

City of Niagara Falls

**Master Servicing Plan and Wet Weather
Management Strategy
Volume 2: Planning and Consultation**

Niagara Falls, Ontario

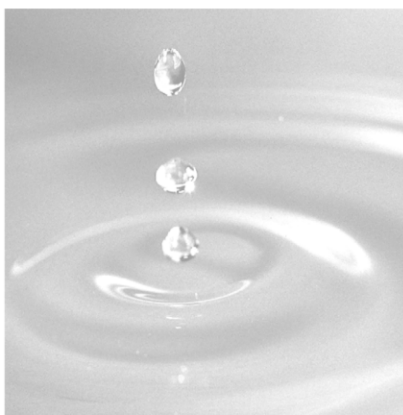
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1. Introduction

1.1. Background and Study Area

The City of Niagara Falls (herein referred to as the “City”) has completed the 2025 Master Servicing Plan and Wet Weather Management Strategy (MSP-WWMS). The 2025 MSP-WWMS aims to address existing system level of service for the water distribution, wastewater collection, and stormwater collection systems as well as develop a plan to support growth to 2051 and beyond.

The City encompasses a total area of 212 km² bounded by the Niagara River to the east, the Town of Niagara-on-the-Lake to the north, the Town of Fort Erie to the south, and the City of Thorold to the west. The City’s urban service area encompasses approximately 82.3 km² or 39%, with the rest of the area defined as rural. The City is unique in that it experiences an annual influx of approximately 12 million tourists in the spring and summer seasons visiting the natural attraction of Niagara Falls, which puts significant seasonal load on the City’s core infrastructure. Further, the City’s aging infrastructure must continue to support a rapidly growing population as directed by the Provincial Planning Statement (2024) (superseding the *Places to Grow Growth Plan for the Greater Golden Horseshoe*), the City’s Official Plan, and the Niagara Region’s Official Plan.

The City is one of twelve municipally serviced lower-tier municipalities within the Niagara Region (“Region”) where the water, wastewater, and stormwater systems operate under a two-tier municipal service delivery model. The Region is responsible for raw water supply, water and wastewater treatment, storage facilities, major water booster pumping stations, major sewage pumping stations, transmission mains, force mains, and trunk storm and wastewater conveyance. The City is responsible for the local water distribution network, and local wastewater and stormwater collection systems infrastructure.

The 2025 MSP-WWMS builds on the previous work undertaken as part of the 1998 Water Master Servicing Study, 2017 Pollution Prevention Control Plan, 2017 Master Drainage Plan Update, and 2021 Region Master Servicing Plan Update as well as previous long-term infrastructure planning studies.

1.2. Master Servicing Plan Objectives

Niagara Falls, like many municipalities, needs to balance addressing existing system level of service and state of good repair as part of a holistic and measurable management approach to infrastructure systems. The City has unique needs to balance existing servicing needs with level of service, development pressures, regulatory requirements and protection of the environment. The MSP-WWMS aims to develop a long-term management plan with short- and long-term system upgrade needs and supporting maintenance and management activities. In the development of the MSP-WWMS, each upgrade (or program) trigger, financial implications, and functional objective is identified, thereby allowing the City to manage and adjust the plan moving forward based on changing growth trends and/or management priorities.

The objective of the MSP-WWMS is to develop a long-term servicing strategy for the drinking water, wastewater, and stormwater systems for the urban areas, current and future. More specifically, the key objectives are outlined as follows:

- Address the growth projections for the City as directed by the Provincial Planning Statement (2024)
- Develop a detailed system inventory, gap assessment, and capacity assessment to clearly identify the existing condition, State of Good Repair, risk and capacity of the City's existing water, wastewater, and stormwater infrastructure to meet level of service objectives and regulatory requirements.
- Review of existing and anticipated regulatory frameworks, existing system performance, and the City's existing financial constraints/tolerability to develop:
 - Appropriate system level of service criteria (in line with O.Reg 588/17)
 - Servicing policies and principles
 - Performance priorities
- Update the City's existing water, wastewater, and stormwater system models to enable the assessment of the existing and projected capacity and performance of the existing systems whilst addressing existing state of good repair and level of service deficits.
- Build off existing studies and recommendations while revisiting and updating past recommendations with the context of revised growth projection, updated performance criteria, and the latest infrastructure priorities.
- Review of system opportunities and constraints to identify potential servicing alternatives to address existing and long-term needs.
- Develop a comprehensive capital program, along with implementation triggers, to support the existing system needs and long-term growth.
- Develop a Wet Weather Flow Management Plan that outlines the City's strategy to monitor and address wet weather flows in the wastewater system including:
 - Prioritization of reduction programs including sewer separation, maintenance and rehabilitation recommendations, and public and private programs.
- Facilitate the necessary stakeholder to satisfy the Municipal Class Environmental Assessment Master Plan requirements, and to ensure stakeholder buy-in.
- Complete suitable documentation, outlining the methodology, results, and recommendations of the Master Servicing Plan.

All project deliverables are aligned with the City's concurrent Official Plan Review, Transportation Master Plan, Asset Management Plan for Core Assets, and Development Charges Bylaw Update. Additionally, the City's MSP-WWMS is developed under the context of the Niagara Region's Official Plan and 2021 Master Servicing Plan Update to ensure that all plans are based on the same foundational elements.

1.3. Master Servicing Plan Report Outline

The MSP-WWMS report, including all supporting volumes, is the document placed on public record for the prescribed review period. This document describes all required phases of the planning process and incorporates the procedure considered essential for the compliance with the Environmental Assessment Act. The MSP-WWMS report is organized into five volumes as described below:

Volume 1 – Executive Summary

Volume 1 provides an overview summary of the entire MSP-WWMS. It summarizes the information provided in Volumes 2 through 5 including problem statement, purpose of the study, significant planning, environmental and technical considerations, description of the analysis performed, and final capital program and recommendations.

Volume 2 – Planning and Consultation

Volume 2 details the master planning process; including the Master Plan Class EA process, related studies, legislative, and policy planning context, water, wastewater, and stormwater servicing principles and policies, population and employment growth forecasts, existing environmental conditions, costing methodology, and documentation related to all public consultation.

Volume 3 – Water Master Servicing Plan

Volume 3 consists of the principal document summarizing the study objectives, approach, methodologies, technical analyses, and selection of the preferred water servicing strategy. This volume details baseline and growth water system performance including detailed information regarding the capital program and additional implementation and ongoing maintenance solutions.

Volume 4 – Wastewater Master Servicing Plan and Wet Weather Management Strategy

Volume 4 consists of the principal document summarizing the study objectives, approach, methodologies, technical analyses, and selection of the preferred wastewater servicing strategy. This volume details baseline and growth wastewater system performance including detailed information regarding the capital program and additional implementation and ongoing maintenance solutions. This volume also details the sewer separation program and inflow and infiltration strategies as incorporated into the wet weather management strategy.

Volume 5 – Stormwater Master Servicing Plan

Volume 5 consists of the principal document summarizing the study objectives, approach, methodologies, technical analyses, and selection of the preferred stormwater servicing strategy. This volume details stormwater system performance including detailed information regarding the capital program and additional implementation and ongoing maintenance solutions.

2. Master Planning Process

The MSP-WWMS was completed in accordance with Section A.2.7 of the Municipal Class Environmental Assessment (Municipal Engineers Association, October 2000 as amended in 2007, 2011, 2015, and 2023) (MCEA) under Approach 1, which involves preparing a master plan document at the conclusion of Phases 1 and 2 of the Class EA Process. This Master Plan provides an overall framework and supporting information sufficient to fulfil the requirement of Phases 1 and 2 for Schedule B and C projects. Any recommended Schedule C projects would have a follow-up Environmental Assessment completed to further fulfill the requirements of MCEA Phase 3 and 4. At the completion of this project, no Schedule C projects were identified.

2.1. Class Environmental Assessment Process

Ontario's Environmental Assessment Act (EAA) was passed in 1975 and was proclaimed in 1976. The EAA requires proponents to examine and document the environmental effects that could result from major projects or activities and their alternatives. Municipal undertakings became subject to the EAA in 1981.

The EAA's comprehensive definition of the environment is:

- Air, land, or water;
- Plant and animal life, including human life;
- The social, economic, and cultural conditions that influence the life of humans or a community;
- Any building, structure, machine or other device or thing made by humans;
- Any solid, liquid, gas, odour, heat, sound, vibration, or radiation resulting directly or indirectly from human activities; and
- Any part of a combination of the foregoing and the interrelationships between any two or more of them, in or of Ontario.

The purpose of the EAA is the betterment of the people of the whole or any part of Ontario by providing for the protection, conservation, and wise management of the environment in Ontario (RSO1990, c.18, s.2). It is the objective of EAA proponents to ensure that decisions result from a rational, objective, transparent, replicable, and impartial planning process.

- As set out in Section 6.1(2) of the EAA, an EA document must include the following:
- A description of the purpose of the undertaking, and
- A description of and a statement of the rationale for:
 - The undertaking
 - The alternative methods of carrying out the undertaking; and
 - Alternatives to the undertaking.

The EA document must also include a description of:

- The environment that will be affected or that might reasonably be expected to be affected, directly or indirectly, by the undertaking or alternatives to the undertaking;
- The effects that will be caused or that might reasonably be expected to be caused to the environment by the undertaking or alternatives to the undertaking;
- The actions necessary or that may reasonably be expected to be necessary to prevent, change, mitigate or remedy the effects upon or the effects that might reasonably be expected upon the environment by the undertaking or alternatives to the undertaking;
- An evaluation of the advantages and disadvantages to the environment of the undertaking, the alternative methods of carrying out the undertaking and the alternatives to the undertaking (RSO1990, c.18, s.2); and
- A description of any consultation about the undertaking by the proponent and the results of the consultation.

2.1.1. Principles of Environmental Planning

The EAA sets a framework for a systematic, rationale, and replicable environmental planning process that is based on five key principles, as follows:

- Consultation with affected parties. Consultation with the public and government review agencies is an integral part of the planning process. Consultation allows the proponent to identify and address concerns cooperatively before final decisions are made. Consultation should begin as early as possible in the planning process.
- Consideration of a reasonable range of alternatives. Alternatives include functionally different solutions, “alternatives to” the proposed undertaking, and “alternative methods” of implementing the preferred solution. The “Do Nothing” alternative must also be considered.
- Identification and consideration of the effects of each alternative on all aspects of the environment. This includes the natural, social, cultural, technical, and economic environments.
- Evaluation of alternatives in terms of their advantages and disadvantages to determine their net environmental effects. The evaluation shall increase in the level of detail as the study moves from the evaluation of “alternatives to” to the evaluation of “alternative methods”.
- Provision of clean and complete documentation of the planning process followed to allow “traceability” of decision-making with respect to the project. The planning process must be documented in such a way that it may be repeated with similar results.

2.1.2. Class Environmental Assessment

“Class” Environmental Assessments (Class EAs) were approved by the Minister of the Environment in 1987 for municipal projects having predictable and mitigable impacts. The Municipal Class EA process was revised and updated in 1993, 2000, 2007, 2011, 2015, and 2023. The Class EA approach streamlines the planning and approvals process for municipal projects that are:

- Recurring;
- Similar in nature;
- Usually limited in scale;
- Predictable in the range of environmental impacts; and
- Responsive to mitigation.

The Municipal Class Environmental Assessment, prepared by the Municipal Engineers Association (October 2000, as amended in 2007, 2011, 2015, and 2023), outlines the procedures to be followed to satisfy Class EA requirements for water, wastewater, stormwater management, and road projects. The process includes five phases:

- Phase 1: Identification of the Problem (deficiency) or Opportunity;
- Phase 2: Identification and Evaluation of Alternative Solutions by taking into consideration the existing environment, and establishing a Preferred Solution while taking into account the input from the public, Indigenous Communities, and other stakeholders into consideration;
- Phase 3: Examination of Alternative Methods of implementation of the Preferred Solution based on the existing environment, anticipated environmental effects, methods of minimizing negative effects and maximizing positive effects, while taking input from the public, Indigenous Communities, review agency, and other stakeholders into consideration;
- Phase 4: Documentation of the Class EA process in the form of an Environmental Study Report (ESR) for review by public, Indigenous Communities, and review agencies; and
- Phase 5: Completion of contract drawings and documents to proceed with project implementation and monitoring for adherence to environmental provisions and commitments.

Public and agency consultation are integral to the Class EA planning process.

Projects subject to the Class EA process are classified into following four “schedules” depending on the degree of the expected impacts. **Figure 2-1** illustrates the Municipal Class EA planning and design process with the phases required for each schedule.

NOTE: This flow chart is to be read in conjunction with Part A of the MCEA

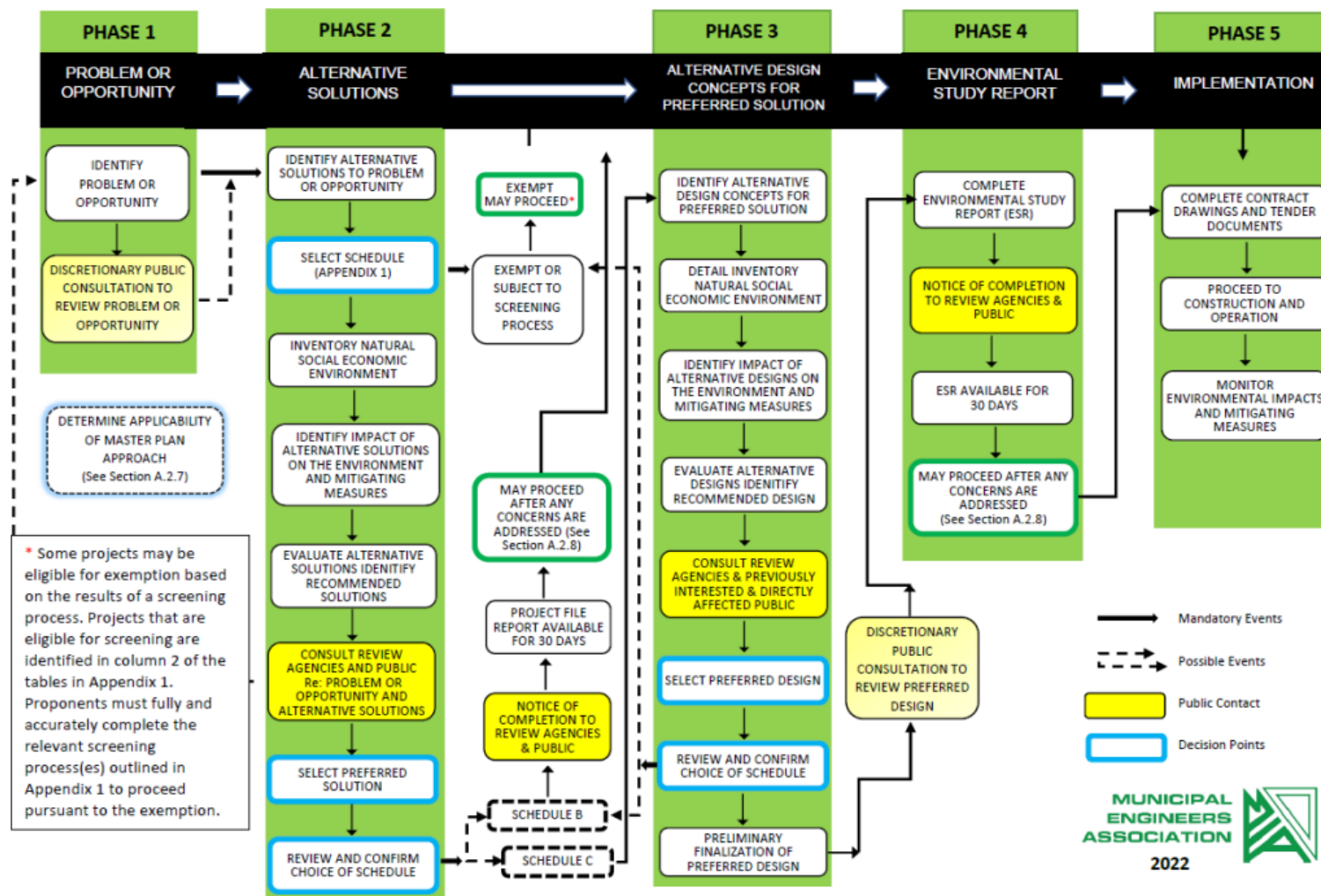


Figure 2-1 Municipal Class EA Planning and Design Process (MCEA, 2023)

Exempt Projects, most of which were formerly classified as Schedule A and A+ projects, include various municipal maintenance, operational activities, rehabilitation works, minor reconstruction or replacement of existing facilities, and new facilities that are limited in scale and have minimal adverse effects on the environment. These projects are exempt from the requirements of the Environmental Assessment Act.

Eligible for Screening to Exempt projects may be eligible for exemption based on the results of a screening process. Proponents may choose to complete the applicable screening process to determine whether the project is eligible for exemption from the Act or proceed with the applicable Schedule B or C process. Projects that are eligible for screening are identified in the MCEA document. Proponents must fully and accurately complete the relevant screening process(es) outlined in the MCEA to proceed pursuant to the exemption.

Schedule B projects require a screening of alternatives for their environmental impacts and Phases 1 and 2 of the planning process must be completed. The proponent is required to consult with the affected public and relevant review agencies. A Project File must be prepared and made available for review. Provided that no significant impacts are identified and no requests for a Part II Order to a Schedule C or Individual Environmental Assessment are received, Schedule B projects are approved and may proceed directly to implementation. Schedule B projects generally include improvements and minor expansions to existing facilities or smaller new projects.

Schedule C projects must satisfy all five phases of the Class EA process. These projects have the potential for greater environmental impacts. Phase 3 involves the assessment of alternative methods of carrying out the project, as well as public consultation on the preferred conceptual design. Phase 4 normally includes the preparation of an Environmental Study Report (ESR) that is filed for public review. Provided no significant impacts are identified and no requests for Part II Order or “bump-up” to an Individual Environmental Assessment are received, Schedule C projects are then approved and may proceed directly to implementation. Schedule C projects generally include the construction of new facilities and major expansions to existing facilities.

2.1.3. Master Planning Process

Municipalities recognize the benefits of comprehensive, long-range planning exercises that examine problems and solutions for an overall system of municipal services. The Municipal Class EA for water, wastewater, and stormwater projects recognizes the importance of master plans as the basis for sound environmental planning. The Class EA defines master plans as:

“Long range plans which integrate infrastructure requirements for existing and future land use with environmental assessment planning principles. These plans examine an infrastructure system(s) or group of related projects to outline a framework for planning for subsequent projects and/or developments.”

Master plans have distinguishing features that set them apart from project specific studies. These features include the following:

- Master plans are broad in scope and focus on the analysis of a system for the purpose of outlining a framework for the provision of future works and developments, and
- Specific projects recommended in a master plan are part of a larger management system and are distributed geographically throughout the study area. Further planning and implementation of specific projects will occur over an extended time frame.

According to the Class EA document, a master plan must at least satisfy the requirements of Phases 1 and 2 of the Class EA process and incorporate the five key principles of environmental planning. The MSP-WWMS must document public and agency consultation at each phase of the process and a reasonable range of alternative solutions must be identified and systematically evaluated.

The MSP-WWMS is designed to build existing studies and present a refined overall strategy for the study area. The approach for the MSP-WWMS is to confirm the existing projects and where applicable, evaluate and develop any new components. This approach would also be scrutinized through a public, Indigenous Communities, and agency consultation process and be fully documented.

2.2. Public Consultation

Public and agency consultation are integral to the Class EA planning process. The public consultation process is essential for informing and obtaining input from potentially interested and affected parties during the study process. Objectives of Phase 1 of the MEA Municipal Class EA process with respect to public consultation are as follows:

- Present clear and concise information to stakeholders at key stages of the study process;
- Solicit community, regulatory and Municipal staff input;
- Meet Municipal Class EA consultation requirements;
- To fulfill the consultation requirements of the MEA Municipal Class EA document:
 - Build on past communication protocols and consultation plans from previous Class EA and municipal planning initiatives, to ensure consistency and continuity.
 - Meet public and agency notification and consultation requirements for Phases 1 and 2 of the MEA Municipal Class EA; and
 - Complete additional tasks to enhance the proposed consultation program and overall Class EA process.

The complete public and agency consultation process is detailed in **Section 8**.

2.2.1. Section 16 Order Requests

The MCEA process includes an appeal provision – the Minister of the Environment, Conservation and Parks has the authority and discretion to make an Order under Section 16 of the Environmental Assessment Act. A Section 16 Order may require that the proponent of a project going through a Class EA process:

- Submit an application for approval of the project before they proceed. This is generally referred to as an individual EA (s. 16(1) order)
- Meet further conditions in addition to the conditions in the Class EA. This could include conditions for: further study, monitoring and/or consultation (s. 16(3) order)

The Minister can also refer a matter in relation to a section 16(6) Order request to mediation. Before making an Order, the Minister must consider the factors set out in section 16(5) of the Environmental Assessment Act.

If a Section 16 Order request is made, the project proponent cannot proceed with the project until the Minister makes a decision on the request. If the Minister makes a Section 16 Order, the proponent may only proceed with the project if they follow the conditions in the Order.

2.2.1.1. Reasons for Requesting an Order

A concerned party may ask the Minister to make a Section 16(6) Order if:

- They have outstanding concerns that a project going through a Class EA process may have a potential adverse impact on constitutionally protected Aboriginal and treaty rights.
- They believe that an Order may prevent, mitigate, or remedy this impact.

A Section 16(6) Order request cannot be made to simply delay or stop the planning and implementation of a project that is going through the MCEA process. Prior to making a Section 16(6) Order request, the concerned party should first try to resolve any concerns directly with the project proponent, in this case, the City of Niagara Falls.

2.2.1.2. Timing for an Order Request

During the 30-day public comment period, anyone can review the documentation, submit any comments or concerns to the proponent, and request a Section 16(6) Order.

To request a Section 16 Order for a project, on the grounds that an Order may prevent, mitigate, or remedy potential adverse impacts on constitutionally protected, Aboriginal and treaty rights, a concerned party must make the request before the public comment period is complete.

3. Related Studies and Background Information

The following section outlines the relevant completed studies, documents, and data reviewed as part of the MSP-WWMS. Key integration aspects outline how documentation recommendations and data were used within the analysis, development of alternatives, and ultimately the preferred program.

3.1. Completed Studies and Background Information

The following completed studies and documents reviewed as part of the MSP-WWMS:

- Water
 - Water Master Servicing Study (1998)
 - Niagara Region 2016 Water and Wastewater Master Servicing Plan and 2021 Update
 - Dynamic Water Model Development (2018)
 - Water and Wastewater Long-Range Financial Plan (2019)
 - Water Model Update (2021)
- Wastewater
 - City of Niagara Falls and Fort Erie Weeping Tile Monitoring Program (2007)
 - Niagara Falls Pollution Control Plan (2008)
 - Chippawa Basement Flooding Analysis (2010)
 - Chippawa Sewer Flooding Relief Study EA (2010)
 - City of Niagara Falls Flow Monitoring Program (2014)
 - Riverview Park CSO Tank (2014)
 - South Side Low Lift Pumping Station Upgrades and CSO Storage Tank Impacts Analysis (2014)
 - Pollution Control Plan and CSO Abatement Study (2015)
 - Niagara Region 2016 Water and Wastewater Master Servicing Plan and 2021 Update
Pollution Prevention and Control Plan Update (2017)
 - Water and Wastewater Long-Range Financial Plan (2019)
 - South Niagara Falls Infiltration and Inflow Study (2021) – Draft
- Stormwater
 - Stormwater Master Drainage Plan Update Study (2017)
 - Beaver Valley SWM Pond Capacity Improvements (2021)
 - Corwin Drainage Area EA (2021)
 - Valley Way Drainage EA (2021)

- Hodgson Subdivisions Sewer separation Strategy (2022)
- Portage Road & Prospect Street Sewer Separation (2022)
- Thompsons Creek Sub Watershed Plan (2022)
- Other
 - Niagara Falls Official Plan & Secondary Plans
 - Niagara Falls Employment Lands Strategy
 - Asset Management Plan Core Assets (2021)
 - Niagara Region Official Plan (2022)
 - Development Charges Background Study and By-law (2024)
 - Niagara Region Development Charges Background Study and By-law (2022)
 - Climate Change Adaptation Plan (2021)
 - Niagara Region Climate Change Discussion Paper (2019)

3.2. Coordinated Planning Process

The City of Niagara Falls is proactively planning to facilitate the anticipated growth for a total of 178,109 residents and 71,911 jobs by 2051 in a coordinated planning process that considers the Niagara Region and City's Official Plan, the Region and City's Development Charges Background Studies and By-Laws, the Region's 2021 Water and Wastewater Master Servicing Plan Update, and the City's MSP-WWMS. These strategic plans are aligned and interconnected to collectively form the foundation to support and foster the City's anticipated growth.

3.2.1. Region and City Official Plan Updates

As part of the Niagara Official Plan, the Region completed an extensive background review, consultation, and supporting studies which resulted in policies and mapping to managing growth and the economy, protecting the natural environment, resources, agricultural land, and providing infrastructure. The plan was approved by the Province of Ontario effective November 2022, with amendments. As of March 31, 2025, Bill 23 downloaded the official plan policies to each of the LAMs, including the City of Niagara Falls. The City's Official Plan, which was approved 1993, is currently undergoing an update to direct the City towards how the City intends to accomplish its planning goals through to 2051 and implement relevant Regional and Provincial policy directives.

3.2.2. Region and City Development Charges Background Studies

The Region's DC By-law¹ took effect in September 2022, to support the capital funding required for implementing the Region infrastructure needed to support future development over the 30-year forecast to 2051. The City completed its own development charges background study and passed the by-law in May 2024 (By-law 2024-055)², to establish development charges related to City water, sanitary sewer, and stormwater management infrastructure based on a 10-year forecast from 2024 to 2033. The development charges are governed under the Development Charges Act (1997), with amendments provided by Bill 23: More Homes Built Faster Act, 2022, and Bill 185: Cutting Red Tape to Build More Homes Act, 2024.

3.2.3. Region's 2021 Water and Wastewater Master Servicing Plan Update

The Region's 2021 Master Servicing Plan Update (MSPU) completed a review, evaluation, and development of growth-related water and wastewater servicing strategies, with consideration of sustainability requirements for the existing infrastructure, for all servicing within the urban areas of the Region, including the City of Niagara Falls. The Region's 2021 MSPU planned for a 2051 total population of 141,574 residents and 59,318 jobs for the City, which is 53,968 people and jobs less than the most up-to-date City growth estimates used in the current City's MSP-WWMS. The Region is currently undergoing a Master Servicing Plan Update for the water and wastewater systems, to be completed in 2026, and is anticipated to reconcile the differences in planning projections between the Region and local area municipalities. The recommended 2021 Region MSPU projects, relevant to the City of Niagara Falls, are summarized in **Table 3-1** and **Table 3-2**.

