works associated with Option 2, and proposed construction techniques, construction is expected to have varied environmental effects. By incorporating proper best management practices and construction techniques, adverse construction related effects can be minimized. To address potential effects, the following approach was taken:

- **Avoidance:** The priority is to prevent the occurrence of negative or adverse environmental effects associated with construction of Option 2.

- **Mitigation:** Where adverse environmental effects cannot be avoided, it will be necessary to develop appropriate measures to eliminate, or reduce to some degree, the negative effects associated with construction of Option 2.

- **Compensation:** In situations where appropriate mitigation measures are not available, or significant net adverse effects will remain following the application of mitigation measures, compensation measures may be required to counterbalance the negative effect through replacement in kind, or provision of a substitute or reimbursement. Compensation is not anticipated for the preferred undertaking.

Based on the project description for the Option 2, as described in Section 7, avoidance measures can be applied in many cases, thereby reducing the extent of potential adverse environmental effects requiring the application of mitigation measures. The mitigation measures summarized below (Table 8-1) are recommended to ensure that any short-term disturbances are managed efficiently through a variety of measures. These measures will be further confirmed and refined during the preliminary and detailed design phases of the Project.
Table 8-1: Potential Construction Related Impacts and Mitigation Measures

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Potential Impacts</th>
<th>Potential Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Utilities and Infrastructure</td>
<td>Potential need to relocate or protect existing utilities and infrastructure.</td>
<td>Preliminary and detailed design to confirm clear zones to avoid conflicts.</td>
</tr>
<tr>
<td>Control of Inadvertent Spills</td>
<td>Contamination of soils through spills and leaks.</td>
<td>All waste generated during construction must be disposed of in accordance with ministry requirements.</td>
</tr>
<tr>
<td>Vehicular Traffic, Travelling Public and Property Access</td>
<td>Traffic disruption. Traffic and access to properties and business during construction</td>
<td>During construction, local residential traffic may be temporarily disrupted. The following measures will be employed to ensure that impacts are eliminated or minimized: 1. Maintain one open lane of traffic in each direction throughout the construction process, wherever possible. 2. Prepare and follow a Construction Traffic Management Plan and provide advanced notification signage. 3. Temporary access will be made available to residents/businesses if the access is severed for an extended period. Directly impacted property owners should be individually notified in advance of the construction schedule/duration. Regular community project updates, including local community design review meetings (post Municipal Class Environmental Assessment process). Provide construction Project Manager contact information.</td>
</tr>
<tr>
<td>Noise, Vibration, Dust, Odour</td>
<td>Dust emissions and vibration during construction.</td>
<td>Construction operations will be restricted to the day shift (wherever possible). In addition, the Contractor will be required to adhere to local noise by-laws. Employ Best Management Practices, including engine maintenance and use of dust suppressors. Re-implementation of odour control management system.</td>
</tr>
<tr>
<td>Climate Change</td>
<td>Carbon footprint and resilience to extreme weather events.</td>
<td>To minimize potential effects during construction, the idling of construction equipment will be avoided, and equipment will be in good working order to reduce inefficiencies in the operation of the equipment. The existing Otterbein Sanitary Sewer Pumping Station that is being upgraded and new Emergency Storage Stank are sited outside of the regulated floodplain. The upgrade and expansion should take into consideration key factors and climate change trends such as building to withstand extreme precipitation and extreme heat.</td>
</tr>
<tr>
<td>Source Water Protection</td>
<td>Located within a Wellhead Protection Area B (WHPA-B) with a vulnerability score of 8.</td>
<td>Existing and planned activities associated with the proposed works may require specific risk management measures, which will be confirmed during the preliminary and detailed design phases of the Project. Consult with the Grand River Conservation Authority, Region of Waterloo and Ministry of the Environment, Conservation, and Parks, as required, during the preliminary and detailed design phase of the Project.</td>
</tr>
<tr>
<td>Cultural Heritage Environment</td>
<td>Loss or disruption to archaeological resources.</td>
<td>The existing SSPS site and adjacent site are disturbed as per Figure 3-3 (no further archaeological work anticipated). The outset routing/connection for the preferred solution (Figure 7-1 shows the preferred and alternative alignment) will be confirmed during preliminary design. Once the area of project impacts has been determined, only the undisturbed land that will be impacted; if any, will require a Stage 2 archaeological assessment (and further assessments, as required) during the early stages of detailed design prior to any ground-disturbing construction activities. Although not anticipated at this time, if the Stage 2 archaeological assessment is determined to be required during preliminary design based on the area of project impacts, the City will notify and engage the Indigenous Communities that requested to participate in any future assessments as per Section 9.4. Should archaeological material be encountered during construction, all activities impacting archaeological resources will cease immediately, MHSTCI will be contacted, and a licensed archaeologist will be engaged to carry out an archaeological assessment in accordance with the Ontario Heritage Act and the Standards and Guidelines for Consultant Archaeologists. Further, if human remains are encountered, all activities must cease immediately and the local police as well as the coroner must be contacted.</td>
</tr>
</tbody>
</table>