¹ <https://www.niagararegion.ca/business/property/>

² <https://niagarafalls.ca/city-hall/building/development-charges.aspx>

Table 3-1. Summary of Niagara Region DC By-Law Water Capital Program

Master Plan ID	Name	Description	Size / Capacity	Year in Service	Municipality	Class EA Schedule	Class EA Status	Project Type
W-D-004	Decommissioning of Lundy's Lane ET	Lundy's Lane ET to be decommissioned and replaced by new South Niagara Falls ET	N/A	2027-2031	Niagara Falls	A+	N/A	Storage
W-M-007	New transmission main from PRV to Port Robinson Chlorine BPS in Niagara Falls	New transmission main from PRV to Port Robinson Chlorine BPS in Niagara Falls	450 mm	2022-2026	Niagara Falls	A+	N/A	Watermain
W-M-009	New Niagara Falls South transmission main to New Elevated Tank	New Niagara Falls South transmission main to provide additional supply to new growth areas.	750 mm	2022-2026	Niagara Falls	A+	N/A	Watermain
W-M-019	New Niagara Falls South feedermain from Dorchester Road to Lyon's Creek Road	New Niagara Falls South feedermain to provide additional supply to new growth areas.	600 mm	2032-2051	Niagara Falls	B	Separate EA Required	Watermain
W-M-020	New Niagara Falls South feedermain along Lyon's Creek Road	New Niagara Falls South feedermain to provide additional supply to new growth areas.	600 mm	2042-2051	Niagara Falls	B	Separate EA Required	Watermain
W-M-021	New Niagara Falls South feedermain along Stanley Avenue	New Niagara Falls South feedermain to provide additional supply to new growth areas.	600 mm	2032-2051	Niagara Falls	B	Separate EA Required	Watermain
W-S-004	New South Niagara Falls ET	New South Niagara Falls ET to replace the Lundy's Lane ET and provide additional storage.	12.0 ML	2022-2026	Niagara Falls	B	Ongoing	Storage
W-S-014	In-ground Reservoir Expansion at Niagara Falls WTP	In-ground Reservoir Expansion at Niagara Falls WTP to support buildout growth and CT volume requirements.	10.0 ML	Post-2051	Niagara Falls	B	Separate EA Required	Storage
W-ST-001	Region Wide WTP Reservoir Volume Study	Study to review WTP reservoir CT volume and overall system storage	-	2022-2026	Region-Wide	A+	N/A	Storage

Table 3-2. Summary of City of Niagara Falls DC By-Law Wastewater Capital Program

Master Plan ID	Name	Description	Size / Capacity	Year in Service	Municipality	Class EA Schedule	Class EA Status	Project Type
WW-FM-005	New Peel Street SPS Forcemain	New 400 mm Peel Street SPS Forcemain in Thorold from station to Black Horse SPS	400 mm	2027-2031	Thorold	B	To be Satisfied Under Consolidated South NF Schedule C EA - Separate Study	Forcemain
WW-FM-006	New Black Horse Forcemain to Niagara Falls	New Black Horse Forcemain to New South Niagara Falls Trunk on Barron Road to the Montrose Trunk Sewer	400 mm	2027-2031	Thorold	B	To be Satisfied Under Consolidated South NF Schedule C EA - Separate Study	Forcemain
WW-FM-009	Dorchester Forcemain Upgrade	Replace Existing 350 mm Dorchester SPS Forcemain with new single 500 mm forcemain in Niagara Falls.	500 mm	2027-2031	Niagara Falls	A+	Satisfied	Forcemain
WW-FM-010	St. David's #1 Forcemain Upgrade	Replace existing 200 mm St. Davids #1 Forcemain with new single 400 mm in Niagara-on-the-Lake	400 mm	2027-2031	Niagara-on-the-Lake	A+	To be Satisfied Under Consolidated Queenstown Schedule B EA - Separate Study	Forcemain
WW-FM-024	St. David's #2 Forcemain Upgrade	Replace existing 250 mm St David's #2 SPS forcemain with new single 400 mm in Niagara Falls	400 mm	2027-2031	Niagara-on-the-Lake	A+	To be Satisfied Under Consolidated Queenstown Schedule B EA - Separate Study	Forcemain
WW-SPS-026	Dorchester SPS Pump Replacement	Increase station capacity from 185 L/s to 345 L/s by replacing the existing three pumps.	345 L/s	2027-2031	Niagara Falls	A+	Satisfied	Pumping
WW-SPS-028	Black Horse SPS Upgrade	New SPS location with increased capacity from 67 L/s to 180 L/s.	180 L/s	2027-2031	Thorold	B	To be Satisfied Under Consolidated South NF Schedule C EA - Separate Study	Pumping
WW-SPS-031	St. David's #2 SPS Upgrade	Increase station capacity from 42 L/s to 202 L/s with a full station Reconstruction	202 L/s	2027-2031	Niagara-on-the-Lake	B	To be Satisfied Under Consolidated Queenstown Schedule B EA - Separate Study	Pumping
WW-SPS-032	St. David's #1 SPS Upgrade	Increase station capacity from 29 L/s to 174 L/s. with a full station Reconstruction	174 L/s	2027-2031	Niagara-on-the-Lake	B	To be Satisfied Under Consolidated Queenstown Schedule B EA - Separate Study	Pumping
WW-SPS-050	Bender Hill SPS Pump Replacement	Full station replacement at new location from 237 L/s to re-establish 330 L/s ECA capacity.	330 L/s	2022-2026	Niagara Falls	B	Separate EA Required	Pumping

Master Plan ID	Name	Description	Size / Capacity	Year in Service	Municipality	Class EA Schedule	Class EA Status	Project Type
WW-SPS-051	Central SPS Pump Replacement	Increase station capacity from 800 L/s to re-establish 1000 L/s ECA capacity by replacing the existing five pumps.	1000 L/s	2037-2041	Niagara Falls	A+	Satisfied	Pumping
WW-SPS-052	Lundy's Lane SPS Pump Replacement	Increase station capacity from 56 L/s to re-establish 98 L/s ECA capacity by replacing the existing three pumps.	98 L/s	2037-2041	Niagara Falls	A+	Satisfied	Pumping
WW-SPS-053	Royal Manor SPS Pump Replacement	Increase station capacity from 9 L/s to 16 L/s by replacing existing two pumps	16 L/s	2022-2026	Niagara Falls	A+	Satisfied	Pumping
WW-SPS-058	Peel Street SPS Upgrade	Station upgrades which may be required to accommodate new forcemain	0 L/s	2027-2031	Thorold	A+	To be Satisfied Under Consolidated South NF Schedule C EA - Separate Study	Pumping
WW-II-017	Region-Wide Wet Weather Reduction	Wet weather reduction program in all systems to be executed from 2022-2051	-	2022-2031	Region-Wide	-	Dependent on outcome of wet weather flow study	Wet Weather Reduction
WW-ST-001	Region-Wide Flow Monitoring and Data Collection	Funding to support flow monitoring and data collection initiatives	-	2022-2031	Region-Wide	-	-	Wet Weather Reduction
WW-TP-002	South Niagara Falls Wastewater Treatment Plant - Phase 1	New South Niagara Falls WWTP Phase 1 with 30 MLD capacity	30 MLD	2022-2026	Niagara Falls	C	Separate EA Required	Treatment
WW-TP-003	South Niagara Falls Wastewater Treatment Plant Phase 2	New South Niagara Falls WWTP Upgrade from 30 MLD to 60 MLD	30 MLD	2037-2041	Niagara Falls	C	To be Satisfied Under Consolidated South NF Schedule C EA - Separate Study	Treatment
WW-TP-005	Region-Wide WWTP Process Upgrades	Process upgrades to re-establish ECA capacity	-	2022-2031	Region-Wide	-	-	Treatment
WW-TP-006	Region-Wide WWTP Process Upgrades	Upgrades for odour control across the Region at forcemains, pump stations, and other locations.	-	2022-2031	Region-Wide	-	-	Treatment
WW-D-003	Decommissioning of South Side High Lift SPS	Decommissioning of SSHL SPS, to be replaced by gravity trunk sewer to SNF WWTP	-	2037-2041	Niagara Falls	A+	To be Satisfied Under Consolidated South NF Schedule C EA - Separate Study	Forcemain
WW-D-004	Decommissioning of Garner SPS	Decommissioning of Garner SPS to be replaced by gravity connection to SNF WWTP	-	2032-2036	Niagara Falls	A+	To be Satisfied Under Consolidated South NF Schedule C EA - Separate Study	Forcemain
WW-D-006	Decommissioning of Grassy Brook SPS	Decommissioning of Grassy Brook SPS to be replaced by gravity connection to SNF WWTP	-	2032-2036	Niagara Falls	A+	To be Satisfied Under Consolidated South NF Schedule C EA - Separate Study	Sewer
WW-SS-006	New Montrose Trunk Sewer	New tunneled trunk sewer on Montrose conveying flows from South Side High Lift SPS to the new South Niagara Falls WWTP	1500 mm	2027-2031	Niagara Falls	B	Satisfied	Sewer
WW-SS-007	New Brown Road Trunk Sewer	Shallow gravity trunk from South Thorold to Garner SPS-South Niagara Falls trunk connection	600 mm	2027-2031	Niagara Falls	B	Satisfied	Sewer
WW-SS-008	Chippawa Trunk Sewer Phase 1	New tunneled 1200 mm trunk sewer from west of Lyon's Creek to South Niagara Falls WWTP	1200 mm	2032-2036	Niagara Falls	B	Separate EA Required (WW-SS-015)	Sewer
WW-SS-014	South Niagara Falls SSO Trunk	New sewer to eliminate overflows upstream of South Side High Lift SPS	1050 mm	2022-2026	Niagara Falls	B	To be Satisfied Under Consolidated South NF Schedule C EA - Separate Study	Sewer
WW-SS-015	Chippawa Trunk Sewer Phase 2	New tunneled 1200 mm trunk sewer from South Side Low Lift to west of Lyon's Creek	1200 mm	2037-2041	Niagara Falls	B	Separate EA Required	Sewer

3.3. 2017 Pollution Prevention Control Plan

The City's most recently updated Pollution Prevention Control Plan (PPCP) last updated 2017 aimed to meet the requirements of the MECP Procedures F-5-5 and F-5-1 (further described in **Volume 4**). The recommendations out of the PPCP include:

- Public side inflow and infiltration reduction combined with municipal sewer separation program of combined sewers
- Multi-year CCTV inspection program
- State of good repair program
- Annual flow monitoring
- Studies including:
 - Corwin Crescent Stormwater Management Environmental Assessment
 - Sinnicks/Keith Outfall to OPG Canal
 - Valley Way Drainage Study Environmental Assessment
 - Decommissioning Study and Design of McLeod Road at Hydro Electric Power Canal and overflow tanks
 - Wastewater System Efficiency Plan
- Ongoing system modelling

3.4. Water and Wastewater Environmental Assessments

The recently completed and ongoing Environmental Assessments relevant to the City's water, wastewater, and stormwater systems are summarized in the following sections.

3.4.1. South Niagara Falls Wastewater Solutions

The South Niagara Falls Wastewater Solutions study was a Schedule C EA completed in September 2022 by the Niagara Region and is currently undergoing the detailed design process. The study goals included:

- Identify, evaluate, and recommend preferred location and design concepts for a new WWTP in South Niagara Falls. Includes recommendations to the overall wastewater catchments and required upgrades to support the new WWTP.
- The preferred WWTP site is 6811 Reixinger Road with outfall discharge to Chippawa Creek. Several preferred alignments for new trunk sewers were identified to support conveyance of flows from Niagara Falls and Thorold, as well as pumping station and forcemain upgrades and decommissioning.

3.4.2. Bender Hill Sewage Pumping Station

The Bender Hill Sewage Pumping Station (SPS) study was a Schedule B EA completed in February 2020 by the Niagara Region and is currently undergoing detailed design. The study included:

- Identify, evaluate, and recommend preferred alternatives and design concepts for SPS upgrades (existing condition concerns, capacity upgrades due to operation and capacity constraints at the SPS).
- The preferred solution is the rehabilitate the existing station, upgrade or replace the existing pumps to address capacity issues, and realign River and Road.

3.5. Relevant Studies and Tools

A review of relevant reports and data was completed for additional project context and information pertinent to the analysis and evaluation of alternatives, including:

- Town of Niagara-on-the-Lake Pollution Prevention Control Plan (PPCP) – Currently ongoing
- City of Thorold Water and Wastewater MSP – Currently ongoing
- Water billing records – Reviewed and cross-referenced against available plant production records and flow monitoring records. These results were utilized to establish baseline flow and demand rates in the existing system.
- Regional flow monitoring – Region permanent flow monitoring data was leveraged with local flow monitoring studies to enhance the model update and the calibration process.
- Updated Region water and wastewater models – The Region’s water and wastewater models, last updated as part of the 2021 MSPU, were leveraged as the base model and updated with updated water billing records, flow monitoring data, etc. as detailed in **Volumes 3 and 4**.
- City of Niagara Falls Engineering Standards – The City’s Engineering Design Standards were referenced for the implementation of capital works projects for the water, wastewater, and stormwater systems and components thereof.

4. Planning and Growth Projections

4.1. Planning Context

The development of the MSP-WWMS has been guided by a comprehensive planning framework that aligns with municipal, regional, provincial, and federal objectives. This framework ensures that infrastructure planning supports sustainable growth, environmental protection, and long-term service delivery. In accordance with the Class EA process for Master Plans, the MSP integrates a wide range of legislative, policy, and technical considerations.

To ensure compliance and consistency with applicable standards, **Table 4-1** summarizes the key regulatory acts, policies, and guidelines that were reviewed and incorporated throughout the planning process. Detailed applicability of each standard is provided in **Appendix A**.

Table 4-1. Summary of Provincial and Federal Legislation and Policy Context

Planning Documentation	Year Approved / Version	Authority	Context / Requirements	How the MSP address the requirements
The Planning Act	2024	Provincial	The Planning Act establishes a land use planning system led by provincial policy and allows for the integration of matter of provincial interest into provincial and municipal planning decisions. It sets out the responsibilities of the province and municipalities in planning Activities. The responsibilities of municipalities include making local planning decisions for future communities; prepare Official Plans and Zoning By-Laws; and ensure that planning decisions and documents are consistent with the Provincial Planning Statement.	The City of Niagara Falls, like all municipalities in Ontario, must operate within the administrative, legislative, and financial framework established by senior levels of government. The MSP-WWMS is a part of facilitating the City’s planning activities under the Act by supporting the City’s Official Plan and ensuring the MSP aligns with planned growth. Additionally, key provincial initiatives are considered under the MSP process.
The Provincial Planning Statement (PPS)	2024	Provincial	The PPS is a framework issued under the Planning Act that provides an overview of the land use goals and objectives for the Province to the year 2031. It provides policy direction for land use planning matters related to provincial interests. The PPS provides more local autonomy in planning while incentivizing infrastructure projects that enable rapid housing and economic growth. The City of Niagara Falls was identified as one of the Province’s 29 ‘large and fast-growing municipalities’ (Schedule 1) and are required to “undertake watershed planning to inform planning for sewage and water services and stormwater management” (Policy 4.2.3).	The MSP is a key part of satisfying the watershed planning requirement for water and wastewater services, and stormwater management planning. Where applicable, the Region and City are recommended to coordinate in the planning process.
Greenbelt Plan	2017 (Amended 2024)	Provincial	The Greenbelt Plan is built upon the policy foundation provided by the Provincial Planning Statement. The Greenbelt is a broad band of permanently protected land which supports agriculture, protects natural heritage and water resource systems, and provides for a diverse range of economic and social activities. The Greenbelt includes lands within, and builds upon the ecological protections provided by, the Niagara Escarpment Plan (NEP).	Protected lands are reviewed and considered under the criteria used to evaluate environmental impact of proposed projects.
Niagara Escarpment Plan	2017	Provincial	The 2017 Niagara Escarpment Plan provides for the maintenance of the Niagara Escarpment and land in its vicinity substantially as a continuous natural environment, and to ensure only such development occurs as is compatible with that natural environment.	Protected lands are reviewed and considered under the criteria used to evaluate environmental impact of proposed projects.
Conservation Authorities Act	2024	Provincial	Under the Conservation Authority Act, Conservation Authorities were established as local agencies that protect and manage water and other natural resources at the watershed level. These agencies have a number of responsibilities and functions in the land use planning and development process. The study area falls within the boundaries of Niagara Peninsula Conservation Authority (NPCA) watersheds. The NPCA is responsible for administering O. Reg. 41/24 Prohibited Activities, Exemptions, and Permits.	As part of the Class EA public consultation process, the NPCA was consulted as a stakeholder on the MSP’s proposed projects.
Sustainable Water and Wastewater Systems Improvement and Maintenance Act	2010	Provincial	The purpose of the Act is to sustain and encourage improvement in Ontario’s water and wastewater services and to establish the Ontario Water Board. The Act sets out a requirement for municipalities to provide a business plan for the provision of water and/or wastewater services to the public.	The City’s water and wastewater systems are assessed under levels of service criteria, and a capital plan is developed under the MSP. The capital plan is an important part of the City’s business plan to maintain provision of water and wastewater services.
Canadian Environmental Protection Act, 1990 and Section 6(1) Inorganic Chloramines and Chlorinated Wastewater Effluents in Municipal Wastewater Effluent Section	2024	Federal	The Canadian Environmental Protection Act (CEPA) required the elimination of toxic chlorine residuals from municipal wastewater effluent. Owners of wastewater systems (i.e., City of Niagara Falls) were required to submit information to the federal Minister of Environment once their Pollution Prevention Plan (P2 plan) was prepared and had fully implemented the activities outlined in their P2 plan.	The City of Niagara Falls, like all municipalities in Ontario, must operate within the administrative, legislative, and financial framework established by senior levels of government. The MSP-WWMS documents the City’s levels of service that conform to regulatory requirements and how the City can meet those goals.

Planning Documentation	Year Approved / Version	Authority	Context / Requirements	How the MSP address the requirements
Fisheries Act, 1985 and the Wastewater Systems Effluent Regulations	2019	Federal	The Fisheries Act sets out provisions on the conservation and protection of freshwater and marine fish habitat in order to sustain fish species. Under the Act, the Wastewater Systems Effluent Regulations aims to decrease the deleterious impact of wastewater effluent into waters frequented by fish by setting a national effluent quality standard for owners and operators of wastewater systems.	The MSP-WWMS reviews and develops strategies for reducing ‘deleterious substances’ from combined sewer overflows through the wet weather management strategy.
CCME Strategic Directions for Water and the Canada-Wide Strategy for the Management of Municipal Wastewater Effluent	2009	Federal and Provincial	The Canadian Council of Ministers of the Environment (CCME) provided a framework for future actions and activities related to water such that Canadians have access to clean, safe, and sufficient water to meet their needs in ways that also maintain the integrity of ecosystems. A key part of the strategic directions is to monitor and implement the Canada-wide Strategy for the Management of Municipal Wastewater Effluent such that the regulatory framework across the country is consistent. It requires that all facilities achieve minimum National Performance Standards and develop and manage site-specific Effluent Discharge Objectives.	The City of Niagara Falls, like all municipalities in Ontario, must operate within the administrative, legislative, and financial framework established by senior levels of government. The MSP-WWMS documents the City’s levels of service that conform to regulatory requirements and how the City can meet those goals.
Ministry of the Environment, Conservation and Parks Guideline F-5 and Procedures F-5-1 and F-5-5	2016	Provincial	Guideline F-5 takes the approach that all sewage treatment works should provide secondary treatment or equivalent as the “normal” level of treatment unless individual receiving water assessment studies indicate the need for higher levels of treatment. Procedure F-5-1, Determination of Treatment Requirements for Municipal and Private Sewage Treatment Works, 2016 (updated in 2021), outlines the treatment requirements for municipal and private sewage treatment works discharging to surface waters. Procedure F-5-5 outlines the requirements for municipal and private combined and partially separated sewer systems. The goals of the Procedure include eliminating dry weather overflows; minimizing the potential for impacts on human health and aquatic life resulting from Combined Sewer Overflows (CSOs); compliance with body contact recreational water quality objectives for E.coli; and each operating authority of a combined sewer system is expected to develop a Pollution Prevention and Control Plan, meet minimum CSO controls, and provide additional controls for beaches impaired by CSOs where water quality is not meeting E.coli objectives. Niagara Falls’ previous PPCP was completed in 2017. The current MSP provides an update to the system’s conformance to the F-5-1/F-5-5 requirements.	The City of Niagara Falls, like all municipalities in Ontario, must operate within the administrative, legislative, and financial framework established by senior levels of government. The MSP-WWMS documents the City’s levels of service that conform to regulatory requirements and how the City can meet overflow targets.
Environmental Protection Act	2024	Federal	The Environmental Protection Act (EPA) was enacted by the Province to provide for the protection and conservation of the natural environment. Under Section 6(1) of the Act, <i>“No Person shall discharge into the natural environment any contaminant, and no person responsible for a source of contaminant shall permit the discharge into the natural environment of any contaminant from the source of contaminant, in an amount, concentration or level in excess of that prescribed by the regulations”</i> .	The City of Niagara Falls, like all municipalities in Ontario, must operate within the administrative, legislative, and financial framework established by senior levels of government. The MSP-WWMS documents the City’s levels of service that conform to regulatory requirements and how the City can meet those goals.
Ontario Water Resources Act	2021	Provincial	The Act provides for the conservation, protection and management of Ontario’s waters and for their efficient and sustainable use, in order to promote Ontario’s long-term environmental, social and economic well-being. It provides policy direction and regulations for the efficient use of water, management of wells, water quality, water taking, sewage works, and others. It works in conjunction with the EPA, to manage and regulate sewage works in the Province.	The City of Niagara Falls, like all municipalities in Ontario, must operate within the administrative, legislative, and financial framework established by senior levels of government. The MSP-WWMS includes strategies to reduce overflows, improve wastewater treatment, and manage stormwater.
Water Opportunities and Conservation Act	2010	Provincial	The Act aims to promote the efficient use of water and reduce negative impacts on Ontario’s water resources. It requires certain municipalities, persons, and entities to prepare, approve, and submit to the MECP municipal water sustainability plans for municipal water services, municipal wastewater services, and municipal stormwater services under their jurisdiction.	The City of Niagara Falls, like all municipalities in Ontario, must operate within the administrative, legislative, and financial framework established by senior levels of government. The MSP-WWMS provides strategies for maintaining and improving municipal services as an essential part of satisfying the requirements of the sustainability plan under The Act.

Planning Documentation	Year Approved / Version	Authority	Context / Requirements	How the MSP address the requirements
Safe Drinking Water Act	2002	Provincial	The Act provides for the protection of human health and the prevention of drinking water hazards through the control and regulation of drinking water systems and drinking water testing.	The City of Niagara Falls, like all municipalities in Ontario, must operate within the administrative, legislative, and financial framework established by senior levels of government. The MSP-WWMS supports compliance by documenting the City’s levels of service and how the City can meet the operational standards of the Act.
Clean Water Act	2006, (amended 2021)	Provincial	The purpose of the Act is to protect existing and future sources of drinking water by enabling the creation of source protection areas and regions. The Act requires that municipalities, conservation authorities, source protection authorities, property owners, and the public to collaborate for the assessment of potential threats to water sources and implement a science-based approach to developing source protection plans.	The City of Niagara Falls, like all municipalities in Ontario, must operate within the administrative, legislative, and financial framework established by senior levels of government. The MSP-WWMS incorporates source water protection principles and aligns with the City’s Source Protection Plan to safeguard water quality.

4.2. Planning Projections

The growth projections for the MSP-WMMS were developed through the review of the following planning data along with workshops with City staff to confirm appropriate projections:

- Niagara Region 2051 Traffic Zone Forecasts, May 2023
 - Revised to include City forecasts, November 2023
- Existing and Active Secondary Plans, July 2023
- Passed Residential Development Applications Units, July 2023
- Pending and Future Secondary Plans, July 2023
- Corridor Intensification, July 2023
- Traffic Zone Growth Composite, November 2023
- Niagara Falls Expansion Secondary Plan Projections, November 2023
- Summary Tables Secondary Plans and All Other, November 2023

Table 4-2 summarizes the 2051 and buildout population projections.

Table 4-2. Population Projections

Growth Horizon	Residential	Employment	Total
Existing	96,720	37,857	134,577
2051	178,110	71,911	250,020
Buildout	287,172	117,544	404,716

4.2.1. 2051 Growth

The Region's high level growth forecast projections based on the Region's Traffic Assessment Zone (TAZ) were found to be under-predicting population projections within the City. As such, the approach that was taken for estimating 2051 population growth projections considered the City-provided unit data for existing and active secondary plans, corridor intensification, passed residential development applications, and infill through accessory dwelling units. These growth areas are shown in **Figure 4-1**. For consistency with the City's Development Charge Background Study (2024), population projection calculations were based on the population per unit density criteria summarized in **Table 4-3**.

Table 4-3. Population Per Unit Criteria

Criteria	Value
Residential People Per Unit	2.45
Residential People Per Job/Employment	2.39

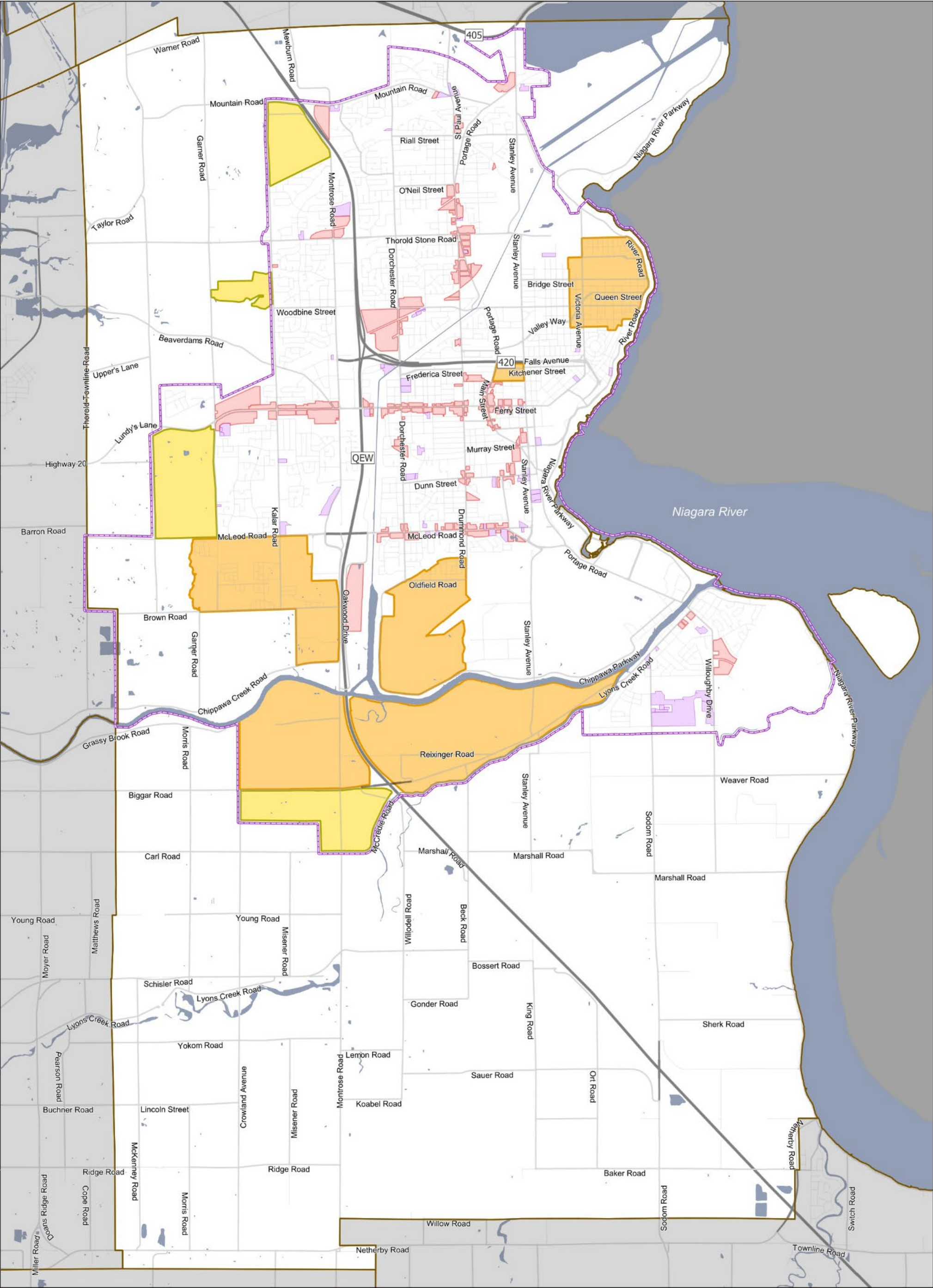
Secondary plans are detailed land-use plans for the growth and development within a designated area of a municipality. There are four existing secondary plans including Thundering Waters/Riverfront, Grand Niagara, Garner South, and Downtown GO Transit Station Area, in which approximate gross units were the only form of planning projections provided. There are five active/pending secondary plan areas including Garner West, Northwest, Southwest Hospital, Grassy Brook, and MTO Lands, in which both the unit forecast and residential population projections with specified unit type were provided. It should be noted that Kalar West was not included in this study as it was removed by the Province's projections.