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Dust Suppressant Treatment
- Dust suppressants during dry periods should be applied to those areas which generate large amounts of dust.
- Restrict earth movement immediately adjacent to woodlands or water features during periods of high dust generation.

Controlled Construction Vehicle Access
- Construction vehicle access should be limited to areas outside of the drip-line of the tree being protected to prevent soil compaction and/or the initiation of soil erosion events.
- Construction vehicle re-fueling stations should be centralized away from vegetation communities and watercourses.
- Construction vehicle access should be limited to existing roadways and construction paths, away from the identified vegetation communities. For areas immediately adjacent to the work limits and vegetation, periodic supervision of the construction is recommended.

Construction Vehicle Re-fueling Stations
- Re-fueling stations should be located within a centralized location on-site a minimum of 30 metres from vegetation communities, and watercourses.
- Re-fueling stations should be constructed in a manner to prevent soil and/or surface and groundwater contamination from any leaks or spills.
- An emergency response kit should be made available at each re-fueling station in case of a spill.
- All on-site crew members operating construction vehicles should be appropriately trained in handling a potential spill and have WHMIS Training.
- All chemical transfer/maintenance should be conducted within the refueling station areas.

Damage to Rooting Zones during Removals
- During grading and construction in areas immediately adjacent to identified vegetation communities and planted trees, roots may be damaged by machinery and soils may be compacted, thereby affecting the trees’ ability to grow and absorb nutrients and water. In order to address root damage, it will be necessary to prune roots of adjacent trees during grading and excavation. To avoid compaction of soils, root zones around trees within natural heritage features will need to be fenced. Most areas will be avoided by restricting construction to areas outside the features.

Wildlife Habitat Protection and Mitigation Measures
- Construction activities within the Study Area have the potential to disturb breeding birds and other resident wildlife within the identified vegetation communities. A certain degree of disturbance can be avoided by the proper scheduling of construction periods.
- Upon the first encounter of any wildlife including SAR (Endangered, Threatened or Special Concern) the following steps are to be taken:
  1. Work in the immediate vicinity of the observation is to come to a stop.
  2. If the animal is uninjured, it should be allowed to leave the work zone under its own power and a record made of the observation.
  3. Should the animal be injured or need assistance removing it from site an Ecologist/Biologist should be contacted immediately.
  4. Ecologist/Biologist will notify the District MNDMNRF Biologist within 48 hours of any observation of Endangered and Threatened species and/or immediately for any species going to a wildlife custodian.
  5. It is not necessary to notify the District MNDMNRF Biologist with observations of Special Concern species (i.e., Snapping Turtle) or general wildlife sightings (i.e., deer, raccoon, etc.).

Breeding Birds and Vegetation Removals
- If removal of vegetation is to occur during the breeding bird window (April 1 to August 31), within simple habitats, the area will be searched by a qualified ecologist for the presence of nesting birds to avoid contravening the Migratory Birds Convention Act (MBCA). Clearing shall only be undertaken if the ecologist is satisfied that there are no breeding/nesting pairs within the affected area.

Construction Mitigation – Noise Disturbance to Resident Wildlife
- Limit construction activity to a period after 7 am and before 7 pm daily.

### Table 8-2: Natural Environment Mitigation Measures

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Potential Mitigation, Compensation</th>
</tr>
</thead>
</table>
| Sediment and Erosion Control Fencing  | - Mitigation measures are recommended to be used for erosion and sediment control to prohibit sediment from entering the identified vegetation communities and watercourses during construction. The primary principles associated with sedimentation and erosion protection measures are to:  
  1. Minimize the duration of soil exposure;  
  2. Retain existing vegetation, where feasible;  
  3. Encourage re-vegetation;  
  4. Divert runoff away from exposed soils;  
  5. Keep runoff velocities low; and  
  6. Trap sediment as close to the source as possible.  
- Details of the type and placement of sediment and erosion control to be used will be outlined in an Erosion and Sediment Control Plan to be drafted during detailed design. |
| Peripheral Vegetation Protection       | - During construction adjacent to the identified vegetation communities, heavy equipment could damage peripheral vegetation from contact, excavation and/or soil compaction. Dust coated vegetation can reduce photosynthesis, increase susceptibility to disease and lead to death. It is anticipated that perimeter plants would be most susceptible to such effects. The following recommendations are made to mitigate these potential impacts.  
  1. Prior to heavy machinery working adjacent to the identified vegetation communities, a fence barrier for tree protection should be installed outside the drip-line of tree identified for protection and is in the vicinity of exposure to damage by machinery. |
| Dust Suppressant Treatment            | - Dust suppressants during dry periods should be applied to those areas which generate large amounts of dust.  
- Restrict earth movement immediately adjacent to woodlands or water features during periods of high dust generation. |
| Controlled Construction Vehicle Access| - Construction vehicle access should be limited to areas outside of the drip-line of the tree being protected to prevent soil compaction and/or the initiation of soil erosion events.  
- Construction vehicle re-fueling stations should be centralized away from vegetation communities and watercourses.  
- Construction vehicle access should be limited to existing roadways and construction paths, away from the identified vegetation communities. For areas immediately adjacent to the work limits and vegetation, periodic supervision of the construction is recommended. |
| Construction Vehicle Re-fueling Stations| - Re-fueling stations should be located within a centralized location on-site a minimum of 30 metres from vegetation communities, and watercourses.  
- Re-fueling stations should be constructed in a manner to prevent soil and/or surface and groundwater contamination from any leaks or spills.  
- An emergency response kit should be made available at each re-fueling station in case of a spill.  
- All on-site crew members operating construction vehicles should be appropriately trained in handling a potential spill and have WHMIS Training.  
- All chemical transfer/maintenance should be conducted within the refueling station areas. |
| Damage to Rooting Zones during Removals| - During grading and construction in areas immediately adjacent to identified vegetation communities and planted trees, roots may be damaged by machinery and soils may be compacted, thereby affecting the trees’ ability to grow and absorb nutrients and water. In order to address root damage, it will be necessary to prune roots of adjacent trees during grading and excavation. To avoid compaction of soils, root zones around trees within natural heritage features will need to be fenced. Most areas will be avoided by restricting construction to areas outside the features. |
| Wildlife Habitat Protection and Mitigation Measures| - Construction activities within the Study Area have the potential to disturb breeding birds and other resident wildlife within the identified vegetation communities. A certain degree of disturbance can be avoided by the proper scheduling of construction periods.  
- Upon the first encounter of any wildlife including SAR (Endangered, Threatened or Special Concern) the following steps are to be taken:  
  1. Work in the immediate vicinity of the observation is to come to a stop.  
  2. If the animal is uninjured, it should be allowed to leave the work zone under its own power and a record made of the observation.  
  3. Should the animal be injured or need assistance removing it from site an Ecologist/Biologist should be contacted immediately.  
  4. Ecologist/Biologist will notify the District MNDMNRF Biologist within 48 hours of any observation of Endangered and Threatened species and/or immediately for any species going to a wildlife custodian.  
  5. It is not necessary to notify the District MNDMNRF Biologist with observations of Special Concern species (i.e., Snapping Turtle) or general wildlife sightings (i.e., deer, raccoon, etc.). |
| Breeding Birds and Vegetation Removals| - If removal of vegetation is to occur during the breeding bird window (April 1 to August 31), within simple habitats, the area will be searched by a qualified ecologist for the presence of nesting birds to avoid contravening the Migratory Birds Convention Act (MBCA). Clearing shall only be undertaken if the ecologist is satisfied that there are no breeding/nesting pairs within the affected area. |
| Construction Mitigation – Noise Disturbance to Resident Wildlife| - Limit construction activity to a period after 7 am and before 7 pm daily. |
8.2 Proposed Construction Monitoring

Contract tender documents will address mitigation in an explicit manner to ensure that compliance is maintained. The provision of an experienced field representative to review construction will ensure that the Project follows contract specifications and does not unnecessarily impact vegetation, the community or aquatic environment.