Corridor intensification involves increasing the density of an existing development along transportation corridors, which in this case are primarily located along Lundy's Lane from Garner Road to Stanley Avenue, McLeod Road from east of the canal to Stanley Avenue, Main Street from North Street to Robinson Street, Drummond Road from O'Neil Street to Morrison Street, and a few smaller areas throughout the City. Passed residential development applications were also taken into consideration for the growth projections as these include development applications that have been approved but are not yet built. These properties are generally scattered throughout the City. As an approximate buffer, a suggested existing neighborhood infill through accessory dwelling units of 5% were included in the projections. These provided an updated basis for growth out to 2051, using 2021 as a base, where forecasts were allocated on a parcel basis to capture impacts on a local scale.

4.2.2. Buildout Growth

Buildout growth forecast projections were provided based on the Region's TAZ. TAZs often cover larger geographical blocks which are appropriate for traffic analysis but less refined for the use of water and wastewater infrastructure analysis that requires a more granular level of detail to refine accuracy of results. A portion of the City's TAZ planning projections exceeded those of the Region's projections as part of the 2021 MSPU. This discrepancy is anticipated to be reconciled in the Region's on-going 2026 Master Servicing Plan Update. The higher value between the Region's TAZ growth projection versus the City's TAZ growth projection was utilized to provide a more conservative growth estimate.

To determine buildout growth, a spatial allocation by TAZ and property parcels were completed to further refine the dataset. This process converted population projections into more detailed allocations for model loading distribution which involved a spatial analysis to existing water and wastewater service areas. Additionally, the buildout considered a suggested existing neighborhood infill through accessory dwelling units of 10%.



- Growth Plans**
- Passed Residential Development Applications
 - Corridor Intensification
 - Pending and Future Secondary Plans
 - Existing and Active Secondary Plans

- General Feature**
- Urban Area Boundary
 - Municipal Boundary
 - Waterbody, Watercourse

Reference(s)
1. Projection EPSG:26917
2. Base Data: City of Niagara Falls, 2023



Figure 4-1
Map Title: Growth Areas

Project Name:
Master Servicing Plan and Wet Weather
Management Strategy

Client Name:
City of Niagara Falls
(Ontario, Canada)



5. Servicing Principles and Policy

Execution of reasonable policies and hydraulic levels of service (HLOS) objectives are essential in ensuring that the proper planning and design principles are followed in the development of detailed servicing strategies, implementation of system capital program, and operations and maintenance practices.

Through the MSP-WWMS; policies and HLOS objectives were established and used to guide future investment in the water, wastewater, and stormwater systems. The development of water, wastewater, and stormwater Policies and HLOS objectives have been based on existing documentation and related sources, and an assessment of the City's existing infrastructure condition and performance. The MSP-WWMS Policies and HLOS objectives and recommendations are included in **Appendix B**.

Although best management practices, criteria, and key performance indicators are updated over time, the context, intent and validity of the Policies and HLOS objectives should remain intact as policy is the overall guiding principle while criteria are the tactical implementation of policy.

5.1. Problem and Opportunity Statement

The City is experiencing increasing pressure on its water, wastewater and stormwater infrastructure due to aging assets, growth, and climate change. The problem and opportunity statement defines the principal starting point in the undertaking of the 2025 MSP-WWMS Class EA and assists in defining the scope of the project as follows:

Supporting a Strong and Growing Niagara Falls

To establish a preferred servicing plan for the City's water, wastewater, and stormwater systems that:

- Meets current needs,
- Supports projected growth to 2051 and beyond,
- Maintains or improves service levels, and
- Considers priority areas of climate change, infrastructure optimization and renewal, and system resiliency.

5.2. Servicing Principles and Policies

Specific servicing principles and policies have been developed to guide the development of water, wastewater, and stormwater servicing strategies. In general, the City is looking to build and maintain efficient, reliable, sustainable, and well-managed infrastructure systems that provide a high level of service to the public. The servicing policies which impact the water, wastewater, and stormwater servicing are summarized in **Appendix B**.

5.3. Design Criteria and Hydraulic Performance Criteria

A guiding principle of design criteria is to ensure that the demand and flow projections are adequately predicted with an appropriate factor of safety and risk management. This overall principle also ensures that infrastructure has sufficient capacity to meet the growing needs of the City and does not impede the approved/planned growth. The design criteria were reviewed as part of this MSP-WWMS to ensure that they are accurate and will support sizing and timing of future infrastructure.

6. Environment Existing Conditions

6.1. Natural Environment Policy Context

The City of Niagara Falls Official Plan includes a set of policies to protect and enhance the natural heritage resources. Within the City, there exists a number of key environmental features including the Niagara River, Niagara Escarpment, woodlands, wetlands, and other watercourses. The City's natural environment, shown in **Figure 6-1**, includes the following:

- Niagara Escarpment Plan Area
- Provincially and regionally significant Areas of Natural and Scientific Interest (ANSIs)
 - Niagara River Bedrock Gorge, St. David's Buried Gorge
- Greenbelt – Protected Countryside
- Provincially Significant Wetlands
- Significant Woodlands, Valley Lands, and Wildlife Habitat
- Conservation Areas
 - Shriner's Creek, Smith-Ness Forest, OPG, Willoughby Marsh
- Watersheds draining to both the Niagara River and Lake Ontario
- Intake Protection Zone (IPZ) 1 and IPZ2 in the Niagara River in the area adjacent and upstream of the Niagara Falls Water Treatment Plant (WTP)
- Niagara Peninsula Conservation Authority

6.1.1. *Niagara Region Core Natural Heritage System*

The Niagara Region's Core Natural Heritage System consists of:

- Core Natural Areas classified as either Environmental Protection Areas or Environmental Conservation Areas;
- Potential Natural Heritage Corridors connecting the Core Natural Areas;
- The Greenbelt Natural Heritage and Water Resources Systems; and
- Fish Habitat.

These elements of the Core Natural Heritage System within the study area are depicted in the Niagara Region Official Plan (Schedule C).

As defined in the Region's Official Plan Environmental Protection Areas include provincially significant wetlands, provincially significant Life Science Areas of Natural and Scientific Interest (ANSIs), and significant habitat of threatened and endangered species. In addition, within the Greenbelt Natural Heritage System, Environmental Protection Areas also include wetlands, significant valleylands, significant woodlands, significant wildlife habitat, significant habitat of species of concern, publicly owned conservation lands, savannahs and tallgrass prairies, and alvars. Environmental Conservation Areas include significant woodlands, significant wildlife habitat, significant habitat of species of concern, regionally significant Life Science ANSIs, other evaluated (e.g., regionally significant) wetlands, significant valleylands, savannahs and tallgrass prairies, alvars, and publicly owned conservation lands.

Although included within the Core Natural Heritage System, significant habitats of threatened and endangered species are not included in the Core Natural Heritage Areas. Rather, the Region's Official Plan states that these habitats are identified through the Planning and Development review process.

6.1.2. Wetlands

The designation of wetlands as either regionally or provincially significant is completed through a standardized assessment process developed by the Ontario Ministry of Natural Resources and Forestry (OMNRF), the Ontario Wetland Evaluation System (OWES). Provincially significant wetlands (PSW) are protected under section 2.1 of the Provincial Policy Statement (2014), which prohibits development and site alteration in provincially significant wetlands and coastal wetlands. In addition, development and site alteration on adjacent lands is permitted only if the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or ecological functions. Wetlands are also included in the Natural Areas System of the Niagara Escarpment Plan (2010) and in the Core Natural Heritage System of Niagara Region's Official Plan.

6.2. Cultural Heritage and Archeology

The City encourages and supports heritage preservation. The City's atmosphere has a sense of continuity between the past and the present as defined by its cultural heritage resources, which include built heritage resources, cultural heritage landscapes, and archaeological resources. The Niagara Falls areas has played an important role in history for both First Nations and Euro-Canadian people.

6.2.1. Built Heritage Resources and Cultural Heritage Landscapes

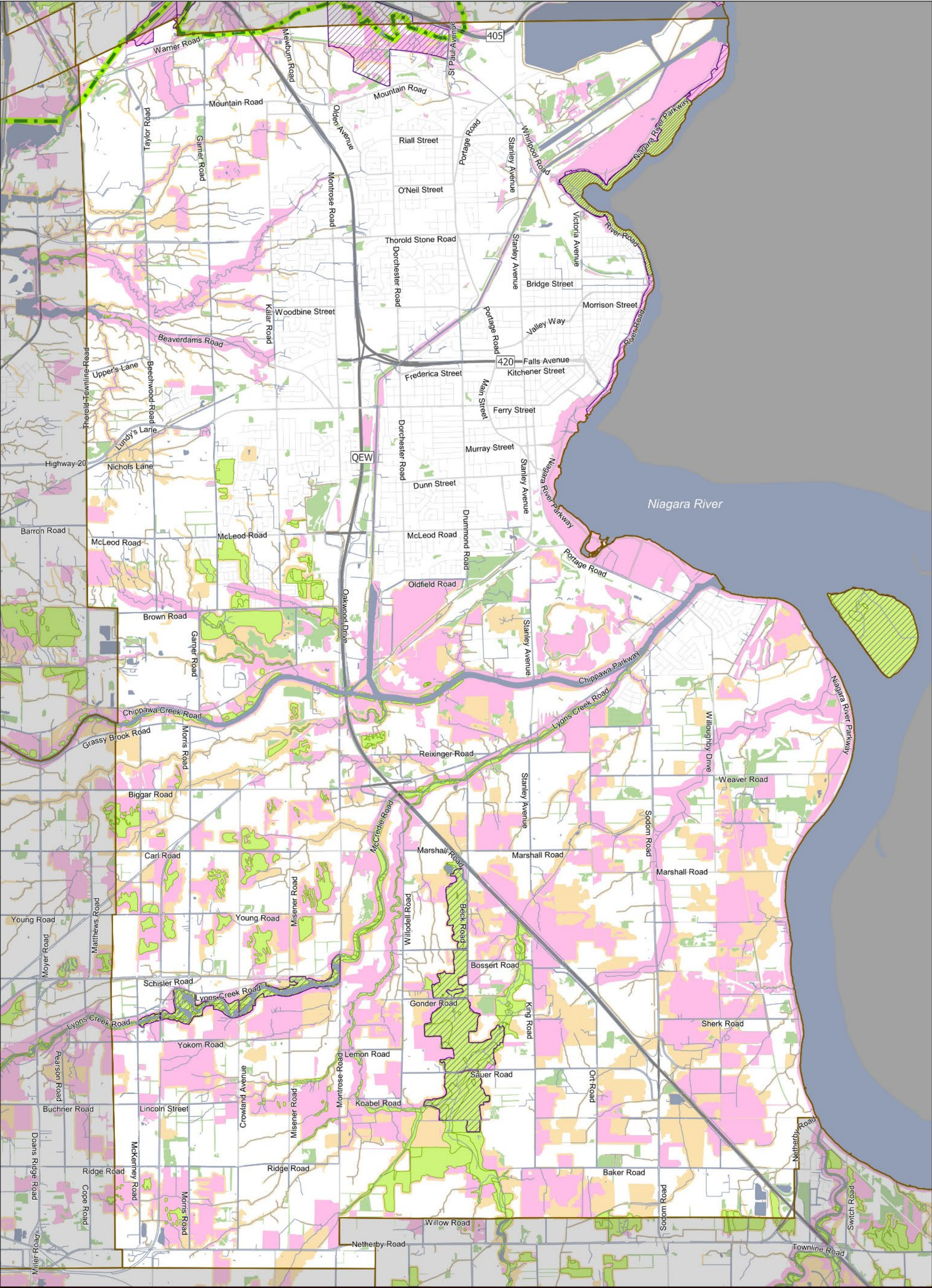
The City has a rich historical background and in order to promote the conservation of heritage resources, the City appoints citizen representatives to a Municipal Heritage Committee (MHC) under the terms of the Ontario Heritage Act. This Committee researches and advises City Council on heritage matters relating to the identification, protection and/or management of properties of cultural heritage value or interest. The MHC also advise and assist Council on other heritage related matters. The City currently has 116 Municipal Heritage Register Listed properties and 47 Municipal Heritage Register Designated properties.

A baseline Cultural Heritage Assessment Report (CHAR) should be completed to determine known and potential cultural heritage resources as they relate to potential infrastructure projects. This may lead to a Heritage Impact Assessment (HIA). The site specific HIA should be conducted prior to water and/or wastewater works on or adjacent (contiguous) to all properties designated under the Ontario Heritage Act and/or subject to a heritage plaque.

6.2.2. Archaeology Resources

Before approving a land development project regulated by legislation, the City – like all Ontario municipalities – is required to undertake an archaeological assessment of all lands that are part of the project. Assessments are required when the land is known to have an archaeological site on it or has the potential to have archaeological resources.

Public development projects such as highway or road construction, or sewer construction require an archaeological assessment under the Environmental Assessment Act directly or through a Class Environmental Assessment. In many cases, an Environmental Assessment determines the need for an archaeological assessment, which is completed as part of the overall environmental assessment process. Upon completion, the archaeological assessment must be sent to the Ministry of Heritage, Sport, Tourism, and Culture Industries for review to ensure the terms and conditions of the archaeological assessment were met and that any archaeological sites found were properly conserved.



Natural Heritage

Escarpment

Area of Natural and Scientific Interest

Environmental Conservation Area

Environmental Protection Area

Wooded Area

Other Wetland

Provincially Evaluated Wetland

Waterbody, Watercourse

NPCA Approximate Regulation Lands

General Feature

Municipal Boundary

Reference(s)

1. Projection EPSG:26917

2. Base Data: City of Niagara Falls, 2023

12 km

Figure 6-1

Map Title: Natural Heritage Features

Project Name:

Master Servicing Plan and Wet Weather Management Strategy

Client Name:

City of Niagara Falls (Ontario, Canada)

GEI

Consultants

Last Updated: July 2025

Document ID: 2402014-001

7. Financing

7.1. Project Costing

The cost estimation approach used for the MSP-WWMS, uses a classification system to categorize different cost estimate classes. These classes represent different phases of planning and design, and subsequently different methods of cost estimation and levels of accuracy. This framework complements the generic approach developed by the Association of Advancement in Cost Estimating (AACE) International and has similarities to the Government of Canada (GOC) approach. For the purposes of the MSP-WWMS it is expected that all the cost estimates will follow a Class 4 estimate; however, it is important to establish the level of accuracy that can be expected and as the project matures through planning to design, how the higher-class estimates refine the costs. Each of the key components is described below, including:

- Cost Estimate Classes
- Project Complexity
- Area Condition
- Construction and Project Contingency
- Construction Provisional and Allowance
- Additional Costs

The unit costs and all the above components are contained in the City's MSP-WWMS Capital Program are further described in detail in **Appendix C**.

7.2. Development Charges Input

A key component of the MSP-WWMS is the overall financing and financial affordability of the capital program. As growth occurs within the City, additional growth related infrastructure benefiting from increased population and employment must be constructed. The primary method to recover these costs is through Development Charges (DC).

The MSP-WWMS program formed the basis for the existing DC Background Study (2024) as well as the next DC Background Study. Although the Capital Program is driven by the growth needs to meet the 2051 horizon, there may be some other benefits that certain projects provide that are reviewed as part of the DC process:

- Benefit to Existing (BTE): If a growth-related project provides added benefit to relieve a capacity or condition deficiency, there may be opportunity to allocate some of the project cost to BTE and is excluded from the DC costs. These costs are generally assigned to the rates-based capital budget.

- Out of By-law (OBL): The MSP-WWMS identifies projects to service growth to the 2051 horizon. However, there are some cases where strategic oversizing of infrastructure may be recommended to service buildout conditions. In general, the cost premium for oversizing these projects is allocated to the OBL category and is excluded from the DC costs.

All projects that are subject to either BTE or OBL are reviewed on a case-by-case basis. The methodology for the cost splits is outlined in the DC Background Study (Hemson).

8. Public Consultation

The Public Consultation section provides a compilation of all the relevant documentation related to the public, stakeholder and agency consultation. This section also provides the background support for satisfying the Public Consultation for the Class EA Process.

Objectives of Phase 1 of the MEA Municipal Class EA process with respect to public consultation are as follows:

- Present clear and concise information to stakeholders at key stages of the study process;
- Solicit community, regulatory and staff input;
- Meet Municipal Class EA consultation requirements; and
- To fulfill the consultation requirements of the MEA Municipal Class EA document:
 - Build on past communication protocols and consultation plans from previous Class EA and municipal planning initiatives to ensure consistency and continuity;
 - Meet public and agency notification and consultation requirements for Phases 1 and 2 of the MEA Municipal Class EA (October 2000, as amended in 2015, 2023); and
 - Complete additional tasks to enhance the proposed consultation program and overall Class EA process.

As part of the MSP-WWMS, a communication and consultation plan was developed. The main objective of the plan was to proactively engage the community, regulatory agencies, and City staff. More specifically, the plan is designed to:

- Ensure the general public, regional and municipal councillors, stakeholders, external agencies (including federal and provincial), and special interest groups have an opportunity to participate in the study process;
- Ensure that factual information is provided to interested and affected stakeholders early and often throughout the study process; and
- Contact external agencies to obtain legislative approvals or regulatory approvals, or to collect pertinent technical information.

8.1. Contact List

A list of stakeholders, review agencies and other interested parties was developed at the outset of the study to invite participation in the planning process. The contact list was updated throughout the study as more individuals became aware of the study or provided feedback. The stakeholder list is provided in **Appendix D**.

8.2. Notice of Commencement

The Notice of Commencement was published and distributed through digital and print media, provided in **Appendix E**. The notice was made public by the following means:

- Mailed/ e-mailed to the stakeholders listed in the contact list;
- Posted on the City's website; and,
- Advertised in the Niagara Falls Review, on August 6, 2023 and August 11, 2023

Additionally, information on the Study was provided on the City's "Let's Talk" page advertised online on the Niagara

8.3. Public Information Centre #1

Public Information Centre (PIC) No. 1 presented details about the study, the process used to decide possible solutions and allow the public the opportunity to share comments and concerns.

The Notice of PIC No. 1 was published and distributed through digital and print media in the following papers:

- Mailed/ e-mailed to the stakeholders listed in the contact list;
- Posted on the City's website; and,
- Advertised in the Niagara Falls Review, on November 23, 2023

An in-person Public Information Centre (PIC) No. 1 was held as an in-person open house at the MacBain Community Centre in the City of Niagara Falls on December 14, 2023 from 6:00pm to 8:00pm. Project information was presented in the form of information boards and GEI and City Staff guided participants through the project information and answered questions. Participants were invited to leave feedback and comments in person and online on the project engagement page on Let's Talk Niagara Falls.

Details on the attendance, comments received, and display panels presented during PIC No. 1 are provided in **Appendix E**.

8.4. Public Information Centre #2

Public Information Centre (PIC) No. 2 presented details about the study, the process used to decide possible solutions, the preliminary preferred solutions, and allow the public the opportunity to share comments and concerns.

The Notice of PIC No. 2 was published and distributed through digital and print media in the following papers:

- Mailed/ e-mailed to the stakeholders listed in the contact list;
- Posted on the City’s website; and,
- Niagara Falls Review on November 20, 2024

PIC #2 was held as an in-person open house on Thursday, December 12, 2024??? at the MacBain Community Centre in the City of Niagara Falls. Similar to PIC #1, project information was presented in the form of information boards and GEI and City Staff guided participants through the project information and answered questions. Participants were invited to leave feedback and comments in person and online on the project engagement page on Let’s Talk Niagara Falls.

Details on the attendance, comments received, and display panels presented during PIC No. 2 are provided in **Appendix F**.

8.5. Public Access to Information

All project publications, presentation materials, and other documentation has been made available to the general public through the City’s website (<https://letstalk.niagarafalls.ca/master-servicing-plan>). Notices of upcoming PICs were also posted on this website.

For those without Internet access, the City also maintained a contact list and mailed relevant project materials to all who had expressed interest in the process.

8.6. Stakeholder and Agency Meeting

The City Staff and GEI held a consultation with First Nations Groups on Thursday, September 28, 2023. The meeting objectives were to introduce the MSP-WWMS and expected study outcomes and identify MCFN’s desired study engagement process.

8.7. Comments Received

Through the public consultation process, comments were received from stakeholders. These comments were filed and addressed accordingly. **Table 8-1** provides a summary of comments received during this study. **Appendix G** provides the detailed list of comments received throughout the study.

Table 8-1. Consultation Comments Summary

Date Received	Stakeholder Organization	Comment	Response/Action
8/25/2023	Niagara Region Metis Council	Received an email with a request to keep the contact informed.	n/a
9/15/2023	Project Stakeholders	Resident posted a question related to mitigating odour from the wastewater treatment facility.	The Project Team indicated the Region or Niagara is responsible for the operation and management of water and wastewater treatment and service delivery inquiries should be directed to the Region.
10/13/2023	Ministry of Natural Resources and Forestry	MNRF confirmed receipt of the Notice of Commencement and provided information to support the project.	n/a
10/16/2023	Project Stakeholders	Resident posted comments on the discussion forum on the project website noting that the City hasn't updated the Official Plan to conform with the Niagara Region Official Plan and that it is a requirement of the Region's Official Plan and Ontario Planning Act and is necessary to provide more detailed policy direction.	The Project Team indicated the City is in the initial stages of creating a new Official Plan and that master plans for water, wastewater and transportation contribute to the preparation of a new Official Plan.
10/17/2023	Ministry of Transportation	MTO provided information on permitting requirements and requested consideration of permitting requirement should any future plans fall within the Ministry's Controlled Areas.	The Project Team confirmed inclusion of MTO on the project stakeholder list and confirmed the specific contacts. Updated stakeholder list.
10/17/2023	Niagara Escarpment Commission	The NEC confirmed receipt of the Notice of Commencement and indicated their interest would be with any proposed improvements within or near the Niagara Escarpment Plan Area. The NEC requested to continue to stay on the stakeholder list.	The Project Team confirmed inclusion on stakeholder list.
10/18/2023	Haudenosaunee Development Institute	The Project Team received a request to update contacts on the stakeholder list.	Updated stakeholder list.

Date Received	Stakeholder Organization	Comment	Response/Action
10/18/2023	Niagara Parks Commission	Niagara Parks confirmed receipt of the Notice of Commencement and requested to be kept notified of anything that may affect the Parkway as the project progresses.	The Project Team indicated Niagara Parks will be followed up with directly if any of the project recommendations could impact the Parkway.
10/24/2023	Transport Canada	Transport Canada indicated they do not require receipt of all individual or Class EA related notification and request the proponent self-assesses to determine whether notification is required.	n/a
11/7/2023	Trans Canada Pipelines	MHBC provided information on behalf of Trans Canada Pipelines. TCPL has 2 high pressure natural gas pipelines contained within an easement crossing the City of Niagara Falls.	No action required.
11/16/2023	Ministry of Citizenship and Multiculturalism	MCM sent a letter providing advice on how to incorporate consideration of cultural heritage in the master planning process.	No action required.
11/27/2023	Hydro One Networks Inc.	Hydro One provided a letter identifying the presence of high voltage transmission facilities within the study area and indicated they need to be kept up to date to determine any conflicts with their assets.	No action required.
12/7/2023	Project Stakeholders	A newspaper article was published December 7, 2023 discussing the Public Information Centre session being hosted on December 14, 2023.	n/a

Date Received	Stakeholder Organization	Comment	Response/Action
12/7/2023	Project Stakeholders	Resident posted comments on the discussion forum on the project website related to increasing budget on critical infrastructure improvements for roads, sanitary sewers, storm sewer separation, cast iron pipe water main pipe replacement and decrease budget spending on transit, parks, pools and recreation facilities and city fleet.	The Project Team identified that the MSP study will identify critical water, sanitary, and stormwater infrastructure expansions and upgrades required to service growth to 2051. The Project Team also noted the City has an asset management plan completed for core infrastructure and once the MSP is finalized the City will have a 10-year comprehensive plan to address critical infrastructure needs.
1/2/2024	Infrastructure Ontario	Received confirmation of receipt of the Notice of Public Information Centre. IO indicated it is the proponent's responsibility to verify if provincial government property is located within the study area and title documents can identify owners. IO noted that if provincial government property in the study area is not required for the project, notification is still required but if property is required, a more in-depth review of the land requirement and potential impacts should be completed.	n/a

8.8. Notice of Master Plan

The Notice of Master Plan was published and distributed in 2026 to notify the public that this Project File Report was being placed on the public record for the required 30-day review period. The notice was made public by the following means:

- Mailed/ e-mailed to the stakeholders listed in the contact list,
- Posted on the City's website; and
- Advertised in the Niagara Falls Review, on September 5, 2026.

A copy of the notice is provided in **Appendix H**. During the review period, the MCEA entitles interested persons, Indigenous Peoples, or government agencies who have significant concerns which cannot be resolved to request the MECP to issue a Section 16 Order under the EA Act.

If there are concerns regarding the study, a request may be made to the MECP for an order requiring a higher level of study (i.e., requiring a Schedule C Class EA or Individual/ Environmental Assessment), 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 for the Ministry.

Requests should specify what kind of order is being requested (request for additional conditions or a request for an individual/comprehensive environmental assessment), how an order may prevent, mitigate or remedy those potential adverse impacts, 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.

Requests should be sent by email or in writing to:

Minister of the Environment, Conservation and Parks
Ministry of Environment, Conservation and Parks
777 Bay Street, 5th Floor
Toronto ON M7A 2J3
minister.mecp@ontario.ca

Director, Environmental Assessment Branch
Ministry of Environment, Conservation and Parks
135 St. Clair Ave. W, 1st Floor
Toronto ON, M4V 1P5
EABDirector@ontario.ca

Appendix A Provincial and Federal Legislation and Policy Context

Planning Act

The Planning Act, 1990 (amended 2024) establishes a land use planning system led by provincial policy and allows for the integration of matter of provincial interest into provincial and municipal planning decisions. The Planning Act also defines the roles and responsibilities of the province and municipalities, as listed below:

Provincial Responsibility

- Issuance of the Provincial Planning Statements;
- Promotion of provincial interests;
- Preparation of provincial plans, such as the Greenbelt Plan
- Provision of advice to municipalities and the public on land use planning issues; and,
- Administration of local planning controls and approvals where required.

Municipal Responsibility

- Make local planning decisions for future communities;
- Preparation of planning documents such as Official Plans and Zoning By-Laws; and,
- Ensure that planning decisions and documents are consistent with the Provincial Planning Statement and conform or do not conflict with provincial plans.

The City of Niagara Falls, like all municipalities in Ontario, must operate within the administrative, legislative, and financial framework established by senior levels of government. The key provincial and national initiatives that provide directives and are considered under the Master Servicing Plan process.