8.3 Post-Construction Monitoring

Following construction, the operation of the upgraded Otterbein Sanitary Sewer Pumping Station and new emergency storage tank expansion is not expected to result in any negative impacts to the environment. Post construction monitoring will be required following construction to ensure that any disturbances have been properly restored (e.g., grading, seeding, and planting). Post construction monitoring details will be developed during detailed design.
9. Consultation Summary

Several steps have been undertaken to develop awareness of the Project and solicit input in the Municipal Class Environmental Assessment decision-making process, thereby contributing to the study outcome. The following summarizes the public, agency, stakeholder, and Indigenous community consultation activities completed for this study.

9.1 Notifications

9.1.1 Notice of Commencement

The Notice of Commencement was first issued on December 8, 2017 introducing the Municipal Class Environmental Assessment study and included contact information for the City and consultant project managers. The following describes the methods by which the notice was distributed:

- Advertised in the local newspaper
- Published on the City’s project webpage
- Issued to the study’s contact list

Refer to Appendix E for a copy of the Notice of Commencement.

9.1.2 Notice of Public Information Centre

The Notice of Public Information Centre was first issued on April 29, 2022 providing details of the online Public information Centre and included contact information for the City and consultant project managers. The following describes the methods by which the notice was distributed:

- Advertised in the local newspaper on April 29, 2022 and May 13, 2022
- Published on the City’s project webpage
- Issued to the study’s contact list
- Issued to property owners with 120 m of the existing Otterbein Sanitary Sewer Pumping Station

Refer to Appendix E for a copy of the Notice of Public information Centre.
9.1.3 Notice of Completion

The Notice of Completion was first issued on October 7, 2022 and identified the preferred upgrade and expansion option (i.e., Option 2). The notice specified where to access the documentation during the 30-day comment period. The procedure for submitting comments and Section 16 Order requests is also explained in the notice, as well as in Section 2.4 of this report. The following describes the methods by which the notice was distributed:

- Advertised in the local newspaper
- Published on the City’s project webpage
- Issued to the study’s contact list
- Issued to property owners with 120 m of the existing Otterbein Sanitary Sewer Pumping Station

Refer to Appendix E for a copy of the Notice of Completion.

9.2 Public Consultation

9.2.1 Public Information Centre

An online Public Information Centre was held in place of holding an in-person event recognizing the current COVID-19 environment. A copy of the material presented was made available for viewing and comment from May 19, 2022 until June 3, 2022 on the City’s website: kitchener.ca/development-and-construction/infrastructure-projects

The purpose of the online Public information Centre was to:

- Introduce the Otterbein Sanitary Sewer Pumping Station Municipal Class Environmental Assessment study
- Provide an overview of the Municipal Class Environmental Assessment planning process and Study Area
- Present the study’s problem and opportunities and evaluation of alternative Sanitary Sewage Pumping Station Upgrade and Expansion Options, including the preliminary preferred solution
- Explain how potential impacts to the community and environment will be addressed
- Present the Project schedule and next steps
- Gather feedback on the Project, including the preliminary preferred solution
Two comments were submitted to the Study Team in response to the Public Information Centre. The comments were requesting to be added to the contact list and a resident supporting the recommended preferred solution (Option 2).

A resident also cited concerns about the impact of Option 2 expanding on the adjacent site, which is used by members of the local community for social gatherings. The City will meet with the Ward 1 Councillor during the design phase to mitigate concerns, where possible.

### 9.3 Agency and Stakeholder Consultation

The following key agencies and stakeholders were circulated on notifications over the course of the study:

- Ministry of the Environment, Conservation and Parks
- Ministry of Heritage, Sport, Tourism and Culture Industries
- Ministry of Northern Development, Mines, Natural Resources and Forestry
- Ministry of Municipal Affairs and Housing
- Ministry of Transportation
- Infrastructure Ontario
- Regional Municipality of Waterloo
- Grand River Conservation Authority
- Local school boards
- Utilities
- Potentially impacted property owners

Two meetings were held with the Study Team and Grand River Conservation Authority at the start of the project on December 12, 2017 and July 11, 2017. The purpose of the meetings was to introduce the Project, review key issues and discuss the alternatives. The meeting minutes are included in Appendix F.