Provincial Planning Statement

The Provincial Planning Statement (PPS) (2024), which superseded both the Provincial Policy Statement (2020) and A Place to Grow: Growth Plan for the Greater Golden Horseshoe (2019), is a key part of Ontario's policy-led land use planning system. The PPS provides an overview of the land use goals and objectives for the Province of Ontario (Province) to the year 2031 and provides policy direction for land use planning matters related to provincial interests. It includes key chapters outlining how the Province will achieve their goals for the creation of strong and competitive communities by enabling municipalities to plan for and support development, increase housing supply, align development with infrastructure, foster long-term viability of rural areas, and protect agricultural lands, the environment, public health, and safety. The PPS is to be read in its entirety and land use planners and decision-makers need to consider all relevant policies and how they work together.

The City of Niagara Falls was identified as one of the Province's 29 'large and fast-growing municipalities' (Schedule 1) and are required to "undertake watershed planning to inform planning for sewage and water services and stormwater management, including low impact development, and the protection, improvement or restoration of the quality and quantity of water" (policy 4.2.3).

Key general infrastructure policies included in the PPS relevant to water, wastewater, and stormwater services include the following:

- Planning authorities shall ... prepare for the impacts of a changing climate through approaches that...(b) shall incorporate climate change considerations in planning for and the development of infrastructure, including stormwater management systems, and public service facilities; (d) promote green infrastructure, low impact development (Policy 2.9.1)
- Infrastructure and public service facilities shall be provided in an efficient manner while accommodating projected needs. Planning shall be coordinated and integrated with land use planning and growth management so that they: (a) are financially viable over their life cycle, which may be demonstrated through asset management planning; (b) leverage the capacity of development proponents, where appropriate; and (c) are available to meet current and projected needs (Policy 3.1.1)
- Before consideration is given to developing new infrastructure and public service facilities: (a) the use of existing infrastructure and public service facilities should be optimized; and (b) opportunities for adaptive re-use should be considered, wherever feasible. (Policy 3.1.2)

More specifically, the 2024 Provincial Planning Statement Policy 3.6.1 recommended that sewage and water services should:

- Accommodate forecasted growth in a timely manner that promotes the efficient use and optimization of existing *municipal sewage services* and *municipal water services*; and *private communal sewage services* and *private communal water services*.
- Ensure that these systems are provided in a manner that:
 - Can be sustained by the water resources upon which such services rely

- Is feasible, financially viable and complies with all regulatory requirements; and,
 - Protects human health and the natural environment.
- Promote water and energy conservation and efficiency;
- Integrate servicing and land use considerations at all stages of the planning process;
- Consider opportunities to allocate, and re-allocate if necessary, the unused system capacity of municipal water services and municipal sewage services to support efficient use of these services to meet current and projected needs for increased housing supply; and
- Be in accordance with the servicing options outlined through policies 3.6.2 to 3.6.5

Policies 3.6.2 to 3.6.5 are outlined below:

- *Municipal sewage services and municipal water services* are the preferred form of servicing for settlement areas. Intensification and redevelopment within settlement areas on existing *municipal sewage services and municipal water services* should be promoted, wherever feasible. (Policy 3.6.2);
- Where *municipal sewage services and municipal water services* are not provided, municipalities may allow the use of private communal sewage services and private communal water services. (Policy 3.6.3);
- Where *municipal sewage services and municipal water services* or *private communal sewage services and private communal water services* are not provided, planned or feasible, *individual on-site sewage services and individual on-site water services* may be used provided that site conditions are suitable for the long-term provision of such services with no negative impacts. At the time of the official plan review or update, planning authorities should assess the long-term impacts of individual on-site sewage services and individual on-site water services on environmental health and the financial viability or feasibility of other forms of servicing set out in Policies 3.6.2 and 3.6.3. (Policy 3.6.4); and,
- Partial services shall only be permitted in the following circumstances: (a) where they are necessary to address failed individual *on-site sewage services and individual on-site water services* in existing development; or (b) within settlement areas, to allow for infilling and minor rounding out of existing development on partial services provided that site conditions are suitable for the long-term provision of such services with no negative impacts; or (c) within rural settlement areas where new development will be serviced by *individual on-site water services* in combination with *municipal sewage services or private communal sewage services* (Policy 3.6.5)
- In rural areas, where partial services have been provided to address failed services in accordance with policy (3.6.5.a), infilling on existing lots of record may be permitted where this would represent a logical and financially viable connection to the existing partial service and provided that site conditions are suitable for the long-term provision of such services with no negative impacts.
- Planning authorities may allow lot creation where there is confirmation of sufficient reserve sewage system capacity and reserve water system capacity.

- Planning for stormwater management shall:
 - (a) be integrated with planning for sewage and water services and ensure that systems are optimized, retrofitted as appropriate, feasible and financially viable over their full life cycle;
 - Minimize, or, where possible, prevent or reduce increases in stormwater volumes and contaminant loads;
 - Minimize erosion and changes in water balance including through the use of green infrastructure;
 - Mitigate risks to human health, safety, property and the environment;
 - Maximize the extent and function of vegetative and pervious surfaces;
 - Promote best practices, including stormwater attenuation and re-use, water conservation and efficiency, and low impact development; and
 - Align with any comprehensive municipal plans for stormwater management that consider cumulative impacts of stormwater from development on a watershed scale.

Further, as the City of Niagara Falls is a lower-tier municipality within the Regional Municipality of Niagara, the PPS (2024) requires that “where planning is conducted by an upper-tier municipality...the upper-tier municipality shall undertake watershed planning in partnership with lower-tier municipalities” (Policy 4.2.4).

The PPS marks a shift towards local autonomy in planning while incentivizing infrastructure projects that enable rapid housing and economic growth. Where applicable, the PPS provides opportunities for infrastructure projects supporting transit, utilities, and settlement expansion that align with the growth goals.

Greenbelt Plan

The Greenbelt is a broad band of permanently protected land which supports agriculture as the predominant land use, gives permanent protection to the natural heritage and water resource systems, and provides for a diverse range of economic and social activities. It includes lands within, and builds upon the ecological protections provided by, the Niagara Escarpment Plan (NEP) and the Oak Ridges Moraine Conservation Plan (ORMCP). The 2005 Greenbelt Plan identifies where urbanization should not occur in order to provide permanent protection to the agricultural land base and the ecological features and functions occurring on this landscape.

A review of the Greenbelt Plan was initiated in 2015 and culminated in the completion of the 2017 Greenbelt Plan. It has last been amended in 2024 for clarity that the PPS referenced in the Plan is to the 2020 PPS.

Niagara Escarpment Plan

The 2017 Niagara Escarpment Plan provides for the maintenance of the Niagara Escarpment and land in its vicinity substantially as a continuous natural environment, and to ensure only such development occurs as is compatible with that natural environment. The objectives of the Plan are as follows:

1. To protect unique ecologic and historic areas;
2. To maintain and enhance the quality and character of natural streams and water supplies;
3. To provide adequate opportunities for outdoor recreation;
4. To maintain and enhance the open landscape character of the Niagara Escarpment in so far as possible, by such means as compatible farming or forestry and by preserving the natural scenery;
5. To ensure that all new development is compatible with the purpose of this Act as expressed in Section 2;
6. To provide for adequate public access to the Niagara Escarpment; and,
7. To support municipalities within the Niagara Escarpment Planning Area in their exercise of the planning functions conferred upon them by the Planning Act.

Conservation Authority Regulation and Policy

The legislative mandate of the Conservation Authority, as set out in Section 20 of the *Conservation Authorities Act, 1990* (amended 2024), is to establish and undertake programs designed to further the conservation, restoration, development, and management of natural resources.

Conservation Authorities are local agencies that protect and manage water and other natural resources at the watershed level. These agencies have a number of responsibilities and functions in the land use planning and development process. The study area falls within the boundaries of Niagara Peninsula Conservation Authority (NPCA) watersheds.

Under Section 28 of the Conservation Authorities Act, the NPCA is responsible for administering O. Reg. 41/24 Prohibited Activities, Exemptions, and Permits. In general, NPCA is the approval authority for permits under this regulation. In NPCA's review of applications under the Planning Act, NPCA ensures that proponents and the provincial or municipal planning authorities are aware of Section 28.1 regulation and requirements under the Conservation Authorities Act and assist in the coordination of these applications.

Sustainable Water and Wastewater Systems Improvement and Maintenance Act, 2010

This Bill enacts the Sustainable Water and Wastewater Systems Improvement and Maintenance Act, 2010 and repeals the Sustainable Water and Sewage Systems Act, 2002. The Bill had its first reading on March 23rd, 2010. Key purposes of the Bill are as follows:

- Sets out the purposes of the Act, which include ensuring that public ownership of water services and wastewater services is maintained;
- Establishes the Ontario Water Board as an agent of the Crown and sets out the Board's objectives, powers and duties which relate to the regulation of water services and wastewater services;
- Sets out the responsibilities of municipalities or groups of municipalities that are designated as regulated entities by regulation; and,
- Regulated entities must prepare business plans for the provision of water services or wastewater services. The plan must contain, among other things, an assessment of the full cost of providing water services or wastewater services to the public and a description of how the regulated entity intends to pay this full cost.

Canadian Environmental Protection Act - Inorganic Chloramines and Chlorinated Wastewater Effluents in Municipal Wastewater Effluent

The Canadian Environmental Protection Act (CEPA) required the elimination of toxic chlorine residuals from municipal wastewater effluent. All owners and operators of wastewater systems with daily volumes greater than 5,000 cubic metres of effluent were required to lower their total residual chlorine (TRC) levels to less than 0.02mg/L or lower by December 15, 2009. Owners of wastewater systems (i.e., City of Niagara Falls) were required to submit information to the federal Minister of Environment once their Pollution Prevention Plan (P2 plan) was prepared and had fully implemented the activities outlined in their P2 plan.

Fisheries Act and the Wastewater Systems Effluent Regulations

The Fisheries Act provides provisions on the conservation and protection of freshwater and marine fish habitat in order to sustain fish species. In 2013, the Fisheries Policy statement was released to support the changes made to the Fisheries Act in 2012. The changes made to the Fisheries Act focuses on the protection of the productivity of commercial, recreational, and Aboriginal fisheries, improved implements for both compliance and protection, enhanced stakeholder partnerships (e.g., government agencies, local groups), and ensuring regulatory requirements are clear and consistent. In 2018, amendments for restoration of lost protections and incorporation of modern safeguards were proposed. The Fisheries Act received royal assent and became law as of June 21, 2019.

CCME Strategic Vision for Water

In 2009, the Canadian Council of Ministers of the Environment (CCME) provided a framework for future actions and activities related to water through the development of a vision and action plan, such that Canadians have access to clean, safe, and sufficient water to meet their needs in ways that also maintain the integrity of ecosystems. The goals and rationale developed as part of the vision includes the following:

- Goal 1: Aquatic ecosystems are protected on a sustainable watershed basis.
 - Rationale: Enhance understanding and application of Integrated Water Resource Management to improve ecosystem health.
- Goal 2: The conservation and wise use of water is promoted.
 - Rationale: Improve understanding of the full value of water to achieve behavioral change.
- Goal 3: Water quality and water quantity management is improved, benefitting human and ecosystem health.
 - Rationale: Promote nationally consistent approaches to water quality and quantity monitoring, guidelines, and multi-jurisdictional public reporting. Encourage research and networks to enhance knowledge and understanding of ground and surface waters.
- Goal 4: Climate change impacts are reduced through adaptive strategies.
 - Rationale: Enhance water quality and quantity monitoring networks to support water and adaptation needs.
- Goal 5: Knowledge about Canada's water is developed and shared.
 - Rationale: Help to spearhead value added information on water quality and quantity by supporting jurisdictional reporting efforts to Canadians in a systematic and consistent fashion.

The 2009 Canada-Wide Strategy for the Management of Municipal Wastewater Effluent Strategy was developed by the CCME. It requires that all facilities achieve minimum National Performance Standards and develop and manage site-specific Effluent Discharge Objectives. The Strategy requires that overflow frequencies for sanitary sewers are not increased due to development or redevelopment. The same applies for combined sewers, unless occurring as part of an approved combined sewer overflow management plan. Neither should occur during dry weather, except during spring thaw and emergencies. Source control of pollutants is recommended, and monitoring and reporting on effluent quality is required. The 2014 Progress Report outlined the progress made by signatory federal, provincial, and territorial jurisdictions on the commitments made in the 2009 Strategy.

Ministry of the Environment, Conservation and Parks Guideline F-5 and Procedures F-5-1 and F-5-5

Procedure F-5-1, Determination of Treatment Requirements for Municipal and Private Sewage Treatment Works, 2016 (updated in 2021), outlines the treatment requirements for municipal and private sewage

treatment works discharging to surface waters. Effluent requirements are established on a case-by-case basis considering the characteristics of the receiving water body. Guideline F-5 takes the approach that all sewage treatment works should provide secondary treatment or equivalent as the “normal” level of treatment unless individual receiving water assessment studies indicate the need for higher levels of treatment. Existing works not complying with this Guideline are required to upgrade as soon as possible.

This procedure gives Effluent Design Objectives for biochemical oxygen demand (BOD), suspended solids, total phosphorus, and Effluent Guidelines for the former two. An Effluent Design Objective for ammonia is given for conventional activated sludge treatment with nitrification. Sewage treatment works designed according to the Ministry “Guidelines for the Design of Sewage Treatment Works” should be able to produce annual average effluent quality approximately equal to the Effluent Design Objectives, but not to exceed the Effluent Guidelines criteria.

Procedure F-5-5 outlines the requirements for municipal and private combined and partially separated sewer systems. The goals of the Procedure are as follows:

- Eliminate dry weather overflows;
- Minimize the potential for impacts on human health and aquatic life resulting from Combined Sewer Overflows (CSOs);
- Achieve as a minimum, compliance with body contact recreational water quality objectives for E.coli at beaches impacted by CSOs for at least 95% of the period June 1 – September 30 for an average year; and,
- Each operating authority of a combined sewer system is expected to:
 - Develop a Pollution Prevention and Control Plan,
 - Meet minimum CSO controls, and
 - Provide additional controls for beaches impaired by CSOs where water quality is not meeting E.coli objectives or where required by receiving water quality conditions.

Niagara Falls’ previous PPCP was completed in 2017. The current MSP provides an update to the system’s conformance to the F-5-1/F-5-5 requirements.

Environmental Protection Act

The Environmental Protection Act (EPA), 1990 (amended 2024) was enacted by the Province to provide for the protection and conservation of the natural environment. Under Section 6(1) of the Act, *“No Person shall discharge into the natural environment any contaminant, and no person responsible for a source of contaminant shall permit the discharge into the natural environment of any contaminant from the source of contaminant, in an amount, concentration or level in excess of that prescribed by the regulations”*.

Ontario Water Resources Act (OWRA)

The OWRA provides for the conservation, protection and management of Ontario's waters and for their efficient and sustainable use, in order to promote Ontario's long-term environmental, social and economic well-being. It provides policy direction and regulations for the efficient use of water, management of wells, water quality, water taking, sewage works, and others. It works in conjunction with the EPA, to manage and regulate sewage works in the Province (Section 53 through 62).

There are a number of guidelines and procedures relating to municipal sewage works that have been issued under the act, including the MECP Procedure F-5-1 and F-5-5, as outlined in **Volume 4**.

Water Opportunities and Conservation Act

The Ontario Government passed the Water Opportunities and Conservation Act in 2010. The purposes of the Act are as follows:

- To foster innovative water, wastewater and stormwater technologies, services, and practices;
- To create opportunities for economic development and clean technology jobs in Ontario; and,
- To conserve and sustain water resources for present and future generations.

To further the purpose of the Act, the MECP may establish aspirational targets with respect to the conservation of water and other matters.

The Act requires certain municipalities, persons, and entities to prepare, approve, and submit to the MECP municipal water sustainability plans for municipal water services, municipal wastewater services, and municipal stormwater services under their jurisdiction. The Minister may establish performance indicators and targets for these services. The Act also authorizes creation of regulations requiring public agencies to prepare water conservation plans, achieve water conservation targets, and consider technologies, services, and practices that promote the efficient use of water and reduce negative impacts on Ontario's water resources.

Safe Drinking Water Act

The Safe Drinking Water Act was adopted in 2002. The Act provides for the protection of human health and the prevention of drinking water hazards through the control and regulation of drinking water systems and drinking water testing. Key features of the Act include the following:

- Legally binding standards for contaminants in drinking water;
- Requirement to use licensed laboratories for drinking water testing;
- Requirement to report any results that do not meet the standards to the Ministry of the Environment and the local Medical Officer of Health and to undertake corrective action;
- All operators of municipal drinking water systems must be trained and certified;

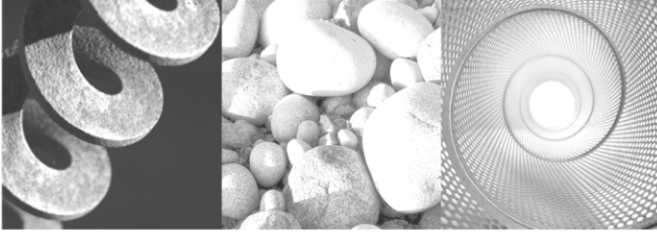
- Establishment of a licensing regime for drinking water systems; and
- Inspections and enforcement to determine compliance with the Act.

Clean Water Act

The Clean Water Act was adopted in 2006. The purpose of the Act is to protect existing and future sources of drinking water. The Act requires the following:

- That local communities assess existing and potential threats to their water, and that they set out and implement the actions needed to reduce or eliminate these threats;
- Empowers communities to take action to prevent threats from becoming significant;
- Public participation on every local source protection plan – the planning process for source protection is open to anyone in the community; and,
- That all plans and actions be based on sound science.

Appendix B Principles, Policies, and Level of Service



Master Servicing Plan Update and Wet Weather Management Strategy

Appendix B – Principles, Policies, and Level of Service

City of Niagara Falls

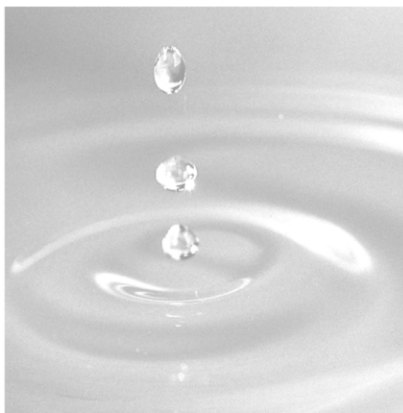
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1. Introduction

The City of Niagara Falls retained GEI Consultants Canada to complete a Master Servicing Plan and Wet Weather Management Strategy (MSP-WWMS). The intent of this study is to complete an evaluation of the City's existing water, wastewater, and stormwater infrastructure and to establish short-term and long-term vision, strategy, and policies to support the management and enhancement of water, wastewater, and stormwater infrastructure.

The MSP-WWMS will determine and optimize future water, wastewater, and stormwater infrastructure needs, including operation and maintenance improvements, within the City of Niagara Falls through to 2051 and beyond.

The purpose of this report is to summarize the recommended water, wastewater, and stormwater Policies, Hydraulic Level of Service (HLOS) Objectives, and Design Criteria that will be used to effectively evaluate the existing and future performance of the water, wastewater, and stormwater systems and further, as rationale in the development of a long-term servicing strategy which meets infrastructure capacity needs and details necessary upgrades.

1.1. Background Objectives

Execution of reasonable Policies and Hydraulic Level of Service (HLOS) objectives are essential in ensuring that the proper planning and design principles are followed in the development of detailed servicing strategies, implementation of system capital programs, and operations and maintenance practices.

Through the MSP-WWMS; draft Policies and HLOS objectives will be established and used to guide future investment in the water, wastewater, and stormwater systems.

The development of water, wastewater, and stormwater Policies and HLOS objectives have been based on existing documentation and related sources, and an assessment of the City's existing infrastructure condition and performance, including the following:

- City of Niagara Falls Official Plan (currently being updated)
- City of Niagara Falls Asset Management Plan (2022)
 - Niagara Falls Climate Change Adaptation Plan (2021)
- Federal and Provincial Policies and Legislation

- Existing design criteria
 - Niagara Region 2021 Master Servicing Plan Update (MSPU)
 - City of Niagara Falls 2020 Water System Model Update Calibration Report
 - City of Niagara Falls Engineering Design Guidelines Manual, updated in 2017
 - City of Niagara Falls Master Drainage Plan Update (2017)
 - City of Niagara Falls Pollution Prevention & Control Plan Study Update (2017)
 - Criteria required by the Ministry of Environment, Conservation, and Parks (MECP)
 - Other local municipal design criteria
- Existing system performance
 - Historic and existing system operations and performance
 - Resiliency to climate change
- Stakeholder feedback
 - City of Niagara Falls staff
- Financially feasible objectives

The objectives of the Principles, Policies, and Level of Service Document include, but are not limited to, the following:

- Providing direction for planning and identifying water, wastewater, and stormwater servicing issues that may impact growth options
- Providing direction for normal operation and maintenance of the water and wastewater systems (the policies do not replace normal operation and maintenance procedures or best practices)
- Providing direction for development and evaluation of servicing strategies for the Master Servicing Plan Update and Wet Weather Management Strategy
- Ensuring appropriate design and costing criteria are utilized for developing and evaluating servicing strategies for the Master Servicing Plan Update and Wet Weather Management Strategy
- Setting policies and Level of Service Objectives that are reasonably implemented
- Setting policies and Level of Service Objectives that are robust, sustainable, and measurable

Although best management practices, criteria, and key performance indicators are updated over time, the context, intent and validity of the Policies and HLOS objectives should remain intact as policies form the overall guiding principles while criteria is the tactical implementation of policy.

1.2. Approach

The Policies and HLOS discussion are split into four main categories and aim to link the analysis of system needs and replacement triggers with the customer experience.

- Policy Statements: communicate the overall guiding principles and objectives of the infrastructure systems.
- Customer Level of Service objectives: communicate and translate technical Levels of Service into terminology relevant to customers.
- Technical Level of Service objectives (Criteria): quantitatively measure the system performance that are used to compare potential strategies and solutions.
- Key performance indicator: measures the relative system performance against the Technical and Customer Level of Service objectives and validate the beneficial impact of any given investment.

The system performance goals are intended to be used in the medium to long-term and will form the basis of a continuous improvement program by which each system investment is measured.

This approach is in line with the Ontario Regulation 588/17 made under the Infrastructure for Jobs and Prosperity Act, 2015, S.O. 2015,

Through the MSP-WWMS, initial development of the HLOS framework will be completed; however, the focus of MSP-WWMS will be on achieving the Technical Level of Service Objectives (Criteria). Refinement and final development of the HLOS framework will be completed under future Asset Management Plans and will require further discussion with Senior Staff and Council to finalize.

2. MSP-WWMS Vision Statement

Through the Municipal Class EA process, Phase 1 requires the identification of the problem and opportunity statement that guides the process of establishing preferred strategies to address the deficiencies observed in the water, wastewater, and stormwater systems. The following vision statement is a driver for the MSP-WWMS where problems and opportunities are clearly identified through the desire to provide an adequate level of service to users and improve system performance under both current and future conditions.

The Vision Statement is as follows:

Supporting a Strong and Growing Niagara Falls

To establish a preferred servicing plan for the City's water, wastewater, and stormwater systems that:

- Meets current needs,
- Supports projected growth to 2051 and beyond,
- Maintains or improves service levels, and
- Considers priority areas of climate change, infrastructure optimization and renewal, and system resiliency.

3. Policy Statements

Niagara Region has established water and wastewater servicing policies, developed through the Region's Master Servicing Plan Updated (2023). The Region's servicing policies have been reviewed, updated and adapted to align with the City's 2023 – 2027 Strategic Plan. The servicing principles and policies were developed to specifically to support key Pillars of the Strategic Plan, specifically Pillar #1 Sustainability (Financial, Environmental, Social), and Pillar #2 Economic Diversity and Growth. The policy statements will guide and provide direction for the development and evaluation of servicing strategies.

In general, the City of Niagara Falls is looking to build and maintain efficient, effective, and well managed water, wastewater, and stormwater systems that provide a high level of service to the end users. The servicing principles have been categorized into four categories – general, water, wastewater, and stormwater.

Table 3-1 presents the general servicing policies which impact water, wastewater, and stormwater servicing. While **Table 3-2** to **Table 3-4** present the servicing policies for the water, wastewater, and stormwater systems.

Table 3-1. General Servicing Principles

No.	Area of Interest	Principle Statement	Servicing Implications
G.01	Municipal Servicing	<i>“The City of Niagara Falls shall provide adequate municipal servicing for water, wastewater, stormwater in accordance with the population and employment projections in the time horizon of the Official Plan. This includes consideration for land available for re-development and full buildout of developable greenfield identified within the Official Plan.”</i>	• Planning and design of servicing strategies will optimize use of existing infrastructure where possible • Infrastructure will be planned and designed in accordance with growth projections in the City’s Official Plan • Infrastructure strategies and sizing will make consideration for all of developable lands identified within the City’s Official Plan • Timing of growth will be reviewed with consideration to a reasonable implementation schedule for infrastructure required to meet the projected growth • Municipal servicing will be implemented using typical standards (MECP Guidelines, City Design Criteria and Standards)
G.02	Environmental Protection	<i>" The City of Niagara Falls shall consider, protect and endeavour to minimize impact to the natural, built and cultural environment and heritage of the community"</i>	• Servicing studies shall consider the City’s Official Plan Environmental Management Policies • Services will be planned through the appropriate Environmental Assessment process to ensure full regard for the natural and cultural heritage
G.03	Planning Horizon	<i>“The City of Niagara Falls shall ensure that the design of water, wastewater, and stormwater infrastructure recognizes the potential for growth beyond the time horizon of the Official Plan and/or changes in the density and/or rate of growth”</i>	• Recognize that the service life of infrastructure may be 60 years or more • Consider, where appropriate, potential for growth beyond the time horizon of the Official Plan for the planning and sizing of infrastructure • Consider, where appropriate, the potential for growth to occur at increased density and/or rate of growth for the planning and sizing of infrastructure
G.04	Reserve Capacity	<i>“The City of Niagara Falls will endeavor to maintain sufficient reserve capacity in its water, wastewater, and stormwater infrastructure and facilities to provide operational flexibility and meet potential changes in servicing conditions.”</i>	• Recognize that infrastructure and facility expansions require sufficient lead time with consideration to the in-service date for planning, the Environmental Assessment process, design, and construction • Day to day operation and maintenance of infrastructure and facilities requires flexibility for operating conditions, fluctuating flows, equipment shutdowns, maintenance, emergency operations and other unforeseen conditions • Water, wastewater, and stormwater assets will be designed with consideration to the potential extreme weather impacts due to climate change
G.05	System Reliability and Security	<i>“The City of Niagara Falls shall endeavor to provide reliability, redundancy and security in its water, wastewater, and stormwater systems with attention to high risk and critical areas.”</i>	• Recognize that all systems are susceptible to some level of failure or breakdown or need to be taken out of service for regular maintenance. • Provide a reasonable level of reliability to ensure an acceptable level of service is maintained
G.06	Location of Municipal Services and Facilities	<i>“The City of Niagara Falls shall locate all of its services and facilities on public property or on municipally-owned easements.”</i>	• Ensure that any new and existing infrastructure be located within road right-of-ways, or on City-owned property (including designated lots and easements) • Adequate property size will be maintained to facilitate all day-to-day activities and emergency response • Adequate property will be acquired to meet future infrastructure requirements
G.07	Climate Change	<i>“The City of Niagara Falls shall be aware of and consider the potential impact of climate change on planning and sizing of infrastructure.”</i>	• Water, wastewater, and stormwater facilities will be designed with consideration to the potential impacts of climate change as set out by the City’s Climate Change Adaptation Plan • Support green infrastructure and low impact development as part of building resilience to the impacts of a changing climate
G.08	Integrated Infrastructure Program	<i>“The City of Niagara Falls shall coordinate and integrate the MSP-WWMS program with Region and City planning, programs and policies where appropriate.”</i>	• Coordination and integration will ensure servicing principles and strategies are aligned between the City and Region • Consideration for integration of sustainability upgrades necessary to maintain existing system performance • Coordination and integration ensures servicing principles and strategies align between key City initiatives including Official Plan, Master Servicing Plan, Council’s Strategic Plan, Transportation Master Plan, Asset Management Plan, and other strategic City and Regional Plans
G.09	Level of Service	<i>“The City of Niagara Falls shall outline the Level of Service Objectives through the Master Servicing Plan and endeavor to meet/exceed the minimum requirements as outlined in the objectives.”</i>	• The City will review and evaluate strategies developed through the Master Servicing Plan based on their ability to meet requirements outlined in the Level of Service Objectives • The City will continuously track the Level of Service of their water, wastewater, and stormwater assets through setting, tracking, and reporting as mandated by O.Reg. 588/17.
G.10	Region and Local Municipality Consistency	<i>“The City of Niagara Falls shall maintain consistent criteria, standards and policy with respect to approach and level of service for planning and design the water, wastewater, and stormwater systems to meet growth”</i>	• The City has responsibility to plan, build, operate and maintain the local water and wastewater systems while the Region has the responsibility to plan, build, operate and maintain the trunk water and wastewater systems including major facilities • The City has responsibility to plan, build, operate and maintain the local and trunk stormwater infrastructure • It is critical that consistent criteria be utilized when analyzing the long-term servicing needs for both trunk and local system capacity • The trunk and local systems are integrated and should be planned accordingly
G.11	Sustainability	<i>" The City of Niagara Falls shall endeavour to undertake sustainable planning, operation and maintenance of the water, wastewater, and stormwater Systems."</i>	• The City will strive to plan, operate, and maintain water, wastewater, and stormwater systems that are environmentally, financially, operationally, legislatively, and socially sustainable • Financial sustainability shall consider and utilize appropriate funding mechanisms including but not limited to Development Charges, local cost to development, rates, and reserves to provide a long term balanced and equitable plan to fund the delivery of servicing

Table 3-2. Water Servicing Principles

No.	Area of Interest	Principle Statement	Servicing Implications
W.01	Health & Safety	"The City of Niagara Falls will promote health, productivity and safety of the community through design, construction and maintenance of the City’s potable water infrastructure"	• The City will prepare a comprehensive strategy to manage existing and future water servicing needs • Ensure that planning and implementation of the potable water systems are consistent with legislative policies and guidelines • Municipal servicing will be implemented under typical standards (MECP Guidelines, Region/City criteria and standards)
W.02	Distribution & Water Quality	“The City of Niagara Falls shall meet or exceed legislated drinking water quality criteria”	• Water quality will meet, at a minimum, all legislated criteria • Ensure regular testing and monitoring for chlorine residual in the system • Implement industry best practices to ensure water quality is maintained • Review the economics, reliability, and water quality impacts of implementing new technology
W.03	Water Demand Projections	“The City of Niagara Falls shall utilize a water demand projection methodology that recognizes recent water supply data and current consumption trends; with consideration for the Regional water conservation initiatives and available water supply capacity”	• Forward-looking water demand projections in the Master Servicing Plan must appropriately identify future water needs to ensure the best estimate for infrastructure capacity and timing • The City will consider the Regional criteria used to project water supply, pumping, and storage requirements • The City will utilize a starting point methodology based on recent water supply conditions • The City will establish current water design criteria and standards for new growth
W.04	Distribution Requirements	“The City of Niagara Falls shall provide potable water at adequate pressure and flow to its customers”	• Provide pressures which meet current design criteria and standards while considering MECP and Regional guidelines • Review and optimize pressure zone boundaries throughout the City • Consider the available Regional storage capacity, pumping capacity to meet the desired level of service
W.05	Fire Flow Requirements	“The City of Niagara Falls shall consider the Ministry of the Environment Guidelines and the Fire Underwriters Guidelines for establishing the acceptable level of fire flow.”	• Provide pressures and flows which meet current design criteria and standards while considering MECP, Regional, and other industry guidelines
W.06	Water Efficiency and Consumption Trends	“The City of Niagara Falls shall be aware of the impacts water efficiency and conservation has on the water network.”	• Continue to assess water demand conditions and determine reasonableness of trends (potential lower water use and consumption) • Utilize water efficiency studies where available • Apply where appropriate demand trends (efficiency) into future design criteria and growth forecasts • Apply awareness to how it will impact strategies and scheduling of future infrastructure
W.07	Water Supply and Distribution Security	“The City of Niagara Falls shall plan, design, construct, operate and maintain the water system to balance level of service and security of supply to the customers”	• The City shall continue to implement standards, criteria, and standard operating procedures for the water system • There is an awareness and integration between the Region water system, local distribution system and water services on private property • The City will maintain appropriate design, operations, and maintenance standards for the City water system to protect the public and private infrastructure including backflow prevention

Table 3-3. Wastewater Servicing Principles

No.	Area of Interest	Principle Statement	Servicing Implications
WW.01	Health & Safety	<i>"The City of Niagara Falls will promote health, productivity and safety of the community through design, construction and maintenance of the City's wastewater infrastructure"</i>	• The City will prepare a comprehensive strategy to manage existing and future wastewater servicing needs • Ensure that planning and implementation of the wastewater systems are consistent with legislative policies and guidelines • Municipal servicing will be implemented under typical standards (MECP guidelines, Region criteria and standards)
WW.02	Sustainability	<i>"The City of Niagara Falls will endeavour to undertake sustainable planning, operation and maintenance of the Wastewater System."</i>	• The City will strive to plan, operate and maintain a wastewater system that is environmentally, financially, operationally, legislatively, and socially sustainable • Financial sustainability shall consider and utilize appropriate funding mechanisms including but not limited to Development Charges, local cost to development and rate reserves to provide a long term balanced and equitable plan to fund the delivery of servicing
WW.03	Wastewater Treatment and Collection Requirements	<i>"The City of Niagara Falls shall meet at a minimum the requirements of the Environmental Compliance Approvals set out by governing bodies and the appropriate legislated treatment and collection criteria."</i>	• Wastewater quality (air and effluent) will meet at a minimum all legislated criteria • Manage wet weather conditions (inflow/infiltration) through asset management programs to minimize extraneous flows and maximize efficient use of available wastewater infrastructure • Implement industry best practices to ensure influent quality is within the City and Regional requirements and is supportive of the Region Treatment Plant maintaining their effluent quality objectives • Review the economics, reliability, and effluent quality impacts of implementing new technology
WW.04	Wastewater Flow Projections	<i>"The City of Niagara Falls shall utilize a wastewater flow projection methodology that recognizes recent wastewater flow and treatment data and current consumption trends; with consideration for the Regional wet weather flow management initiatives and available wastewater treatment capacity"''</i>	• Forward-looking wastewater flow projections in the Master Servicing Plan must appropriately identify future wastewater needs to ensure the best estimate for infrastructure capacity and timing • The City will consider the Regional criteria used to project wastewater treatment and pumping requirements • The City will consider the potential impacts of wet weather flow management initiatives on the management of existing system flows and requirements to support new growth • The City will utilize a starting point methodology based on recent wastewater flow conditions • The City will establish current wastewater design criteria and standards for new growth
WW.05	Sewer Use Criteria	<i>"The City of Niagara Falls shall maintain a sewer use program that sets the appropriate limits and procedures to control discharge"</i>	• Review and maintain a sewer use by-law, which is supported by Council • Maintain a monitoring program to ensure the discharges meet the limits set out in the by-law • The City shall consider over-strength discharge and surcharge agreements
WW.06	Separated Wastewater and Stormwater Systems	<i>"The City of Niagara Falls shall plan and endeavour to maintain separate wastewater and stormwater systems where it is technically and financially feasible to do so"</i>	• The City will continue to build, maintain, and operate separated wastewater and stormwater systems • The City will endeavor to ensure that new wastewater systems are constructed in a manner that minimizes new wet weather flow (inflow/infiltration) contributions • The City will endeavor, as part of wet weather flow management initiatives, to identify and remediate existing sanitary sewer cross connections and implement strategy to prevent future cross connections and stormwater impact on the wastewater system • The City will endeavor, where technically and financially feasible, to eliminate existing combined sewer systems and replace them with separated wastewater and stormwater systems
WW.07	Wastewater Collection and Pumping Systems	<i>"The City of Niagara Falls shall work with the Region to support reliability, security, and appropriate levels of redundancy in the wastewater pumping systems"</i>	• The Region is responsible for the operation and maintenance of wastewater pumping system; however, the performance of the pump stations are impacted by condition and performance of the local collection system • Adequate retention capacity should be provided in the sewer system • The Region and the City shall consider the joint management of the wastewater system to endeavor to provide adequate level of facility storage, system storage, and standby power to manage emergency conditions
WW.08	Wet Weather Flow Criteria	<i>"The City of Niagara Falls shall utilize current wet weather flow criteria to determine peak wet weather flows and size wastewater infrastructure"</i>	• Existing systems across the City have a range of existing performance and levels of flow under wet weather flow conditions • The level of service under wet weather conditions will be established through the Master Servicing Plan design criteria • Consideration to environmental, social, and financial factors as well as the feasibility for implementation should be given when determining the wet weather criteria

No.	Area of Interest	Principle Statement	Servicing Implications
WW.09	Wet Weather Strategies	<i>“The City of Niagara Falls shall review a combination of servicing strategies including infrastructure and non-infrastructure (i.e., I/I reduction) solutions to meet wet weather level of service and provide sufficient wastewater capacity.”</i>	• Providing wastewater system capacity in the City collection system requires a wide review of potential servicing strategies with consideration of Regional level infrastructure • The City Master Servicing Plan will develop and evaluate a comprehensive list of alternatives against multiple-bottom-line criteria including lifecycle costs • The most cost-effective and beneficial strategy may include not providing additional infrastructure but creating additional capacity through flow reduction methods such as inflow/infiltration control • Development of the servicing strategies to address high wet weather flows should consider the joint City and Regional capacity needs and implementation costs • As additional flows from growth are added to the system, the City should look for opportunities to not make overflow conditions worse than the current baseline conditions
WW.10	Capacity Allocation	<i>“The City of Niagara Falls shall review opportunities to allocate capacity gained through the implementation of wet weather strategies and system optimization for growth and non-growth benefit”</i>	• Provision of additional capacity within the wastewater system will need to consider the desired benefit • Additional capacity may be required to meet regulatory requirements or to improve level of service in the system
WW.11	Wet Weather Guidelines	<i>“The City of Niagara Falls shall approach Guidelines F-5-5 and F-5-1 such that new development will not put the City out of compliance with the regulations and the City shall consider opportunities to not increase wet weather overflows beyond current conditions”</i>	• The City will continue to manage system performance under wet weather conditions • As required under F-5-5, baseline performance of the system has been established • New growth should not negatively impact the system and should not put the City out of compliance with existing regulations • As additional flows from growth are added to the system, the City should look for opportunities to not make overflow conditions worse than the current baseline conditions

Table 3-4. Stormwater Servicing Principles

Policy No.	Policy Area	Policy Statement	Servicing Implications
SW.01	Health and Safety	<i>“The City of Niagara Falls will prioritize the health and safety of the public and property by implementing a strategy to provide sufficient conveyance and control infrastructure to safely manage stormwater runoff.”</i>	• Prepare a comprehensive strategy to manage existing and future stormwater related impacts • Ensure that planning and implementation of stormwater management systems are consistent with legislative policies and guidelines • Stormwater Management (SWM) strategies will need to be coordinated with flood plain management strategies and the Niagara Peninsula Conservation Authority • Municipal servicing will be implemented under typical standards (MECP guidelines, design standards and criteria)
SW.02	Sustainability	<i>“The City of Niagara Falls will endeavour to undertake sustainable planning, operation and maintenance of the Stormwater System.”</i>	• Strive to plan, operate and maintain a stormwater system that is financially, environmentally, and socially sustainable • Financial sustainability shall consider and utilize appropriate funding mechanisms including but not limited to Development Charges, local cost to development and tax reserves to provide a long term balanced and equitable plan to fund the delivery of servicing • All existing storm drainage systems shall be maintained and improved in order to ensure their efficient operation and to minimize the potential for flooding
SW.03	Receiving Water Bodies	<i>“The City of Niagara Falls shall endeavor to enhance, protect, and maintain quality, quantity, and safety of its receiving water bodies”</i>	• Act in accordance with the Official Plan Source Water Protection Plan developed under the Source Protection Plan for the Niagara Peninsula Source Protection Area
SW.04	Natural Environment and Hydrologic Cycle	<i>“The City of Niagara Falls, through stormwater servicing strategy and policy implementation, will endeavour to preserve and/or re-establish a more natural hydrologic cycle.”</i>	• Promote the utilization of facilities and low impact development techniques that mimic the existing hydrologic cycle • Stormwater management plans shall incorporate the use and creation of naturalized overland systems • Promote and facilitate strategies within existing service areas that implement retrofit programs and no net increase in runoff for infill and redevelopment sites • Strive to develop sustainable stormwater management practices
SW.05	Natural Environment and Erosion Control	<i>“The City of Niagara Falls will endeavour to reduce impacts to the natural environment and protect against erosion.”</i>	• Require the implementation of stormwater management measures to mitigate the impacts of urban runoff on existing streams' stability and to minimize erosion • Not permit any new development or redevelopment where it would interfere with, or reduce, the drainage capacity of any natural watercourse or agricultural field drainage system, result in any erosion, pollution or drainage problems along watercourses and their tributaries or where it would adversely affect the quality/quantity of groundwater or a water recharge/discharge area
SW.06	Water Quality	<i>“The City of Niagara Falls, through its stormwater servicing strategy and implementation, endeavours to improve runoff water quality.”</i>	• Require the implementation of stormwater management measures to improve storm water runoff quality • Conduct regular operation and maintenance for stormwater facilities, in particular sediment removal, to ensure long-term effectiveness • Implement sewer rehabilitation programs, including ongoing storm sewer and sanitary sewer separation, detention ponds, inline storage and other improvement works
SW.07	Management Responsibility	<i>“The City of Niagara Falls will develop and implement a stormwater management strategy and program that promotes and implements shared responsibility between the City and property owners.”</i>	• Stormwater Management is a shared responsibility • The City’s Official Plan set land use restrictions and specify minimum levels of onsite measures and controls • The City shall continue to maintain city-owned assets on private property • The City shall continue to prohibit through by-law the discharge of collected water on private property to adjacent properties • The City’s Official Plan supports private property owners to improve stormwater water quality through programs and guidelines (e.g. weeping tile disconnection) • Development and sharing of of public education materials and resources clearly communicating delineation of responsibilities
SW.08	Integrated Planning Approach	<i>“The City of Niagara Falls will improve Management of the Stormwater System through Integrated Stormwater Management Planning.”</i>	• The City will agree to a comprehensive stepped approach to developing a robust understanding and delivery plan for stormwater management including: development and continuous update of master drainage plans, subwatershed studies, area specific stormwater management plan, and storm water management reports • The City will strive to develop sustainable stormwater management practices
SW.09	Separated Wastewater and Stormwater Systems	<i>“The City of Niagara Falls shall plan and maintain separate wastewater and stormwater systems.”</i>	• The City will continue to build, maintain and operate separated wastewater and stormwater systems • The City will endeavor, as part of Inflow and Infiltration reduction measures, to identify and remediate existing sanitary sewer cross connections and implement strategies to prevent future Inflow and Infiltration

4. Water System

4.1. Water Level of Service Framework

Based on the MSP-WWMS vision statement and the identified Policy statements, the following customer service statement for the City's water system was developed to guide the selection of Level of Service objectives and design criteria:

"To provide an efficient, sustainable, and safe water system that meets regulatory requirements, minimizes service disruptions, and is capable of accommodating growth."

Table 4-1 outlines the water system level of service framework, outlining the water system in terms of technical and customer key performance indicators and relating to each relevant policy statement. Both technical objectives and key performance indicators which are relevant to only Regional infrastructure are included; however, noted as such in italics.

4.2. Region Water System Technical Level of Service Criteria

Table 4-2 summarizes the water system technical level of service criteria utilized in the Region's MSPU. Given the inter-dependency between the Region and City infrastructure Performance it is critical that the City's technical level of service be developed with consideration for the Region's criteria in order to harmonize servicing strategies and to avoid competing priorities and/or servicing philosophies.

It is noted that the City MSP-WWMS review will be limited to Demand and System Performance Criteria, while the Regional Facility Triggers will not be revisited.

Table 4-1. Water Level of Service Objectives

Service Objective	Supporting Policy Statements		Technical Objective	Key Performance Indicators - Technical	Key Performance Indicators - Customer
Efficient		W.02 W.06	- Full life-cycle costing - Renewal of aging infrastructure - Optimization of system operations (Applicable Regional Infrastructure) - Increased water conservation - Non-revenue water is at a reasonable rate	- Water use including non-revenue water rate, per capita rate, peaking factor estimated through water production and billing records - SOGR program - Watermain head losses and velocities - Facility needs (supply, storage, and pumping) (Applicable Regional Infrastructure)	- Number of complaints (water bills, cost, pressure, quality etc.) - Default rates - Service interruptions - Compliance with MECP Standards
Sustainable	G.07 G.10	W.06	- Full life-cycle costing - Renewal of aging infrastructure - Resiliency to climate change - Costs associated with water servicing rates	- State of Good Repair (SOGR) program - Age of infrastructure - Number of watermain breaks - Replacement/ rehab costs - O&M costs	
Safe	G.10	W.01 W.04 W.05	- Reliability of the distribution system - Safe Drinking Water Act legislated requirements - Maintain chlorine residual in distribution system at acceptable levels - Provide adequate fire protection	- Water quality including water age, chlorine residuals, flushing rates, and watermain velocities - Water turnover rate in storage facilities (Applicable Regional Infrastructure) - Available fire flow - Emergency storage (Applicable Regional Infrastructure)	
Reliable	G.04 G.05 G.09	W.03 W.04 W.05 W.07	- Ability to supply adequate pressures and flows, uninterrupted to the distribution system - Ability to meet daily demands - Minimal service interruptions - Facilities have backup power available (Applicable Regional Infrastructure)	- Water system performance including pressures and fire flows - Facility needs (supply, storage, and pumping) (Applicable Regional Infrastructure) - Backup power at facilities (Applicable Regional Infrastructure) - System redundancies	
Capacity	G.04	W.04 W.05	- Provide adequate, uninterrupted pressures and flows, to the existing and future distribution system - Ability to meet daily demands - Minimal service interruptions	- Water system performance including pressures and fire flows - Facility needs (supply, storage, and pumping (Applicable Regional Infrastructure)	
Regulatory		W.02 W.04 W.05 W.07	- Safe Drinking Water Act - MECP - Ontario Water Resources Act	- Pressure and emergency pressure - Chlorine residuals - Supply capacity (Applicable Regional Infrastructure)	
Growth	G.03	W.03 W.04 W.05 W.06	- Rated capacity of facility can support growth (Applicable Regional Infrastructure) - Pressures, fire flow, and water quality are maintained at or above current performance - Projected demands are applied to areas of planned growth	- Water system performance including pressures and fire flows - Facility needs (supply, storage, and pumping) (Applicable Regional Infrastructure) - Water use including rate, per capita rate, peaking factor	

Table 4-2. Summary of Niagara Region 2021 MSPU Water Design Criteria

Description			Criteria
Demand Criteria	Water Demand	Residential	240 L/c/d
		Employment	270 L/e/d
	Peaking Factor	Maximum Day	1.60 (Based on historic average of maximum day peaking factors from 2011 – 2020)
		Peak Hour Factor	Based on system mass balance using hourly SCADA data from 2018 – 2020
	Existing System Demands		Starting Point Methodology - Based on local billing meter records and production records to establish existing system demands - Growth demands are added to the existing system baseline using design criteria
System Performance Criteria	System Pressures		Acceptable pressure range of 40 – 100 psi Regional objective of maximizing areas within the preferred range of 50 – 80 psi on Regional watermains
	Fire Flow		250 L/s on Regional watermains at residual pressure of 30 psi
	Velocity	Average Day	Flag areas less than 0.6 m/s minimum velocity
		MDD+FF or PHD	Flag areas greater than 1.5 m/s Trigger upgrades greater than 2 m/s
Sizing and Triggers	Plant and Facility Upgrade Triggers		80% trigger for plant and facility planning process (time based trigger on a case-by-base basis) - Complete plant and facility expansions before 90% capacity is reached
	Treatment Plant Sizing		Maximum day demand
	Pumping Station Sizing		Various potential demand scenarios: - Maximum day demand (MDD) - MDD + fire flow (250 L/s or MECF) - Peak Hour Demand (PHD) Appropriate design sizing scenario depends on the configuration of the service area for the pumping station. Refer to the Niagara Region 2021 MSPU Volume 3 - Introduction for further discussion.
	Watermain Sizing		Regional transmission main system for PHD and MDD + fire flow demands
	Storage Sizing		MECF methodology (A + B + C) Refer to the Niagara Region 2021 MSPU Volume 3 - for discussion regarding contact time (CT) volume requirement at WTP reservoirs

4.3. City of Niagara Falls Water Technical Level of Service Criteria Context

4.3.1. Water Use Design Criteria

The basis of the growth water system evaluation relies heavily on water per capita consumption and maximum day demand peaking factors as these design criteria will be used to estimate growth demands.

Table 4-4 summarizes the analysis of historic water treatment plant production and water billing records (2011-2022).

4.3.1.1. Non-Revenue Water

Non-Review Water (NRW) demand consists of the difference between water billing records are subtracted from water production records. The NRW is inclusive of:

- Water system losses: such as leakage, data errors, and unauthorized consumption
- Authorized unbilled demands; such as fire fighting, watermain flushing, etc.

The City currently has an average NRW 30% which is above the Region 2021 MSPU target of 25%. Through more detailed analysis utilizing the American Water Works Association (AWWA) approach, the City has indicated that the previous average is further reduced to approximately 18%.

4.3.1.2. Residential Per Capita Demand

The average residential demand criteria from 2018 to 2022, including NRW, was estimated to be 235 L/cap/day inline with the Niagara Region 2021 MSPU of 240 L/cap/day. On this basis it is recommended that the City MSP-WWMS utilize the Niagara Region 2021 MSPU criteria of 240 L/cap/day.

4.3.1.3. Employment Per Capita Demand

The City's employment based water demands are heavily influenced by the City's Tourism industry, which experiences approximately 15M tourist day visits per year – excluding COVID-19 affected years.

Table 4-4 outlines the average employment demand, including NRW, of 530 L/job/day during non COVID-19 influenced years and 410 L/job/day during COVID-19 influenced years. Both of employment values are substantially higher than the Niagara Region 2021 MSPU of 270 L/emp/day.

Table 4-3 summarizes the estimated Tourist based impacts on the observed employment demands. Utilizing the 15M tourist day visits per year and the City's 240 L/cap/day demand, the average daily tourist demand is estimated at 9.8 million litres per day (MLD), which is marginally lower than 10.5 MLD of tourist based demands assuming employment based demand using the Niagara Region 2021 MSPU of 270 L/emp/day. This would suggest that tourist independent employment criteria is generally in line with the Region's MSPU criteria.

Table 4-3. Employment per Capita Demands

Year	Commercial incl. NRW (MLD)	Employment Population	Employment Demand without tourist demand (assuming 270 L/cap/d) (MLD)	Demand attributed to tourists (MLD)
2018	21.4	40,495	10.9	10.5
2019	21.2	39,655	10.7	10.5
2020	16.2	38,815	10.5	5.7
2021	15.2	37,975	10.3	4.9
2022	19.1	No pop data	No pop data	10.5
5-Year Average	18.6	39,235	10.6	8.4
5-Year Peak	21.4	40,495	10.9	10.5

On this basis it is recommended that the City MSP-WWMS:

- Utilize the Niagara Region 2021 MSPU criteria of 270 L/job/day for employment growth
- That the tourist based increase in water demands be applied separately from the employment based growth as follows:
 - Utilize a starting point tourism based demand of 10.5 MLD
 - Increase in tourist be applied as a percentage increased relative to the increase in tourist day visits.

Table 4-4. Historic Water Use

Year	Niagara Falls WTP	Billing		Non-revenue water		Niagara Falls WTP	Average Per Capita Rate (L/c/d) (with NRW)	
	Average Day Demand (MLD)	Residential (MLD)	Employment (MLD)	MLD	%	Average Per Capita Rate (with NRW) (L/c/d)	Residential	Employment
2011	52.2	-	-	-	-	446	-	-
2012	53.1	17.7	18.1	17.2	32%	449	272	706
2013	46.7	16.5	15.5	14.7	31%	392	258	618
2014	43.8	16.1	14.0	13.7	31%	364	253	560
2015	46.2	-	-	-	-	379	-	-
2016	47.4	17.0	15.8	14.7	31%	360	252	497
2017	45.2	15.9	15.5	13.8	31%	342	234	505
2018	44.8	17.8	16.3	10.8	24%	337	253	529
2019	43.4	15.7	15.8	11.9	28%	325	224	534
2020	40.1	16.3	11.7	12.2	30%	299	237	418
2021	41.1	15.5	10.8	14.8	36%	305	226	400
2022	43.1	15.2	13.9	14.0	32%	312	210	490
5-Year Average (2018-2022)	42.5	16.1	13.7	12.7	30%	316	230	474
5-Year Peak	44.8	17.8	16.3	14.8	36%	337	253	534
12-Year Average	45.6	16.4	14.7	13.8	31%	359	242	526
12-Year Peak	53.1	17.8	18.1	17.2	36%	449	272	706
Historic Criteria								
City of Niagara Falls Design Standards (MECP Drinking Water Systems General Design Consideration)							270 – 450	General: 28 m³/ha/d
Niagara Region 2021 MSPU Average Per Capita Rate (L/c/d) (with NRW)							240	270

4.3.1.4. Peaking Factor

Table 4-5 summarizes the water system peaking factors for 2018-2022 as compared to prior peaking factor criteria. The 5 year average peaking factor of 1.59 is in line with the Region MSPU peaking factor of 1.6. As such, it is recommended that the system analysis be completed using the 1.6 peaking factor. Further, due to the high tourist population within the City, growth demands will apply a 2.0 peaking factor to these areas.