**Table 9-1** summarizes the key incoming agency and stakeholder correspondence received by the Study Team. The complete correspondence between the Study Team and all agencies and stakeholders is included in Appendix F.
### Table 9-1: Key Agency and Stakeholder Correspondence

<table>
<thead>
<tr>
<th>Agency / Stakeholder</th>
<th>Date</th>
<th>Summary of Correspondence</th>
<th>Study Team Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ministry of the Environment, Conservation</td>
<td>February 15, 2022</td>
<td>Confirmed list of potentially interested Indigenous Communities.</td>
<td>Refer to Section 9.4 and Appendix G for the consultation record for Indigenous Communities</td>
</tr>
<tr>
<td>Parks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ministry of the Environment, Conservation</td>
<td>June 7, 2022</td>
<td>Provided Ministry’s Source Water Protection contact information.</td>
<td>Contact noted.</td>
</tr>
<tr>
<td>Parks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ministry of Heritage, Sport, Tourism</td>
<td>December 29, 2017</td>
<td>Letter outlining Ministry of Heritage, Sport, Tourism and Culture Industries interest in the Municipal Class Environmental Assessment, including archaeological resources, built heritage resources, and Cultural heritage landscapes.</td>
<td>A Stage 1 archaeological assessment report and Ministry of Heritage, Sport, Tourism and Culture Industries checklist have been completed in support of this study.</td>
</tr>
<tr>
<td>and Culture Industries</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ministry of Heritage, Sport, Tourism</td>
<td>June 7, 2022</td>
<td>Updated letter in response to the Public Information Centre outlining the Ministry’s requirements for the study.</td>
<td>A Stage 1 archaeological assessment report and Ministry of Heritage, Sport, Tourism and Culture Industries checklist have been completed in support of this study.</td>
</tr>
<tr>
<td>and Culture Industries</td>
<td></td>
<td>Requested to include the completed Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes and supporting documentation in the Project File.</td>
<td>At the time of this publication, the Stage 1 archaeological assessment report has been submitted to the Ministry.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Confirmed the Stage 1 Archaeological Report has not been submitted at this time by the licensed archaeologist.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Further archaeological assessments, as required, should be completed during the early phases of the design phase of the Project.</td>
<td></td>
</tr>
<tr>
<td>Infrastructure Ontario</td>
<td>January 8, 2018</td>
<td>Letter indicating it is not clear if the proposed works will use lands under the control of the Ministry of Infrastructure (MOI lands).</td>
<td>MOI lands are not being proposed to be used to support this project.</td>
</tr>
<tr>
<td>Grand River Conservation Authority</td>
<td>March 22, 2022</td>
<td>No concerns with the preliminary preferred solution.</td>
<td>Grand River Conservation Authority will be engaged during the preliminary and detailed design phases of the Project, including circulation on drawings.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Noted the two lots where the upgrade/expansion is proposed are in proximity to an erosion hazard, and within 40 metres of a wetland.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>A conceptual / preliminary drawing should be prepared showing the extent of the work area (e.g., extent of the storage tank and any tie-ins with sanitary mains) upon completion of the Municipal Class Environmental Assessment.</td>
<td></td>
</tr>
<tr>
<td>Grand River Conservation Authority</td>
<td>July 5, 2022</td>
<td>Confirmed no comments on the draft Project File.</td>
<td>Grand River Conservation Authority will be engaged during the preliminary and detailed design phases of the Project, including circulation on drawings.</td>
</tr>
<tr>
<td>Regional Municipality of Waterloo</td>
<td>April 29, 2022</td>
<td>Requested further information on the project as the Project could be subject to mitigation policies under the Clean Water Act.</td>
<td>Source Water Protection is a consideration in the evaluation of upgrade and expansion options.</td>
</tr>
<tr>
<td>Regional Municipality of Waterloo</td>
<td>April 29, 2022</td>
<td>Confirmed the existing pumping station is located within a well protection area B with a vulnerability score of 8. In these area, “new storage” of sewage is prohibited. If allowed, there may be additional construction requirements associated with the upgrade.</td>
<td>The Project File documents the Source Water Protection considerations (see Section 4.6) and identifies preliminary recommendations for design features to mitigate leakage and for construction practices to mitigate spills, provide containment, and ensure erosion control. Based on AECOM’s review of the source water protection policies, the Otterbein Sanitary Sewer Pumping Station can be upgraded/re-designed (storage tanks, and sanitary sewers) as long as the Environmental Compliance Approval is updated with the Ministry of the Environment, Conservation and Parks.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Provided diagram of policies related to source water protection</td>
<td></td>
</tr>
<tr>
<td>Ministry of Transportation</td>
<td>May 4, 2022</td>
<td>Noted the Project does not appear to conflict with the Ministry of Transportation Highway 7 plans.</td>
<td>Provided a copy of the Public Information Centre Materials.</td>
</tr>
<tr>
<td>Hydro One</td>
<td>May 20, 2022</td>
<td>Indicated that based on preliminary assessment, there are no existing Hydro One Transmission assets in the Study Area</td>
<td>Comments noted.</td>
</tr>
</tbody>
</table>
9.4 Indigenous Community Consultation