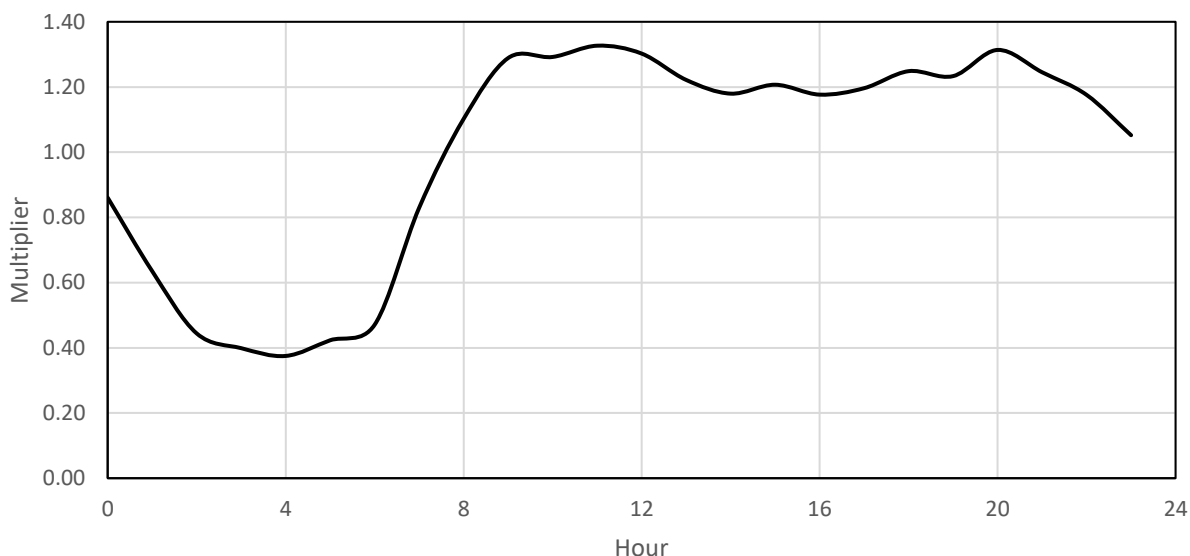
Table 4-5. Max Day Peaking Factors

Year	Average Day Demand (MLD)	Maximum Day Demand (MLD)	Maximum Day Demand Peaking Factor
2018	44.8	74.5	1.66
2019	43.4	71.8	1.65
2020	40.1	65.6	1.63
2021	41.1	63.7	1.55
2022	43.1	62.7	1.45
5-Year Average	42.5	67.6	1.59
<i>5-Year Peak</i>	44.8	74.5	1.66
Niagara Region MSPU			1.6
<i>City of Niagara Falls 2021 Model Update</i>			1.65 (Max Peaking Factor from Previous 7 years (2018))
<i>MECP Methodology (Population 75,001 – 150,000)</i>			1.65

4.3.1.5. Diurnal Curve

Water use typically follows a diurnal pattern dependent on water consumption rates throughout the day. A typical diurnal pattern peaks during the morning and evening hours which coincide with conventional work day hours, and drops to a minimum during the overnight hours. Hourly flows were assessed to determine a diurnal curve based on the historic SCADA records and used to develop hourly diurnal curve factors. A representative average demand day was identified for developing a diurnal curve, as illustrated in **Figure 4-1**. The diurnal curve factors were used for modelling the both average day demand and maximum day demand ensuring that peak conditions are captured.

Figure 4-1. Average Demand Day Diurnal Curve



4.3.2. Starting Point Methodology

The five-year rolling average of average day demands will be used to establish baseline system average day demands. Baseline system max day demand will be calculated using a peaking factor of 1.6.

4.3.3. Growth Demand Projections

Future system demands were developed using a starting point methodology, the standard approach within Southern Ontario for projecting future growth demands. Expected demand due to growth was added to the starting point demand to establish future demands. Example is provided below.

$$2051 \text{ ADD} = \text{Baseline ADD} + (2051 \text{ total equivalent pop}^1 - 2021 \text{ total equivalent population}) \times 270 \text{ L/c/d}$$

¹ Equi. Pop – Total of the combined people and employment population

4.3.4. Hydraulic Performance Criteria

An updated and calibrated hydraulic water model, as part of both this Niagara Falls MSP-WWMS and the 2021 Region MSPU, was used to evaluate the existing water system performance without the application of growth. Through this process, the water system technical level of service criteria were developed with the consideration of existing system performance.

4.3.4.1. Pressures

Pressures within the existing system, detailed as a percent of the system in **Table 4-6**, are typically between 40-100 psi under both average day demand (ADD) and maximum day demand (MDD) scenarios. Noting that due to local topography, there are a number of areas near the Niagara River which experience pressures >100 psi; as such, minimization and mitigation of these areas should be prioritized. Further reducing the pressure bounds to 50-80 psi is not feasible without major adjustments to pressure zone boundaries; as such, was not carried forward.

Recommended design criteria to be utilized for pressure are as follows:

- Maintain pressure design criteria between 40-100 psi, consistent with the MECP Criteria and the City's existing design standard
 - Minimize and mitigate areas of exceeding 100 psi while maximizing areas between 50-80 psi
- Watermains shall be designed to withstand the maximum operating pressure plus transient pressure, at a minimum of 150 psi regardless of working pressure
- Reduction of the pressure boundaries would require system operations modifications and water system upgrades with minimal to moderate benefit

Table 4-6. Existing System Pressures

Pressure (psi)	ADD (Percentage of Nodes in the System)	MDD (Percentage of Nodes in the System)
<40	0%	0.3%
40-50	0%	0.4%
50-60	0%	2.7%
60-80	5%	47.5%
80-90	22%	29.2%
90-100	31%	16.8%
>100	41%	3.2%

4.3.4.2. Fire Flow – Network Capacity

The local watermain sizing within the distribution system is typically driven by fire flow targets which are commonly evaluated using the “Water Supply for Public Fire Protection Guidelines” by the Fire Underwriters Survey² (FUS) or Ontario Building Code. Land-use based fire flow targets can be developed can be defined while considering the following:

- Commits a certain level of service for a typical property of a specific land use,
- Provides guidance in the prioritization of the City’s State of Good Repair (SOGR) program and clearly identifies upsizing needs, and
- Requires developers to meet City’s fire flow targets should they require a higher fire flow based on FUS evaluation

Through the City’s 2019 review of the water system, land use based FUS derived fire flow targets were developed. In consultation with the City, the land used based was carried forward; however, a review of the multi-family residential targets was revisited to account for the increase in residential densities of new developments.

A FUS review was completed of sample multi-family residential properties within the City to determine appropriate fire flow targets for the majority of proposed growth property types. These FUS calculations, outlined in **Table 4-7**, demonstrate a range of fire flow targets such that the City’s target can balance between these values.

Table 4-7. FUS Fire Flow Examples

Building	3757 St Peter Avenue		6118 Kelsey Crescent		6420 Delta Drive	
Land Use	Residential (Multi)		Residential (Muli)		Residential (Multi)	
Total Floor Area (m ²)	1,250		1,050		970	
Estimate	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Type of Construction	Ordinary	Wood	Ordinary	Wood	Ordinary	Wood
Fire Hazard	Limited Combustibility		Limited Combustibility		Limited Combustibility	
Sprinklers	No	No	No	No	No	No
Proximity Adjustment	0.55		0.50		0.60	
FUS Target (L/s)	171	256	151	227	155	233

Based on the results of the multi-family review, the prior multi-family criteria was modified from a single 150 L/s category to 150 L/s for Semi Family Residential and Row Houses and 200 L/s for Residential Multi (Apartments and Stacked Townhouses). **Table 4-8** summarizes the recommended fire flow targets to be used when assessing system capacity.

² Fire Under Writers Survey: <https://www.fireunderwriters.ca/>

Table 4-8. Range of Recommended Fire Flow Targets

Land Use	Fire Flow Target
Single Family Dead End	50 L/s
Single Family Residential	75 L/s
Semi Family Residential and Row Houses	150 L/s
Residential Multi (Apartments and Stacked Townhouses)	200 L/s
Commercial	175 L/s
Institutional	175 L/s
Industrial	250 L/s
Tourist Area	300 L/s

The recommended process of defining fire flow targets is as follows:

- FUS and land use-based approach
- Fire flow at a hydrant is governed by land use with the highest fire flow target

4.3.4.3. Water Quality

Based on MECP requirements, the City must maintain total chlorine residuals at 0.25 mg/L in the distribution network. The recommended approach to water quality is:

- Water age, as evaluated by the hydraulic water model, is correlated to chlorine residuals as shown in **Table 4-9** as percentage of the City's existing system
- Areas with high water ages (greater than 98 percentile) will be flagged and reviewed with City staff to confirm any water quality issues
- Dead ends with minimal demands will result in high water age as water is consumed a slow rate; as such, the City should continue to monitor dead end chlorine residuals

Table 4-9. Existing Average Day Water Age

Water Age	Distribution (<400 mm)
0-7 days	98.6%
>7 days	1.4%

4.3.4.4. Peak Velocities

The Region’s MSPU criteria require watermains to maintain peak velocities, under peak hour conditions, less than 1.5 m/s with peak velocities exceeding 2.0 m/s to be triggered for replacement. This methodology is to be used to evaluate the existing system for the MSP-WWMS as well. The majority of the local existing system is currently within these bounds, as detailed in **Table 4-10**.

Table 4-10. Existing System Peak Velocities

Peak Velocity (m/s)	Distribution (<400 mm)
<0.5	98.4%
0.5-1.0	1.4%
1.0-1.5	0.2%
1.5-2.0	0.0%
≥2.0	0.0%

4.4. Water System Technical Level of Service Criteria - Recommendations

Table 4-11 summarizes the draft water system technical level of service criteria that will be utilized as the decision-making rationale related to the City’s water system capacity needs and triggers for upgrades.

Table 4-11. Summary of Water Technical Criteria

Criteria			Performance Target
Water Use	Per Capital Rate	Residential	240 L/c/d
		Employment	270 L/c/d
	Peaking Factor	Tourist Area	2.0
		Remainder of City	1.6
System Performance	Peak Velocity		Flag >1.5 m/s Trigger upgrades > 2 m/s
	Water Age		Flag >7 days
	Pressure	Pressure under daily demand	40 – 100 psi
		Pressure under fire flow	20 psi
	Fire Flow	Single Family Dead End	50 L/s
		Single Family Residential	75 L/s
		Semi Family Residential and Row Houses	150 L/s
		Residential Multi (Apartments and Stacked Townhouses)	200 L/s
		Commercial	175 L/s
		Institutional	175 L/s
		Industrial	250 L/s
		Tourist Area	300 L/s

5. Wastewater System

5.1. Wastewater Level of Service Framework

Based on the MSP-WWMS vision statement and the identified Policy statements, the following customer service statement for the City's wastewater system was developed to guide the selection of Level of Service objectives and design criteria:

"To provide an efficient, sustainable, and reliable wastewater system that minimizes environmental impacts and is capable of accommodating growth"

Table 5-1 details objectives intended to evaluate the existing and future performance of the wastewater system in terms of technical and customer key performance indicators.

5.2. Region Wastewater System Technical Level of Service Criteria

Table 5-2 summarizes the wastewater system technical level of service criteria utilized in the Region's MSPU. Given the inter-dependency between the Region and City infrastructure Performance it is critical that the City's technical level of service be developed with consideration for the Region's criteria in order to harmonize servicing strategies and to avoid competing priorities and/or servicing philosophies.

It is noted that the City MSP-WWMS review will be limited to Flow and System Performance Criteria, while the Regional Facility Triggers will not be revisited.

Table 5-1. Wastewater Level of Service Objectives

Service Objective	Supporting Policy Statements		Technical Objective	Key Performance Indicators - Technical	Key Performance Indicators - Customer
Efficient	G.08	WW.05 WW.08 WW.10	- Full life-cycle costing - Renewal of aging infrastructure - Optimization of system operations (Applicable Regional Infrastructure) - Reduction of inflow and infiltration	- SOGR program - Pumping Station Capacity (Applicable Regional Infrastructure) - I/I flows - Percent of sewage treated with conformance to MECP F-5-5 requirements - Sewer surcharging during wet weather events	- Number of complaints (water bills, cost, odour, etc.) - Basement flooding (due to extraneous flows) - Default rates - Service interruptions - Compliance with MECP Standards
Sustainable	G.07 G.11	WW.02	- Full life-cycle costing - Renewal of aging infrastructure - Resiliency to climate change - Costs associated with Wastewater servicing rates	- SOGR program - Age of infrastructure - Replacement/rehab costs - O&M costs	
Safe	G.10	WW.01 WW.04	- Compliance with Provincial Water Quality Objectives - CCME Wastewater Effluent Regulations - MECP Guideline F-5-5 & F-5-1 (compliance with Effluent Criteria) - Sewer system meeting capacity targets	- I/I flows - Treatment Plant Capacity (Applicable Regional Infrastructure) - System CSO Volumes	
Reliable	G.04 G.05 G.10	WW.05	- Condition of sewer system (CCTV) - Capacity to meet wastewater treatment (Applicable Regional Infrastructure) - Minimal service interruptions - Facilities have backup power available (Applicable Regional Infrastructure)	- System capacity is compliant with Pipeline Assessment Certification Program scores - Percent of system meeting capacity needs - Sewer surcharging during wet weather event	
Capacity	G.04	WW.05 WW.06 WW.09 WW.11	- Availability to service Urban Boundaries - Minimal service interruptions - Ability to convey growth wastewater production	- Treatment Plant Capacity (Applicable Regional Infrastructure) - Pump Station Capacity (Applicable Regional Infrastructure) - Percent of system meeting capacity needs - Sewer surcharging during wet weather event	
Regulatory		WW.03 WW.04 WW.07	- Compliance with Provincial Water Quality Objectives - CCME Wastewater Effluent Regulations - MECP Guideline F-5-5 & F-5-1 (compliance with Effluent Criteria)	- System CSO Volumes - Sewer and forcemain (Applicable Regional Infrastructure) velocities - Pump Station Capacity (Applicable Regional Infrastructure) - Treatment Plant Capacity (Applicable Regional Infrastructure) - Sewer surcharging during wet weather event	
Growth	G.03	WW.06 WW.09	- Rated capacity of facility can support growth (treatment, pumping) (Applicable Regional Infrastructure) - Sewers system can support growth (gravity sewers) - Projected demands are applied to areas of planned growth	- Pump Station Capacity (Applicable Regional Infrastructure) - Treatment Plant Capacity (Applicable Regional Infrastructure) - I/I allowance - Per capita rate - Percent of system meeting capacity needs - Sewer surcharging during wet weather event	

Table 5-2. Summary of Niagara Region 2021 MSPU Wastewater Design Criteria

Component		Criteria	
Flow Criteria	Existing System Flows	Starting Point Methodology - Based on local billing meter records and flow monitoring data to establish existing dry and wet weather flows - Growth flows are added to the existing system baseline using design criteria	
	Flow Generation	Residential	255 L/c/d
		Employment	310 L/e/d
	Peaking Factor	Peak Dry Weather Flow	Harmon's Peaking Factor
	Extraneous Flow Design Criteria	0.4 L/s/ha for existing areas 0.286 L/s/ha for new developments	
WWTP	System Performance and Triggers	- MECP Procedure F-5-1 - Trigger upgrade study at 80% capacity - Trigger upgrade construction at 90% capacity	
	Upgrade Sizing	Average daily flow plus growth based on population design flows	
Pump Station	System Performance and Triggers Sizing	- Two flow scenarios considered Design Allowance: Peak wet weather flow using the peaked dry weather flow plus the extraneous flow design allowance 5-Year Storm: Modelled peak wet weather flow using the 5-year design storm - Peak flow capacity to meet design peak wet weather flow using the extraneous flow design allowance - Wet well and system storage considerations under 5-year storm to minimize basement flooding and overflow risks	
Forcemain	System Performance and Triggers	- Flag velocities less than 0.6 m/s - Flag velocities greater than 2 m/s - Upgrade when velocities exceed 2.5 m/s and considering condition and age	
	Upgrade Sizing	- Design velocity target between 1 m/s and 2 m/s - Forcemain twinning to increase capacity where feasible	
Trunk (>170 L/s peak dry weather flow ³)	System Performance and Triggers	- Design allowance peak wet weather flows, using the extraneous flow design allowance, to be managed within pipe - Freeboard (depth between hydraulic grade line and surface) greater than 1.8 m below surface in 5-year design storm - Flag pipes velocities less than 0.6 m/s - Flag pipes velocities greater than 3.0 m/s	
	Upgrade Sizing	- Sized for full flow under post-2051 design peak wet weather flow - Assess 5-year design storm performance to minimize basement flooding risks and overflows	

³ Regional Municipality of Niagara Development Charge Background Study 2022 Appendix E

5.2.1. Sizing of Pump Stations

Although it is the Region’s design philosophy to size sewage pumping stations (SPS) inline with the Region’s extraneous flow design criteria, the Region’s 2021 MSPU undertook a hybrid evaluation approach in an effort to acknowledge that SPSs are a major contributor to local wastewater system performance and that many legacy system’s existing wet weather flows exceed the extraneous flow design allowance. The SPS hybrid performance evaluation and upgrade framework are summarized in **Table 5-3** and strives to balance the magnitude of capacity upgrades, potential cascading downstream upgrades, and managing the potential risk of local sewer surcharging and system overflows.

Under the hybrid performance evaluation and upgrade framework, the SPS capacity was sized to meet the lesser of peak wet weather flow (PWWF) using the extraneous flow design allowance, referred to as “Design Allowance PWWF” or the estimated 5-year storm PWWF. Further, consideration for the SPS actual performance under the estimated 5-year design storm peak wet weather flow was evaluated to determine if the available system storage including the wet well, storage tanks, and in-system capacity was sufficient to manage excess flows while maintaining the system hydraulic grade line (HGL) below the basement flooding level of 1.8 m below grade and/or below the local overflow level.

In instances where the 5-year storm PWWF flow exceeded the available system storage, additional system solutions such as wet weather management, system storage, and/or additional SPS capacity upgrades were incorporated into the servicing solution. The most efficient solution to manage capacity and flow reduction was determined through the assessment of calculated flows from the 2051 design allowance PWWF and modelled 5-year storm PWWF against the operational firm capacity of the station and system storage.

Table 5-3. SPS Assessment Framework

Case	2051 Design PWWF	2051 5 Year Storm PWWF	2051 5-Year Storm Storage Need	Preferred Solution	Upgrade Priority	Flow Monitoring Priority
Case 1	> Firm Capacity	> Firm Capacity	> Available Storage	Upgrade pumps to future design allowance flow with potential storage upgrades and wet weather management	High	Medium
Case 2	< Firm Capacity	> Firm Capacity	> Available Storage	Upgrade storage and wet weather management	High	High
Case 3	> Firm Capacity	> Firm Capacity	< Available Storage	Potential upgrade to design allowance flow and wet weather management	Medium	High
Case 4	< Firm Capacity	> Firm Capacity	< Available Storage	Potential wet weather management	Low	Medium
Case 5	> Firm Capacity	< Firm Capacity	< Available Storage	No upgrade, use actual peak flows	N/A	Low
Case 6	< Firm Capacity	< Firm Capacity	< Available Storage	No upgrade	N/A	Low

5.3. Wastewater Technical Level of Service Criteria Context

5.3.1. Wastewater Use Design Criteria

The basis of the growth wastewater system evaluation relies on appropriate estimates for per capita wastewater generation, peaking factors, and rates of inflow and infiltration. To estimate the growth flow under 2051 and buildout conditions, per capita flow rates, peaking factors, and extraneous flow allowance are defined based on historical data.

5.3.1.1. Per Capita Rate

As part of the 2021 MSPU, the per capita average dry weather flows was reassessed on a system scale to maintain a reasonable factor of safety within the consumption criteria while avoiding over-conservatism which ultimately impacts the capital projects that are triggered and when they are triggered. It was decided that the per capita flow criteria would be adjusted to match the median average dry weather flow across the Region while also applying the same ratio for residential and employment from the observed (local billing meter) water per capita rates.

The 2021 MSPU recommended design criteria to be utilized for per capita dry weather flows are as follows:

- Residential per capita rate: 255 L/c/d
- Employment per capita rate: 310 L/c/d

For the purposes of evaluating the wastewater flow criteria an in-depth review of a five-year period of records (2018-2022) was completed. **Table 5-4** presents the average per capita rate (combined population employment and tourism) that was calculated for the Niagara Falls WWTP (inclusive of the St. David's SPS Contributions from Niagara-on-the-Lake). To account for the influence of wet weather flows on the daily wastewater treatment plant flows, two additional average daily flows criteria were used:

- Dry average daily flows, which excluded days with greater than 5 mm of precipitation and preceding day
- Summer dry average daily flows: same as dry average daily flows but only accounted for flows within the month of June through to September.

The identification of appropriate wastewater per capita growth criteria was complicated due to:

- The observed inflow and infiltration which included:
 - Substantial local and seasonal variability in daily flows
 - Observed flows to the wastewater treatment plants exceeding the water generated from the water treatment plants
- Limited ability to complete detailed employment vs. residential-based analysis due to unmetered discharge.
- Difficulty in apportioning population demands by local WW sub-catchment.

Further to the WWTP based flow analysis, **Table 5-5** summarizes the dry weather flow per capita criteria by SPS utilizing the updated calibrated model results (2022-2023 flow monitoring data).

Table 5-4. Historic Wastewater Per Capita Rates for WWTP

Year	Average Per Capita Rate (L/c/d)	Dry Weather Flow Per Capita Rate (L/c/d)	Summer Dry Weather Flow Rate (June to September) (L/c/d)
2018	311	290	242
2019	308	284	235
2020	261	247	200
2021	256	222	221
2022	No pop data		
Average	292	260	225
Current Design Criteria	450		
Region Design Criteria	255 (Residential) 310 (Employment)		

Table 5-5. Modelled Dry Weather Flow by SPS Catchment

SPS	Estimated Equivalent Population (2021) (inclusive)	Average Dry Weather Flow (L/s)	Modelled Per Capita Dry Weather Flow Rate (L/c/d)
Niagara Falls WWTP	134,414	450.1	289
L→Calaguire SPS	329	2.0	532
L→Central SPS	33,759	158.9	407
L→Bender Hill SPS	5,517	97.4	1,336 ⁽¹⁾
L→Muddy Run SPS	2,589	6.6	221
L→Seneca Street SPS	1,701	3.7	189
L→Dorchester Road SPS	12,407	56.6	394
L→Lundy's Lane SPS	1,697	7.3	374
L→Meadowvale SPS	1,287	3.3	362
L→Rolling Acres SPS	1,182	6.0	438
L→Royal Manor SPS	444	2.2	421
L→Drummond Road SPS	2,342	4.5	164
L→Kalar Road SPS	14,824	59.1	345
L→Mewburn SPS	134	0.6	376
L→Neighbourhood SPS	623	1.5	206
L→St. Davids #2 SPS	3,591	19.8	477
L→St. Davids #1 SPS	3,382	1.4	469
L→South Side High Lift SPS	50,837	163.9	279
L→South Side Low Lift SPS	8,740	25.7	254
L→Garner SPS	2,972	6.3	184
L→Oakwood SPS	396	1.1	249
L→Grassy Brook SPS	836	2.1	217
Minimum			164
Median			353
Maximum			1,336

1. Bender Hill SPS services tourist core, population and employment number does not reflect tourism contributions

Based on the average dry weather flow observed at the WWTP, the average per capita wastewater generation of 292 L/s (**Table 5-4**), and the modelled per capita average dry weather flow of 289 L/s (**Table 5-5**) at the WWTP; which is significantly lower than the City's Design criteria of 450L/s and is within the boundaries of the Region's Design Criteria.

5.3.1.2. Peaking Factor

The City presently utilizes the Babbitt peaking factor approach in their current design criteria, however the Region 2021 MSPU utilizes Harmon's Peaking factor. It is recommended that the City adopts the Harmon's Peaking Factor approach, with values ranging from 2-4, to correspond with Region criteria.

5.3.1.3. Extraneous Flow Allowance

The City's current maximum extraneous flow allowance is 0.28 L/s/ha. 2021 MSPU design criteria for extraneous flows design allowance are:

- Existing areas: 0.4 L/s/ha
- Greenfield: 0.286 L/s/ha

Table 5-6 summarizes the peak wet weather flow by SPS utilizing the calibrated model results (2023 flow monitoring data) compared with the Region criteria. The existing observed flows are utilized to assess existing system wet weather flow contributions. The SPS catchments where the modelled 5-year and 10-year design storm peak exceeds the SPS capacity or Region design allowance PWWF are generally identified by an RDII exceeding 0.4 L/s/ha. These catchments require City and Region coordination to manage excess wet weather flows.

It is recommended that the City adopts the 2021 MSPU design criteria for extraneous flows to correspond with the Region criteria for the purpose of aligning the framework for SPS upgrades and system solutions to support growth.

Table 5-6. Observed Extraneous Flows

Pump Station Catchments	Inclusive Catchment Area (ha)	Existing SPS Operational Firm Capacity (L/s)	Region Design Allowance Peak Wet Weather Flow			Peak Existing Wet Weather Flow (L/s)		Peak Extraneous Flow (L/s/ha) (1 hour average)	
			Modelled Peak Dry Weather Flow (L/s)	Existing Region Extraneous Flow Allowance (L/s)	Total Design Allowance Peak Wet Weather Flow ⁽¹⁾ (L/s)	5-year Design Storm	10-year Design Storm	5-year Design Storm	10-year Design Storm
Niagara Falls WWTP	5167	N/A	584.9	2,066.8	2,651.7	4073.1	4426.6	0.675	0.743
↳Calaguiro SPS	23	5.5	2.9	9.1	12.0	22.3	21.2	0.854	0.802
↳Central SPS	978	800.0	266.8	391.1	657.9	2848.3	3291.6	2.640	3.094
↳Bender Hill SPS	198	237.0	107.4	79.0	186.4	930.5	939.2	4.165	4.210
↳Muddy Run SPS	63	77.0	9.6	25.2	34.8	27.0	30.3	0.276	0.329
↳Seneca Street SPS	42	63.0	5.3	16.8	22.1	39.7	50.6	0.819	1.077
↳Dorchester Road SPS	576	185.0	84.1	230.4	314.5	390.1	385.7	0.531	0.524
↳Lundy's Lane SPS	97	56.3	12.4	38.9	51.3	48.1	54.6	0.368	0.434
↳Meadowvale SPS	36	34.0	7.4	14.4	21.8	67.5	73.3	1.673	1.837
↳Rolling Acres SPS	51	52.3	7.9	20.4	28.3	118.9	130.3	2.174	2.398
↳Royal Manor SPS	33	8.8	3.2	13.1	16.3	26.7	29.4	0.718	0.802
↳Drummond Road SPS	86	56.7	5.8	34.5	40.3	25.6	27.6	0.229	0.252
↳Kalar Road SPS	500	463.0	72.5	200.0	272.5	160.2	176.1	0.176	0.207
↳Mewburn SPS	9	17.1	0.8	3.6	4.4	2.2	2.2	0.159	0.159
↳Neighbourhood SPS	20	29.0	2.1	7.9	10.0	24.3	28.1	1.130	1.320
↳St. Davids #2 SPS	236	42.9	33.5	94.3	127.8	34.7	35.3	0.005	0.008
↳St. Davids #1 SPS	236	28.8	24.7	94.3	119.0	32.7	34.0	0.034	0.040
↳South Side High Lift SPS	2077	609.0	207.1	830.9	1,038.0	651.9	709.6	0.214	0.242
↳South Side Low Lift SPS	719	392.1	33.2	287.8	320.9	127.6	140.3	0.131	0.149
↳Garner SPS	98	99.7	7.9	39.2	47.1	25.2	25.2	0.177	0.177
↳Oakwood SPS	32	13.0	1.9	12.8	14.7	8.6	8.6	0.211	0.211
↳Grassy Brook SPS	53	17.8	2.2	21.2	23.4	25.2	25.2	0.433	0.433
Current Region Design Criteria								Existing Areas: 0.4 New Areas: 0.286	
Current City Design Criteria								0.28	

1. May vary from 2021 Region MSPU Design Allowance Peak Wet Weather Flow due to updated modelled peak dry weather flow.
2. Red values denotes exceedance of current operational firm capacity or the Region extraneous flow allowance of 0.4 L/s/ha.

5.3.2. Starting Point Methodology

The modeled average day demand based on calibrated wastewater model (Calibrated to 2023 flow monitoring and Region SCADA records) was used to establish baseline system dry weather flows.

Table 5-5 summarizes the average dry weather flows to each Region SPS and to the WWTP.

5.3.3. Growth Flow Projections

Future system demands were developed using a starting point methodology, the standard approach within Southern Ontario and the one used in the Region 2021 MSPU for projecting future growth flows. Expected flows due to growth were added to the starting point demand to establish future flows. Example for 2051 growth scenario below:

$$\text{2051 Flows} = \text{Baseline Average Day Demand Reduced to Account for Non-Revenue Water} + (\text{2051 total equivalent population}^4 - \text{2021 total equivalent population}) \times 270 \text{ L/c/d}$$

5.3.4. Hydraulic Performance Criteria

The updated and calibrated hydraulic wastewater model was utilized in the analysis of existing wastewater system performance. This process detailed existing system performance without the application of growth demands and could be used as a guideline for potential system upgrades.