The following Indigenous Communities and organizations were identified and notified as part of this Municipal Class Environmental Assessment study:

- Mississaugas of the Credit First Nation
- Six Nations of the Grand River (Elected Council and Haudenosaunee Confederacy Chiefs Council / Haudenosaunee Development Institute)

Follow up was completed via phone for those Indigenous Communities that did not formally respond to the Notice of Commencement and Notice of Public Information Centre letters to confirm receipt of notifications and to address any questions or concerns regarding the Project.

Table 9-2 summarizes the correspondence received. Refer to Appendix G for the consultation activities summary log and detailed correspondence.
### Table 9-2: Indigenous Community Correspondence

<table>
<thead>
<tr>
<th>Indigenous Community/ Organization</th>
<th>Date</th>
<th>Summary of Correspondence</th>
<th>Study Team Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mississaugas of the Credit First Nation</td>
<td>March 5, 2018</td>
<td>■ Requested reports completed for the Study.</td>
<td>■ Circulated draft Cultural Heritage Screening Memorandum, Natural Environment Report and Stage 1 Archaeological Assessment Report via email on May 13, 2022.</td>
</tr>
<tr>
<td>Mississaugas of the Credit First Nation</td>
<td>May 12, 2022</td>
<td>■ In response to the Notice of Public Information Centre and Project status update letter, requested the supporting studies be circulated to staff for review and comment.</td>
<td>■ Circulated draft Cultural Heritage Screening Memorandum, Natural Environment Report and Stage 1 Archaeological Assessment Report via email on May 13, 2022.</td>
</tr>
<tr>
<td>Mississaugas of the Credit First Nation</td>
<td>May 13, 2022</td>
<td>■ Indicated interest in participating in the fieldwork and reviewing the stage 2 archaeological assessment.</td>
<td>■ At this time, the preferred solution does not appear to require a stage 2 archaeological assessment. The City will notify Mississaugas of the Credit First Nation if a Stage 2 archaeological assessment is required.</td>
</tr>
<tr>
<td>Six Nations of the Grand River</td>
<td>May 20, 2022</td>
<td>■ Confirmed receipt of draft Cultural Heritage Screening Memorandum and Natural Environment Report</td>
<td>■ No comments provided at the time of this publication.</td>
</tr>
<tr>
<td>Six Nations of the Grand River</td>
<td>June 14, 2022</td>
<td>■ Indicated no comments on the recommendations of the draft Stage 1 Archaeological Assessment Report. ■ Requested participation in the stage 2 archaeological assessment.</td>
<td>■ The City will notify Six Nations of the Grand River if a Stage 2 archaeological assessment is required.</td>
</tr>
<tr>
<td>Haudenosaunee Confederacy Chiefs Council / Haudenosaunee Development Institute</td>
<td>June 7, 2022</td>
<td>■ Confirmed receipt of the Notice of Public Information Centre via phone</td>
<td>■ No further comments provided at the time of this publication.</td>
</tr>
</tbody>
</table>
10. Conclusions

This Municipal Class Environmental Assessment covers the processes required to ensure that the proposed Option 2: Upgrade and Expand Existing Sanitary Sewer Pumping Station with new Emergency Storage Tank – onsite and adjacent site meets the requirements of the *Environmental Assessment Act*. The preferred undertaking as described in **Section 7** resolves the problem and opportunity statement (**Section 5**). The Municipal Class Environmental Assessment planning process has not identified any significant environmental concerns that cannot be addressed by incorporating best management practices and established mitigation measures during construction as identified in **Section 8**.

Subject to the filing and clearance of this Municipal Class Environmental Assessment study, the City may proceed to complete the preliminary and detailed design phases of the Project, which includes permitting-approvals and proceed to construction in 2025 (subject to council approval and funding) and beyond as per the preliminary project schedule (**Section 7.7**).

The Project File was received by City Council on Monday, August 22, 2022 and approved to file with the Ministry of the Environment, Conservation and Parks for the mandatory 30 day review period as required by the *Environmental Assessment Act*. 