Causes system surcharging leading to basement flooding are:

- Peak rain derived inflow and infiltration exceeding pipe capacity;
- Structural deficiencies such as pipe deflection;
- Operational deficiencies such as debris build up and blockages;
- Pumping station deficiencies resulting in system backups.

The model assumes the system is functioning as designed and does not reflect structural or operational constraints in the gravity system.

5.3.4.1. Gravity Sewer System Capacity

Table 5-7 summarizes the percentage of the system meeting various sewer performance criteria as measured:

3. d/D: the ratio of hydraulic depth over full pipe depth;
4. HGL: The hydraulic grade line of a surcharging sewer is below road center line ground surface.

⁴ Equi. Pop – Total of the combined people and employment population

A system is deemed to be at risk of basement flooding when the hydraulic grade line (HGL) exceeds a freeboard below road center line ground surface (represented by the symbol 'X m' in **Figure 5-1** which is higher than the standard basement's elevation.

Figure 5-1. Example of Sewer Capacity and Freeboard

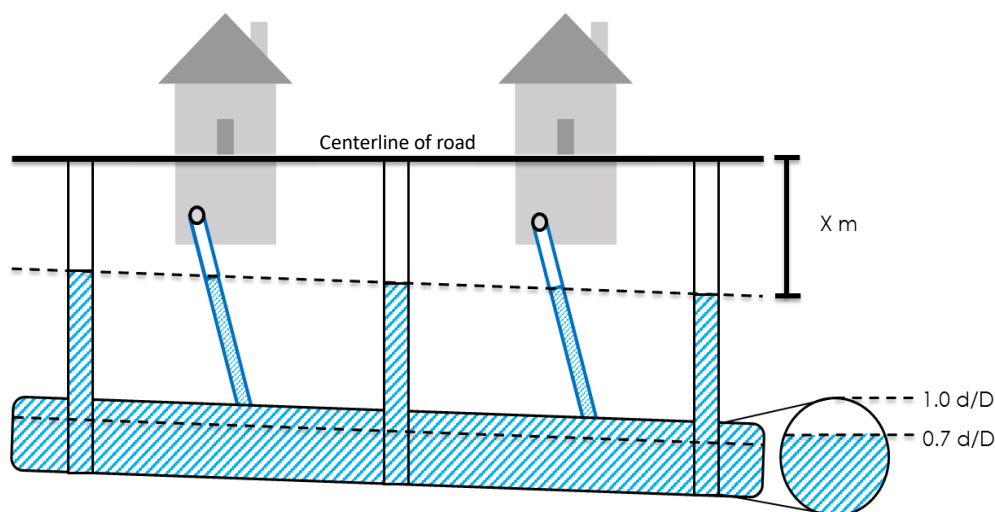


Table 5-7. Gravity Sewer Performance

Design Storm	d/D		Surcharging		
	<0.8	0.8-1	Freeboard <1.8 m	Freeboard <2.1 m	Freeboard <2.4 m
DWF	99.8%	0.2%	0.0%	0.0%	0.0%
2-Year	96.6%	3.4%	1.6%	1.7%	1.9%
5-Year	94.9%	5.1%	2.2%	2.5%	2.8%
10-Year	93.9%	6.1%	2.6%	3.0%	3.4%
25-Year	93.1%	6.9%	3.1%	3.4%	3.7%
50-Year	92.3%	7.7%	3.6%	4.1%	4.4%
100-Year	91.4%	8.6%	4.3%	4.5%	4.7%

Industry standards for basement elevations range from 1.7 to 2.1 m below ground levels, with municipal standards typically achieving a minimum of 1.8 m. Based on the existing system performance, there is an opportunity to apply a more conservative 2.1 m freeboard without substantially increasing existing system upgrade needs.

5.3.4.1.1. Gravity Sewer Performance Objective

The objective for upgrades to gravity sewers will be assessed using the City's current Standards for Site Planning consisting of:

- Minimum and maximum velocity at full pipe capacity shall be 0.6 and 3.0 m/s, respectively;

- The minimum pipe size for sanitary sewers shall be 200 mm diameter (with the exception of top end/low flow sewers which can be sized to 150 mm to maintain minimum velocity targets); and
- The minimum HGL shall be 2.1 meters cover below final grade at centreline of road.

5.3.4.1.2. Gravity Sewer Capacity Assessment

The performance of the gravity sewers will be evaluated on three criteria in order to classify sewer capacity assessment of surplus capacity, restrained capacity, surcharging from downstream capacity limitation and capacity limitation causing basement flooding risk:

1. d/D : the ratio of hydraulic depth over full pipe depth;
2. q/Q : the ratio of pipe flow to Manning's Capacity flow based on diameter, slope; and
3. HGL: The hydraulic grade line of a surcharging sewer is below the City's basement protection freeboard of 2.1 m under the design storm (this is more conservative than the Region's 1.8 m freeboard criteria)

The gravity system performance criteria and classifications are detailed in **Table 5-8**.

Table 5-8. Gravity System Performance Criteria

Sewer Classification	Hydraulic Criteria	Description
Surplus Capacity	• $d/D < 1$ • $q/Q < 1$	• Pipe not surcharging • Flow within pipe capacity
Restrained Capacity	• $d/D < 1$ • $q/Q = 1$	• Pipe not surcharging • Flow exceeding pipe capacity
Surcharging – Downstream Limitation	• $d/D > 1$ • $HGL \leq 2.1$ m freeboard • $q/Q = 1$	• Pipe surcharging • HGL depth not exceeding criteria • Flow exceeding pipe capacity
Exceeds Capacity and Basement Flooding Risk	• $d/D > 1$ • $HGL > 2.1$ m freeboard • $q/Q = 1$	• Pipe surcharging • HGL depth exceeding criteria • Flow exceeding pipe capacity

5.3.5. Combined and Sanitary Sewer Overflows

MECP F-5-1: Determination of Treatment Requirements for Municipal and Private Sewage Treatment Works Discharging to Surface Waters⁵ states that:

“All sewage treatment works shall provide secondary treatment or equivalent as the “normal” level of treatment, unless individual receiving water assessment studies indicate the need for higher levels of treatment”

The procedure also contains recommendations for sewage by-pass from nominally separate systems.

Meeting the goals of total containment and treatment of sewage flows per the MECP Procedure F-5-1 in the MSP-WWMS are considered in the long-term strategies, however, the study will focus on continuing to achieve the objectives of Procedure F-5-5 with the consideration of the significant growth anticipated within the City (detailed in Section 11 of the Procedure).

MECP F-5-5: Determination of Treatment Requirements for Municipal and Private Combined and Partially Separated Sewer Systems⁶ goals are stated as follows:

1. Eliminate the occurrence of dry weather overflows;
2. Minimize the potential for impacts on human health and aquatic life resulting from Combined Sewer Overflows;
3. Achieve as a minimum, compliance with body contact recreational water quality Provincial Water Quality Objectives for *Escherichia coli* at beaches impacted by Combined Sewer Overflows for at least 95% of the four-month period (June 1 to September 30) for an average year.

The Technical Criteria from MECP Procedure F-5-5 that are required for the Study are as follows:

- No overflows during dry weather;
- Maximize the use of the collection system for the storage of wet weather flows when capacity is available; and
- During a seven (7) month period commencing within 15 days of April of an average year, provide 90% volumetric control of wet weather in addition to all of the dry weather flow.

Additionally, Section 11 of the F-5-5 Regulation mandates that:

“When and where significant combined sewer system deficiencies exist, the Regional Office of the Ministry shall require that the provision of sanitary servicing for additional development tributary to the deficient system be curtailed to prevent aggravation of the problem until the necessary upgrading, as

⁵MECP F-5-1 Website: <https://www.ontario.ca/page/f-5-1-determination-treatment-requirements-municipal-and-private-sewage-treatment-works>

⁶ MECP F-5-5 Website: <https://www.ontario.ca/page/f-5-5-determination-treatment-requirements-municipal-and-private-combined>

outlined by a Pollution Prevention and Control Plan is carried out in keeping with the requirements of this Procedure. Some development is allowed as upgrading proceeds, conditional upon its progress. The staged upgrading should at a minimum provide for the transmission and treatment of all flows from the additional development. This provision applies to significant development i.e. not to simple, one lot infill cases.”

To align with the Procedure and Region approach, the MSP-WWMS assesses solutions such that growth does not increase system wet weather flows, City-wide. Development approvals will not be limited in advance of the I&I removal but it is encouraged that the City remove I&I at a similar rate of development.

5.4. Assessment of an Average Precipitation Year

This section is intended to outline the City of Niagara Falls precipitation, allocation approach and assumptions which will be used to support the City’s F-5-5 analysis. Selecting a suitable rainfall year as representative of an ‘average year’ sets up a transparent and repeatable framework for analysis and forecasting. The growth projections will be used to estimate future system demands and ultimately determine growth related infrastructure needs.

Long term precipitation analysis was completed using data from the Region’s Niagara Falls WWTP Precipitation Station 1998 to 2022. Long term trends were established for several variables including the total number of rainfall events, total annual precipitation depth, total duration of rainfall, average event duration, and median event intensity which are summarized in **Table 5-9**. The average year was determined by determining the least rank sum to the average across all variables. 2022 was determined to be the most representative of an “average year” for the F-5-5 time period and will be utilized for the average year assessment of the system.

Table 5-9. Long-term Annual Rainfall Trends (F-5-5) at Niagara Falls WWTP Precipitation Station

Year	Number of Rainfall Events	Annual Precipitation (mm)	Total Duration (hrs)	Average Event Duration (dd:hh:mm)	Average Event Precipitation (mm)	Median Peak 1-hr Intensity (mm/hr)
1998	54	365.5	433.6	8.0	6.8	2.0
1999	50	452.75	556.3	11.1	9.1	3.1
2000	52	567.25	708.2	13.6	10.9	2.9
2001	56	391.5	595.3	10.6	7.0	1.8
2002	61	497	580.6	9.5	8.1	2.3
2003	64	590	647.9	10.1	9.2	2.0
2004	58	619.5	713.3	12.3	10.7	2.5
2005	42	562.25	484.0	11.5	13.4	3.1
2006	55	534.25	626.1	11.4	9.7	3.0
2007	47	229.25	403.5	8.6	4.9	1.3
2008	65	451	614.1	9.4	6.9	2.8
2009	51	540.5	551.4	10.8	10.6	3.0
2010	54	479	489.5	9.1	8.9	3.1
2011	52	600.75	729.6	14.0	11.6	3.3
2012	44	436.5	483.8	11.0	9.9	2.6
2013	56	678.25	630.8	11.3	12.1	2.5
2014	55	429.75	473.6	8.6	7.8	2.3
2015	50	485.75	419.6	8.4	9.7	2.5
2016	48	289.75	362.9	7.6	6.0	2.5
2017	63	624.25	634.7	10.1	9.9	2.5
2018	49	437.5	639.7	13.1	8.9	2.5
2019	64	601	635.1	9.9	9.4	3.4
2020	52	373	527.7	10.1	7.2	2.5
2021	57	626	650.8	11.4	11.0	2.5
2022	53	463.75	577.4	10.9	8.8	2.8
2023	56	471.25	549.1	9.8	8.4	2.4
Average	54	492.2	566.1	10.5	9.1	2.6
Median	54	482.4	579.0	10.4	9.1	2.5

5.5. Wastewater System Technical Level of Service Criteria

Table 5-10 summarizes the draft wastewater system technical level of service criteria that will be utilized as the decision-making rationale related to wastewater system capacity needs and triggers for upgrades.

Table 5-10. Summary of Wastewater Technical Criteria

Criteria			Performance Target
Wastewater Flows	Per Capital Rate	Residential	255 L/c/d
		Employment	310 L/c/d
	Peaking Factor		Harmon's Peaking Factor
	I/I Allowance	Existing Areas	0.4 L/s/ha
		Greenfield	0.286 L/s/ha
System Performance	Peak Wet Weather Design Flows		10-Year Design Storm
	Existing Infrastructure		- d/D < 1 - HGL <2.1 m
	New/Upgraded Infrastructure		- Full capacity velocity between 0.6-3.0 m/s - Minimum sewer size of 200 mm diameter (with the exception of top end/low flow sewers which can be sized to 150 mm to maintain minimum velocity targets) - HGL <2.1 m at centreline of road
Overflows			MECP's F-5-5 Regulations: - No overflows during dry weather; - During a seven (7) month period commencing within 15 days of April of an average year, provide 90% volumetric control of wet weather in addition to all of the dry weather flow. Additionally, Section 11 of the F-5-5 Regulation mandates that: "When and where significant combined sewer system deficiencies exist, the Regional Office of the Ministry shall require that the provision of sanitary servicing for additional development tributary to the deficient system be curtailed to prevent aggravation of the problem.."

6. Stormwater System

6.1. Stormwater Level of Service Framework

Based on the MSP-WWMS vision statement and the identified Policy statements, the following customer service statement for the City's stormwater system was developed to guide the selection of Level of Service objectives and design criteria:

"To provide an efficient, sustainable, and reliable stormwater management system that minimizes environmental impacts and protects public health and property"

Table 6-1 details objectives intended to evaluate the existing and future performance of the stormwater system in terms of technical and customer key performance indicators.

6.2. Region Stormwater System Technical Level of Service Criteria

The Region MSPU did not include recommendations for the stormwater system performance; however, Niagara Region released Region-wide Stormwater Management Guidelines in 2022 which contain level of service criteria for Regional infrastructure and to be used where lower-tier municipalities do not have defined technical criteria. The following is a brief summary of the relevant components:

- Flood Control – post-development to pre-development for 2-year through 100-year storms
- Water Budget – Pre-development levels maintained with a minimum of zero runoff for the first 5mm of rainfall
- Quality Control – 80% TSS removal (MECP “Enhanced” criteria)
- Climate Change – Assessed using one of the three approved online tools or alternative method:
 - University of Western Ontario IDFCC Tool
 - Ontario Climate Change Data Portal (OCCDP) IDF Rainfall Tool
 - MTO IDF Curve Lookup
 - Alternative method – stress test scenario with increased rainfall percentages

Table 6-1. Stormwater Level of Service Objectives

Service Objective	Supporting Policy Statements		Technical Objective	Key Performance Indicators - Technical	Key Performance Indicators - Customer
Efficient	G.08	SW.02 SW.08	- Full life-cycle costing - Renewal of aging infrastructure - Optimization of system operations - Source control - Minimize directly connected downspouts	- SOG program - Performance of existing conveyance and treatment infrastructure - Prevalence of on-site SWM controls - No new direct connected roof leaders	- Number of complaints (cost, flooding, etc.) - Number Basement flooded - Number road flooding/ closure - Amount of damage and insurance claims - Emergency relief cost - Regular cost (property tax)
Sustainable	G.07 G.11	SW.02	- Full life-cycle costing - Renewal of aging infrastructure - Costs associated with obtaining funding	- SOG program - Age of infrastructure - Replacement/rehab costs - O&M costs	
Safe and Reliable	G.04 G.05 G.07 G.10	SW.01	- Capacity to meet specified design storm (major and minor systems) - Minimal flooding events - Resiliency to climate change - Condition of sewer system (CCTV) - Minimize cross-connections	- Percent of system meeting capacity needs under minor storm - Percent of system meeting capacity needs under major storm - System’s ability to meet performance targets under existing and climate change scenarios - Sufficiency of outlets - Number of cross connections to sanitary system	- Number of complaints (cost, flooding, etc.) - Number Basement flooded - Number road flooding/ closure - Amount of damage and insurance claims - Emergency relief cost - Regular cost (property tax)
Environmental and Regulatory	G.02	SW.03 SW.04 SW.05 SW.07	- Compliance with Provincial Water Quality Objectives - Ontario Water Resources Act - The Clean Water Act and Source Protection Plan - MECP Stormwater Planning and Design Guidelines, Future LID Guidelines - Adaptability to the effect of climate change - Water balance and provision of baseflow to streams - Protecting aquatic habitat	- Percent of system with adequate flooding and erosion control practices (stabilization or retention/detention) - Percent of system with adequate water quality treatment - Imperviousness - Prevalence of LIDs/ recharge areas - Pond and OGS sediment removal needs - Critical receiver water quality - Critical receiver stability - Critical receiver ecological changes	- Compliance with MECP Standards - Alignment with the source water protection plan amendments to the Official Plan and Zoning By-law 79-200 - Number of complaints: park/trail and watercourse cleanliness, water quality, sport fisheries - Number of severe weather events

6.3. Design Storms Climate Change Consideration

Several different approaches have been undertaken by municipalities to account for climate change when evaluating or planning their stormwater management system, including the following:

- Undertake a statistical study to update local intensity-duration-frequency (IDF) parameters based on the most up-to-date precipitation data to determine the current impact of climate change. Where old IDF parameters have been found to be more conservative than the updated parameters (which may occur if the old parameters were calculated from a shorter data set including an extreme storm event), old parameters are retained to implicitly account for future climate change.
- Apply an increase factor (e.g. 15%) to existing IDF parameters based on assumptions regarding the effect of climate change on rainfall depths.
- Utilize modified IDF parameters based on specific local predictions of a global climate model, if available.
- Utilize a more conservative return period when designing new infrastructure (e.g. 10 year storm instead of 5 year storm).

Due to the inherent uncertainty and lack of site-specific information regarding the current and future impact of climate change on the City of Niagara Falls, the recommended approach is as follows:

- Conservative IDF parameters (as included in the new Linear Design Guidelines) and design storms will be used to assess existing storm sewer capacity and design new storm sewers
- Target level of service for storm sewer capacity in existing areas will consider financial and technical feasibility of upgrading deficiencies, and major system evaluation study will be recommended to ensure that storms exceeding minor system capacity can be adequately conveyed to outlets
- During MSP-WWMS process, alternative approaches will be evaluated based on resiliency to climate change by assessing the solutions capacity to accommodate more conservative return period storms.

6.3.1. IDF Curve

The City's current IDF curves were updated in 1989 (Falcone Smith Associates) as part of the Shriners Creek Watershed Study. During a Level of Service Workshop with City staff (September 11, 2023), it was noted that the City's IDF curves were reviewed as part of the Master Drainage Plan Update (Aquafor Beech, 2017). A review of the Master Drainage Plan Update results indicated inconsistencies in the reported data. The results of the Master Drainage Plan Update indicated that a 5% - 10% increase in rainfall was appropriate to account for climate change.; however, the City have indicated that the IDF analysis from this study was not carried forward into an updated IDF curve.

As discussed during the Level of Service Workshop, GEI noted that other Niagara Region lower-tier municipalities have reviewed IDF curves against the Ministry of Transportation (MTO) IDF Curve Lookup Tool⁷, which developed location-specific IDF curves based on statistics from 352 Meteorological Service of Canada and National Oceanic and Atmospheric Administration stations with an average record length of 30 years. As recommended during the workshop, the current day (2010 MTO data) and climate change projected (extrapolated to 2050) MTO IDF curves will be used in evaluating both the existing system performance and future infrastructure performance respectively.

Table 6-2, Table 6-3, and Table 6-4 provide the MTO IDF parameters, rainfall intensity (mm/hr), and rainfall depth (mm) for 2010, which will be used to assess existing system performance. **Figure 6-1** provides a graphical representation of the intensity vs duration associated with the 2010 MTO IDF curve.

Table 6-2. 2010 MTO IDF Parameters

Return Period	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr
A	22.4	29.7	34.4	40.5	45	49.4
B	-0.699	-0.699	-0.699	-0.699	-0.699	-0.699

Table 6-3. 2010 MTO IDF Rainfall Intensity (mm/hr)

Duration	5-min	10-min	15-min	30-min	1-hr	2-hr	6-hr	12-hr	24-hr
2-yr	127.2	78.4	59	36.4	22.4	13.8	6.4	3.9	2.4
5-yr	168.7	103.9	78.3	48.2	29.7	18.3	8.5	5.2	3.2
10-yr	195.4	120.4	90.7	55.8	34.4	21.2	9.8	6.1	3.7
25-yr	230	141.7	106.7	65.7	40.5	24.9	11.6	7.1	4.4
50-yr	255.6	157.4	118.6	73.1	45	27.7	12.9	7.9	4.9
100-yr	280.6	172.8	130.2	80.2	49.4	30.4	14.1	8.7	5.4

Table 6-4. 2010 MTO IDF Rainfall Depth (mm)

Duration	5-min	10-min	15-min	30-min	1-hr	2-hr	6-hr	12-hr	24-hr
2-yr	10.6	13.1	14.8	18.2	22.4	27.6	38.4	47.3	58.3
5-yr	14.1	17.3	19.6	24.1	29.7	36.6	50.9	62.7	77.3
10-yr	16.3	20.1	22.7	27.9	34.4	42.4	59	72.7	89.5
25-yr	19.2	23.6	26.7	32.9	40.5	49.9	69.5	85.6	105.4
50-yr	21.3	26.2	29.6	36.5	45	55.4	77.2	95.1	117.1
100-yr	23.4	28.8	32.5	40.1	49.4	60.9	84.7	104.4	128.6

⁷ MTO IDF Curve Lookup Tool: <https://idfcurves.mto.gov.on.ca/terms.shtml>

Figure 6-1. Intensity vs. Duration for 2010 MTO IDF Curve

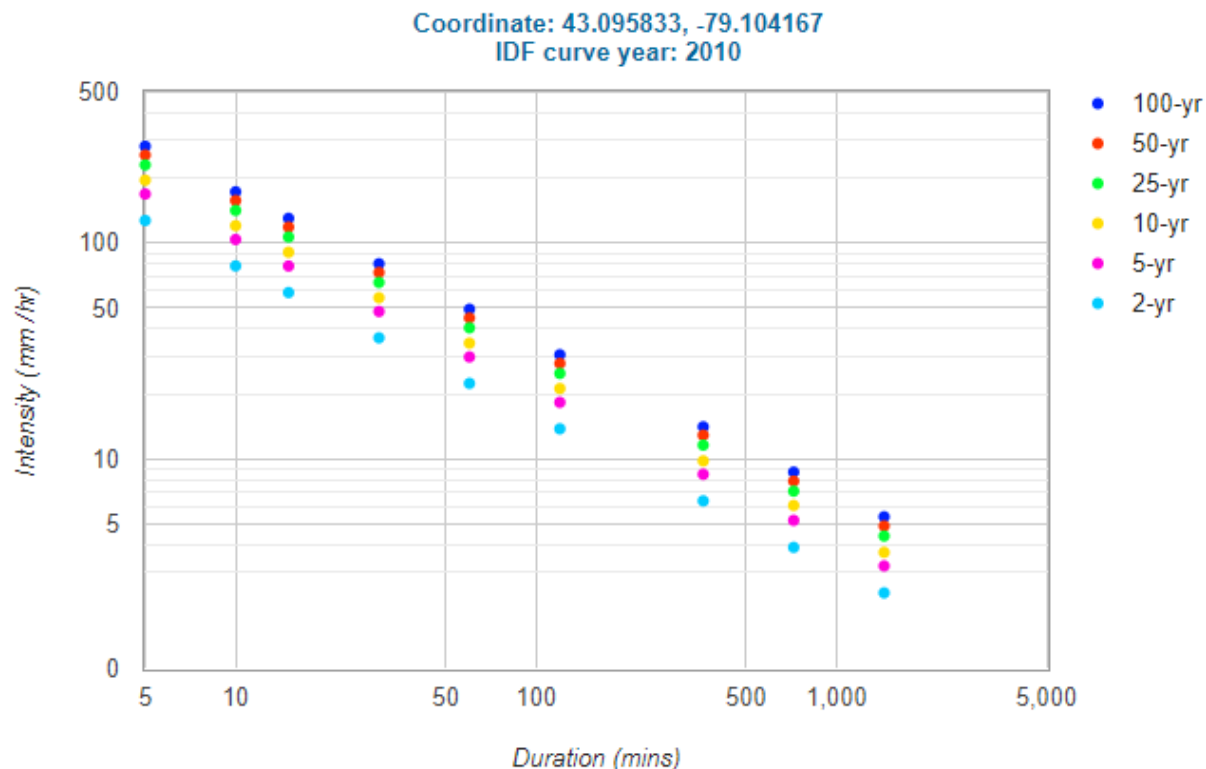


Table 6-5 and **Table 6-6** provide the extrapolated rainfall intensity (mm/hr), and rainfall depth (mm) for 2050, which will be used to assess existing system performance. **Figure 6-2** provides a graphical representation of the intensity vs duration associated with the 2050 MTO IDF curve.

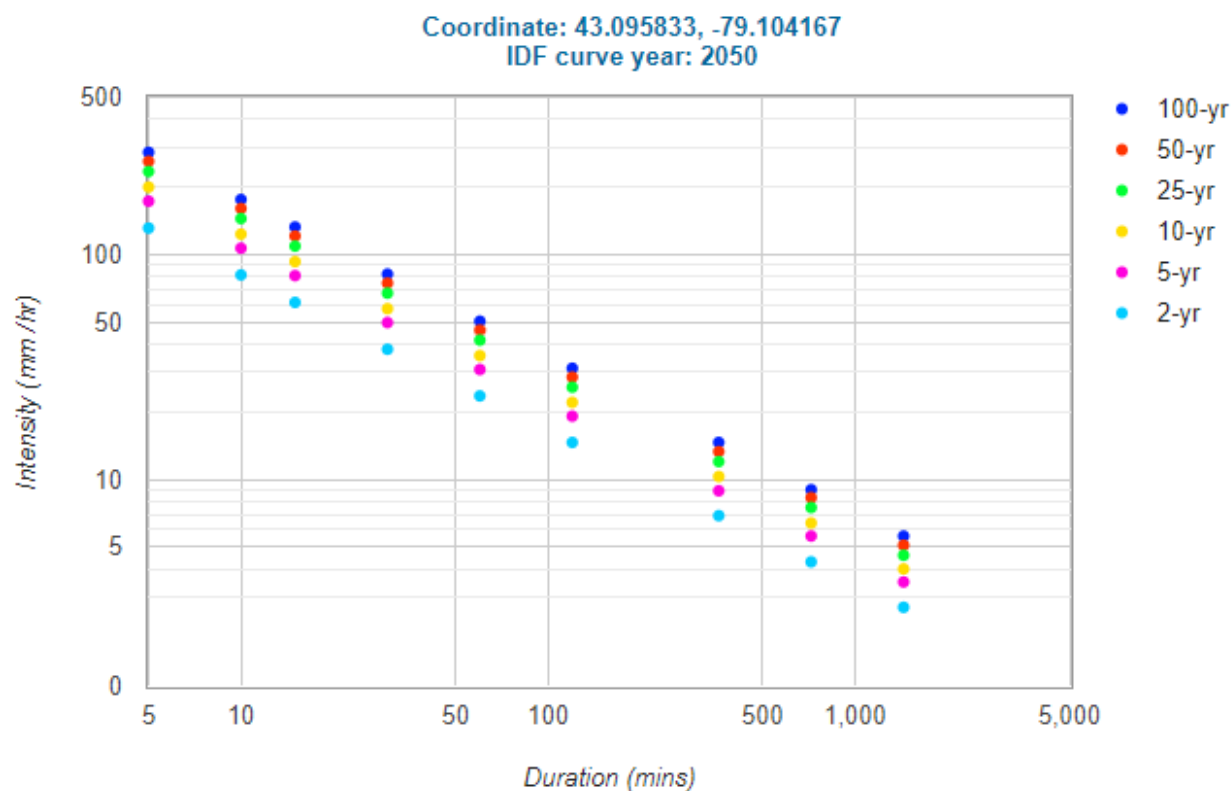
Table 6-5. 2050 MTO IDF Rainfall Intensity (mm/hr)

Duration	5-min	10-min	15-min	30-min	1-hr	2-hr	6-hr	12-hr	24-hr
2-yr	131	81.1	61.2	37.9	23.5	14.6	6.9	4.3	2.7
5-yr	172.5	106.6	80.5	49.8	30.8	19.1	8.9	5.6	3.5
10-yr	199.2	123.1	92.9	57.4	35.5	22	10.3	6.4	4
25-yr	233.8	144.4	108.9	67.3	41.6	25.7	12	7.5	4.6
50-yr	259.4	160.2	120.8	74.6	46.1	28.5	13.3	8.3	5.1
100-yr	284.4	175.5	132.4	81.8	50.5	31.2	14.6	9	5.6

Table 6-6. 2050 MTO IDF Rainfall Depth (mm)

Duration	5-min	10-min	15-min	30-min	1-hr	2-hr	6-hr	12-hr	24-hr
2-yr	10.9	13.5	15.3	18.9	23.5	29.2	41.4	51.6	64.8
5-yr	14.4	17.8	20.1	24.9	30.8	38.2	53.4	67.2	84
10-yr	16.6	20.5	23.2	28.7	35.5	44	61.8	76.8	96
25-yr	19.5	24.1	27.2	33.6	41.6	51.4	72	90	110.4
50-yr	21.6	26.7	30.2	37.3	46.1	57	79.8	99.6	122.4
100-yr	23.7	29.3	33.1	40.9	50.5	62.4	87.6	108	134.4

Figure 6-2. Intensity vs. Duration for 2050 MTO IDF Curve Extrapolated



6.3.2. Design Storms

The 3-hour Chicago distribution will be used for the minor and major system storm system analysis. The 5-year design storm will be used to assess the performance of the minor system, while the 100-year design storm will be used to assess the performance of the major system.

6.4. Stormwater Technical Level of Service Context

There is no prescribed level of service in the Stormwater Management Planning and Design Manual (MECP, 2003) for minor system (storm sewer and ditch) performance. The MECP manual notes that storm sewers are generally sized to convey runoff from storms ranging from 2 year to 10-year return periods, and that during the design phase the Rational Method is typically used to calculate the required capacity of sewers.

The recommended approach to evaluate the existing stormwater system performance is as follows:

- Utilize all-pipes model with catchment characteristics calibrated to observed flow monitoring data and apply 3-hour Chicago design storm of various return periods in existing and post-development scenarios. For growth and intensification areas, subcatchment parameters typical to the type of land use will be applied.
- Recommended minor system evaluation utilizing the 5-year storm event.
- Recommend major system evaluation study to ensure that storms exceeding minor system capacity can be adequately conveyed to outlets.

New infrastructure in greenfield areas should follow the City of Niagara Falls Standards for Site Planning.

6.4.1. Stormwater Hydraulic Performance Criteria

The updated and calibrated PCSWMM model was utilized in the analysis of existing stormwater system performance with the historical 3-hour Chicago design storm applied. This process detailed existing system performance without the application of growth or climate change and could be used as a guideline for potential system upgrades.

6.4.2. Storm Sewer System Capacity

Storm sewer capacity conditions will be defined and assessed when peak system HGL within a pipe satisfies the following conditions:

- The HGL is maintained below the ground surface elevation (i.e. stormwater system surcharges to the road) at either end of each storm sewer.

Level of service, in terms of design storm return period, is to be based on observed performance/ characteristics, providing an appropriate balance of risk and financial feasibility:

- 5 Year level of service across the entire City's minor system

6.4.3. Stormwater Facilities

There are several types of stormwater management facilities within the City of Niagara Falls:

- End-of-pipe detention ponds, including dry ponds, wet ponds, and wetlands. Typically designed for quantity control (flooding and/or erosion control) and quality control.
- Oil grit separator (OGS) units; quality control only.

The recommended approach is to evaluate the existing stormwater system in terms of coverage, with the required amount of coverage and design criteria for various stormwater management objectives to be subcatchment specific depending on the characteristics of the receiver. 100% of outfalls to sensitive watercourses are to have upstream or downstream control measures unless the subwatershed study confirms that they are not required. Further, direct outfalls to the Hydro Canal, the Welland River, and the Niagara River do not require quantity control, however they do require quality control as follows:

- Existing system coverage requires a minimum of 50% of the impervious areas to be captured and treated via a water quality facility
- New system coverage requires 100% of the impervious area drains to have a water quality facility

Further, each quality control facility is to target an 80% total suspended solids removal (to be confirmed by subwatershed studies) and 70% suspended solids removal into the Hydro Canal, Welland River, and the Niagara River.

6.4.4. New Development Sites

Servicing of new development with the MSP-WWMS will be evaluated using the Standards for Site Planning. Approval of future development applications will be subject to the City criteria and policy in place at the time of the application and may differ to those outlined below.

6.4.4.1. Stormwater Runoff and Imperviousness

Table 6-7 details the percent impervious, by land use, which was used by the MSP-WWMS to evaluate the potential runoff rated from greenfield and infill development. These impervious percentages are derived from the runoff coefficients provided in the Niagara Region Stormwater Management Guidelines (2022). The Guidelines provide a runoff coefficient of 0.95 for impervious area and 0.25 for pervious area.

Table 6-7. Stormwater Perviousness

Land use	Runoff Coefficient	Impervious Percentage (%)
Parks and Open Spaces	0.35	14%
Single Family Residential	0.6-0.65	50% - 57%
Semi-detached Residential	0.7	64%
Townhouses	0.75	71%
Apartments	0.85	86%
Schools	0.75	71%
Industrial	0.9	93%
Commercial	0.9	93%
Churches	0.75	71%

6.4.4.2. Depression Storage

Table 6-8 summarizes the depression storage that was used by the MSP-WWMS.

Table 6-8. Depression Storage Recommendation

Perviousness	Depression Storage
Pervious	4 mm
Impervious	1.5 mm

6.4.4.3. Flow Control Targets

Unless otherwise stated under area specific stormwater planning studies, new development / redevelopment areas will be expected to manage stormwater runoff to the following criteria:

- Post development peak flow to match pre-development peak flow under both minor flow system level of service objective (5 year design storm) and major system level of service objective (100 year design storm)
- Manage post development runoff volumes to the greater of:
 - Match pre-development flows under both minor system level of service objective (5 year design storm) and major system level of service objective (100 year design storm)
 - Capture and manage the first 25 mm of site runoff.

Further, allowable peak flows will be subject to the available capacity in the downstream minor and major stormwater conveyance systems.

6.4.4.4. Major Flow System

Unless otherwise stated under area specific stormwater planning studies, new development / redevelopment area will require a clearly defined major storm outlet, with adequate capacity, discharging to the City's riverine system, the Hydro Canal, Welland River, or the Niagara River.

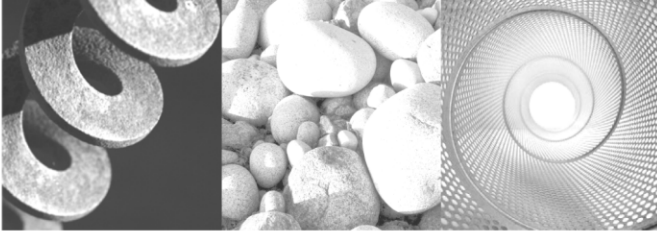
6.5. Stormwater System Technical Level of Service

Table 6-9 summarizes the draft stormwater system technical level of service criteria that will be utilized as the decision-making rationale related to stormwater system capacity needs and triggers for upgrades.

Table 6-9. Summary of Stormwater Technical Criteria

Criteria		Targets
Stormwater Flows	Minimum Runoff Coefficient “R” for Rational Method	Parks and Open Spaces - 0.35 Single Family Residential - 0.6-0.65 Semi-detached Residential - 0.7 Townhouses - 0.75 Apartments - 0.85 Schools - 0.75 Industrial - 0.9 Commercial - 0.9 Churches - 0.75
	Depression Storage	1.5 mm for impervious areas 4 mm for pervious areas
	Synthetic Design Storm	3-hour Chicago (minor system)
	Velocity	Minimum velocity – 0.8 m/s Maximum velocity – 6.0 m/s
Sewer System Performance	Design Return Period	Minor System – 5 Year Major System – 100 Year
	HGL Target (existing)	Below ground level
	d/D Target (new)	d/D = 1.0
Facility Assessment – Quantity Control/ Erosion Control	Coverage	100% of outfalls to sensitive watercourses have upstream control or downstream control measures. – Matching Post to Pre-development flows and duration Not required for outfalls to the Hydro Canal, Welland River, or the Niagara River provided there is sufficient capacity in the conveyance system.
Facility Assessment – Quality Control	Coverage (existing)	Minimum 50% of impervious area drains to water quality facility
	Coverage (new)	100% of impervious area drains to water quality facility
	Target	70% Total suspended solids removal into the Hydro Canal, Welland River, and the Niagara River 80% Total suspended solids removal into a quality control facility
	Thermal Mitigation	Per Subwatershed Studies or individual studies if a subwatershed study is not available
Facility Assessment – Water Balance		Per Subwatershed Studies or individual studies if a subwatershed study is not available

Appendix C Costing Methodology



City of Niagara Falls

Master Servicing Plan and Wet Weather Management Strategy Appendix C – Costing Methodology

Niagara Falls, Ontario

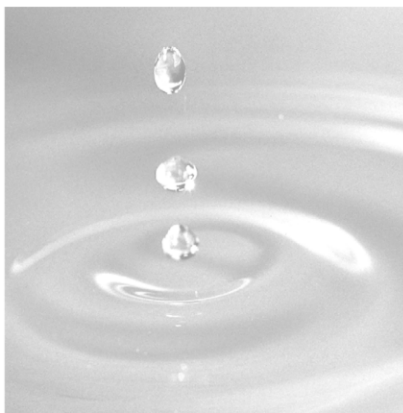
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Appendices

Appendix A	Unit Rates
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1. Introduction

This Appendix is intended to summarize the costing methodology used in the development of the Capital Program costs for the Niagara Falls Master Servicing Plan and Wet Weather Management Strategy (MSP-WWMS). The cost estimation approach uses a classification system to categorize different cost estimate classes. These classes represent different phases of planning and design, and subsequently different methods of cost estimation and levels of accuracy. This framework complements the generic approach developed by the Association of Advancement in Cost Estimating (AACE) International and has similarities to the Government of Canada (GOC) approach. **Table 1-1** provides a description of the proposed estimate classes and their end usage or deliverables.

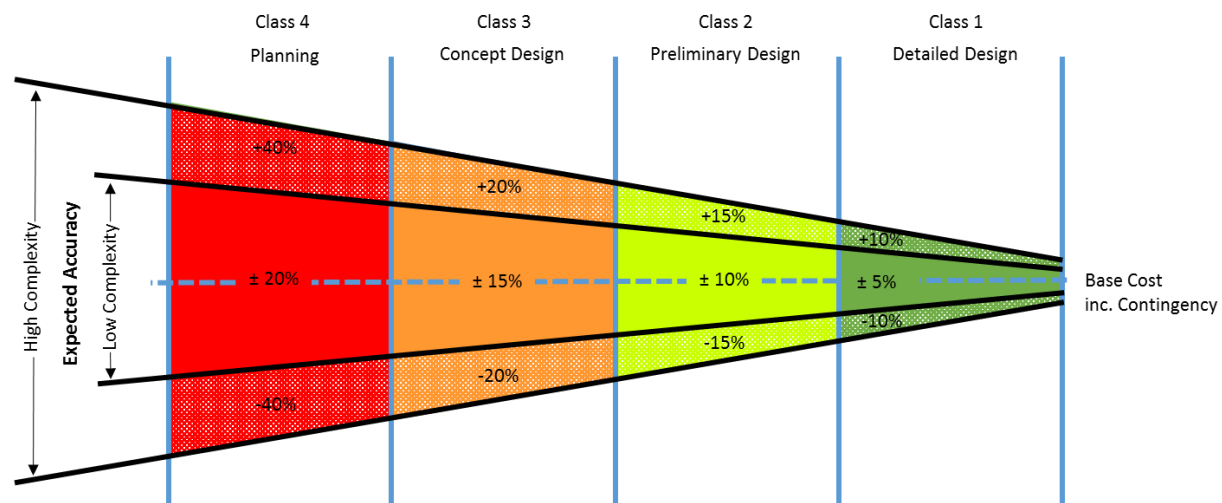
Table 1-1. Cost Estimation Classes

Estimate Class	Estimate Class Description	End Usage / Major Deliverables
Class 4	Planning Cost Estimate	Infrastructure Planning/Master Planning. Justification for project planning funding. Minimum information requirements.
Class 3	Concept Design Cost Estimate	Basis for budgeting and approvals.
Class 2	Preliminary Design Cost Estimate	Used for project cost control during design; initial detailed estimate.
Class 1	Detailed Design Cost Estimate	Final cost review in preparation for construction; tender ready.

1.1. Estimated Accuracy

The accuracy range is defined by the cost estimate class and the project complexity. **Figure 1-1** shows how the estimate varies based on the two input criteria. The accuracy percentage applies to the total base cost plus all allowances and contingencies.

Figure 1-1. Cost Estimate Accuracy Ranges



An accuracy range is an acknowledgment that even with a formal cost estimation framework, and appropriate contingencies, actual costs may still vary because of ‘unknown unknowns’, such as changes in the economy or new future innovative technologies. These unknowns can just as easily result in a lower final cost as a higher one, even with the application of an appropriate contingency. A recent example is the value of the Canadian dollar. In March 2020, the Canadian dollar dropped to \$0.77 American dollars, and rose to \$0.83 American dollars in May 2021. If an American supplier is being used for the project, the final cost could significantly vary from that estimated in the earlier stages of the planning and design process. This variance should not be associated with the contingency amount.

2. Approach and Methodology

For the purposes of the MSP-WWMS, all the cost estimates will follow a Class 4 estimate. It is important to establish the level of accuracy that can be expected and as the project matures through planning to design, how the higher-class estimates refine the costs. Each of the key components of the diagram is described below, including:

- Cost Estimate Classes
- Project Complexity
- Area Condition
- Construction and Project Contingency
- Construction Provisional and Allowance
- Additional Costs

The unit costs and all the above components are contained in the NF MSP Capital Program spreadsheet that also includes standard project details sheets. The spreadsheet is the working tool that brings all the cost components together to create a project cost estimate. A schematic of the cost estimate approach is provided in **Figure 2-1**, while a detailed breakdown of each element is provided in the following sections.

City of Niagara Falls MSP and Wet Weather Management Strategy Costing Methodology

Step 1. Define Project Classification

Estimate Class	Estimate Class Description	End Usage/Major Deliverables
Class 4	Infrastructure Planning Cost Estimate	Study to support investment decisions based on sufficient knowledge to identify high-level risk.
Class 3	Conceptual Design Cost Estimate	Basis for budgeting and approvals.
Class 2	Preliminary Design Cost Estimate	Used for project cost control during design; initial design estimate.
Class 1	Detailed Design Cost Estimate	Final cost review in preparation for construction; tender-ready.

Step 2. Define Project Complexity

Project Complexity	Complexity Description
High complexity	Projects with high cost, broad scope of work, multiple alternatives/alignments, etc.
Low complexity	Projects with low cost, defined scope of work, few if any alternatives

Step 3. Define Project Details

Project Detail	Detail Description
Diameter	Nominal diameter of the proposed water main to provide the required level of service.
Length	Approximate length of the proposed water main based on the alignment (whether assumed or determine through more rigorous analysis).
Construction Methodology	The method by which the water main will be installed (e.g., open cut, trenchless).
Construction Depth	The depth of excavation required to install the water main assuming that open cut construction is chosen (e.g., normal, deep).
Construction Environment	The general environment within which the water main will be constructed (e.g., greenfield, suburban, urban).
Crossings	Identification of the type and number of crossings associated with the water main installation (e.g., creeks, roads, railways, major utilities).
Appurtenances	Identification of the type and number of appurtenances required for the proposed water main (e.g., valves, chambers, hydrants, etc.).
Other Considerations	Coordination with other capital works that could impact schedule and cost.

Step 4. Calculate Total Construction Cost

1 INSTALLATION COST
Basic cost to install the sewer main and associated appurtenances calculated using various unit rates for pipe, valve and chamber sizes and type of crossings.

Includes: Sewer main installation (unit rate x length), crossings (count x unit rate for size and type of crossing), manholes and chambers (included in unit rate).



2 CONSTRUCTION UPLIFT
Allowance for the increased cost of constructing in built-up areas, applied to the base construction cost.

Construction Environment		
Greenfield	Suburban	Urban
0%	20%	30%



3 UPDATED SOILS REGULATION UPLIFT
Allowance for the increased cost of geotechnical and materials handling due to the Updated Soils Regulation. An Updated Soils Regulation Uplift of 2% is applied to all projects.



4 BASE CONSTRUCTION COST
Total cost to construct the actual water main and associated appurtenances, not including tasks such as traffic management, mobilization, inspections, etc.

$$4 = 1 + 2 + 3$$



5 ADDITIONAL CONSTRUCTION COSTS
Additional costs associated with construction not covered under the base construction cost or the construction uplift, including mobilization, traffic management, inspections, etc. A percentage is applied to the sewer main construction cost based on the complexity of the project.

Project Complexity		
Low		High
10%		20%



6 PROVISIONAL ALLOWANCE
Provisional allowance for labour and materials over and above the sewer main construction cost, a standard item on construction tenders. A provisional allowance of 10% is applied to all projects.



7 TOTAL CONSTRUCTION COST
Total cost of constructing the sewer main including all items that make up a construction tender.

$$7 = 3 + 4 + 5 + 6$$

Step 5. Calculate Project Contingency

8 PROJECT CONTINGENCY
An allowance for contingency that recognizes both the complexity of the project and the project classification in terms of the certainty regarding scope of work, alignment, construction methodology, property requirements, geotechnical/hydrogeological issues, etc. The contingency will become smaller as the project moves closer to implementation.

	Project Complexity	
	Low	High
Class 4	20%	30%
Class 3	15%	25%
Class 2	10%	20%
Class 1	10%	15%

Step 6. Calculate Soft Costs

9 GEOTECHNICAL/ HYDROGEOLOGICAL
Studies, field work, inspection, etc.

Project Complexity		
Low		High
0.5%		2.0%



10 PROPERTY/EASEMENTS
Minor property acquisition and infrastructure easements required.

Project Complexity		
Low		High
1.0%		2.0%



11 ENGINEERING/DESIGN (INTERNAL)
In-house costs of labour, engineering, wages, and/or construction administration

Total Cost		
<\$10m	\$10 \$50m	>\$50m
4%	6%	8%



12 DESIGN/CONTRACT ADMINISTRATION (EXTERNAL)
Consultant costs of design, engineering, and contract administration

Total Cost		
<\$10m	\$10 \$50m	>\$50m
10%	12%	15%



13 TOTAL SOFT COSTS (GROWTH)

$$13 = 9 + 10 + 11 + 12$$

Step 7. Compile Capital Plan

7 + 8 is entered as the CONSTRUCTION component

13 is entered as the DESIGN component

2.1. Unit Rates

Suggested unit rates are based on supplier material costs, tender analysis, and historic project costs from multiple municipalities across southern Ontario. In this recommended approach the unit rates are the starting point or base for a cost estimate. Many other factors and criteria are applied to the unit rates. Therefore, caution is advised when comparing recommended unit rates in isolation with those used for previous studies. Only full and complete costs estimates should be compared.

Due to the pandemic, recent inflation, and general variability in tender prices over recent years, it did not seem appropriate to rely only on recent tender review. As such we used data originally from 2012 which was based on a comprehensive review and more stable costs and then inflated the costs using the quarterly year-to-year percentage change in Non-Residential Building Construction Price Index (NRB CPI) for Toronto, Ontario. **Table 2-1** shows the average annual percentage change in NRB CPI and **Table 2-2** shows the inflated prices for pipe installation as a sample.

Table 2-1. Average Annual NRB CPI from 2012-2022

Year	Average Annual NRB CPI
2012	2.2%
2013	0.4%
2014	1.4%
2015	1.8%
2016	2.9%
2017	5.0%
2018	4.6%
2019	4.0%
2020	2.8%
2021	10.6%
2022	20.2%
Assumed Inflation Per Year from 2012 to 2023	5.0%

Table 2-2. Sample Restoration Unit Cost Inflation

Pipe Diameter (mm)	Restoration Cost (2012) \$/m	Restoration Cost (2023) \$/m
300	98	167
375	98	167
450	99	168
525	100	170

Tables detailing unit rates for water and wastewater infrastructure can be found in **Appendix A**.

2.2. Project Complexity

Table 2-3 provides general definition of project complexity.

Table 2-3. Project Complexity Description

Project Complexity	Complexity Description
High Complexity	Projects with high cost, broad scope of work, multiple alternatives/alignments, etc.
Low Complexity	Projects with low cost, defined scope of work, few if any alternatives

2.3. Area Condition

Area Condition provides an allowance for the increased cost of constructing in built-up areas, applied to the base construction cost. Table 2-4 provides a general definition and the construction uplift cost percentage of the area condition.

Table 2-4. Area Condition Descriptions

Construction Environment	Environment Description	Construction Cost Uplift %
Rural	Greenfield construction with no environmental constraints	0%
Suburban	Developed built up environment	20%
Urban	Heavily developed built up environment – downtown area	30%

2.4. Estimated Accuracy Range

The accuracy range is not an additional contingency and should not be used for budgeting or funding purposes but rather be a representation of the level of confidence or vulnerability associated with a cost estimate (base + contingency). The concept of an accuracy range is that after the inclusion of an appropriate contingency, it is just as likely that the final cost will be below the estimate as above and it is therefore expected that the long-term aggregate of cost estimates (base + contingency), within each class, will balance out.

The accuracy range for each class is comprised of a high and low value to provide flexibility with respect to the project complexity and corresponding levels of cost estimating confidence.

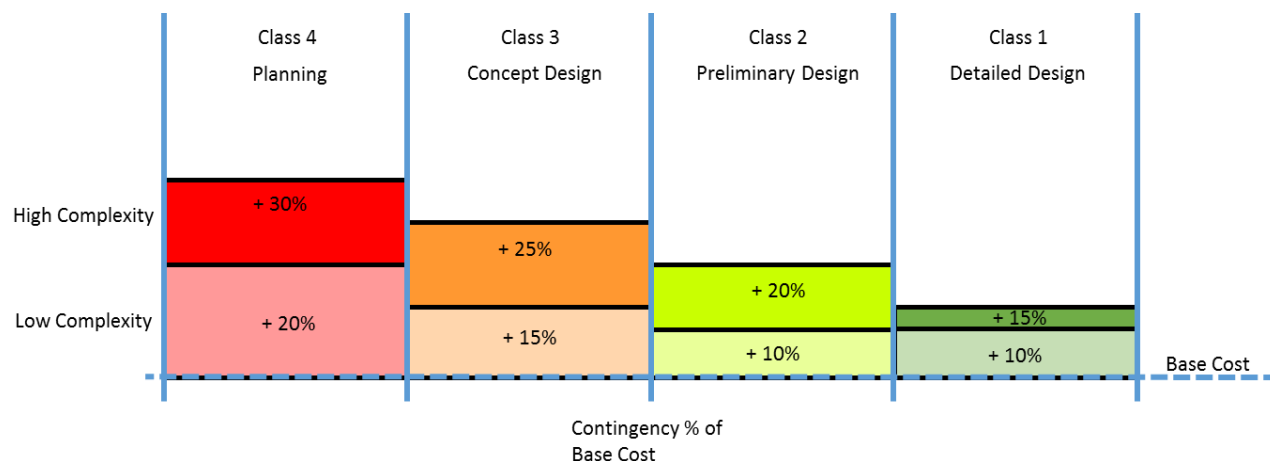
2.4.1. Construction and Project Contingency

There is a certain amount of risk and uncertainty associated with each class of cost estimation. The associated risk and uncertainty are minimized with the addition of a contingency. Contingencies are an allowance for risks that are known or anticipated at early stages of the project definition, i.e. they represent probable events that are ‘known unknowns’ and experience has shown are likely to occur.

They cannot be attributed to specific items in the base estimate but need to be considered in addition to the base cost. It should be noted that a project contingency does not cover changes in scope, which are dealt with on their own and should be defined in the project management plan. The project contingency changes with project complexity as well as project estimate class, as shown **Figure 2-2**.

Two types of contingencies are recommended for use: construction contingency and project contingency.

Figure 2-2. Cost Estimate Contingency Amounts



2.4.2. Construction Contingency

Construction contingency is a percentage contingency amount applied to the base construction costs. It accounts for any additional construction costs not included in the unit rates, valving, and crossings. It includes mobilization/demobilization, connections, inspection, hydrants, signage, traffic management, bonding, and/or insurance. **Table 2-5** provides the percentage contingency amount based on construction complexity.

Table 2-5. Construction Complexity Contingencies

Construction Complexity	Percentage of Base Construction Cost
Low Complexity	10%
High Complexity	20%

2.5. Construction Provisional Allowance

It is recommended that a provisional amount be applied to the base construction costs in the event of increased construction labour and/or material costs. Provisional Project Cost remains separate from the primary project cost but must be accounted for budgeting purposes. Regardless of estimate class or project complexity it is recommended that 10% of the base construction cost is applied as a Provisional Allowance.

2.6. Additional Costs

Additional costs capture all soft costs associated with the project. If available, actual quoted costs should be used. In the absence of this information percentage amounts, applied to the base construction costs, are recommended. Such costs are related to project complexity and total project cost, as such percentages vary accordingly. **Table 2-6** shows the percentages to be applied for high and low complexity and different value projects.

Table 2-6. Additional Cost Components

Cost Component		High Complexity	Low Complexity
Geotechnical / Hydrogeological / Materials		2% of construction cost	0.5% of construction cost
Property Requirements		2% of construction cost	1% of construction cost
Consultant Engineering / Design	Total Construction Cost <\$10M	15% of construction cost	
	Total Construction Cost \$10M - \$50M	12% of construction cost	
	Total Construction Cost >\$50M	10% of construction cost	
In House Labour / Engineering / Wages / CA	Total Construction Cost <\$10M	8% of construction cost	
	Total Construction Cost \$10M - \$50M	6% of construction cost	
	Total Construction Cost >\$50M	4% of construction cost	
Non-refundable HST		1.76% of total costs	

2.7. Cost Example

The following provides a sample calculation for a new trunk watermain using the costing methodology shown above in **Figure 2-1**.

The following provides as example construction cost estimation during the planning process for a new 1640 m long 450 mm diameter trunk watermain in a rural area with one major canal crossing. It is estimated that 45% (730 m) will be constructed via tunnelling due to the canal crossing and the remaining 55% (910 m) via open cut construction. The project is anticipated to have a medium complexity level.

- **Step 1.** Define Project Classification: Class 4 (Infrastructure Planning Cost Estimate)
- **Step 2.** Define Project Complexity: Medium
- **Step 3.** Define Project Details:

Project Detail	Specific Details
Diameter	450 mm watermain
Length	1640 m
Construction Methodology	55% Open Cut (910 m) 45% Tunnelled (730 m)
Construction Depth	5 m
Construction Environment	Greenfield/rural
Crossings	1 Major Creek Crossing (i.e. canal crossing)
Appurtenances	4 Valve and chambers
Other Considerations	N/A

- **Step 4. Calculate Total Construction Cost:**

Component	Rate (%)	Unit	Estimated Quantity	Cost Per Unit	Sub-Total	Notes
Pipe Construction – Open Cut		m	910 m	\$1,294	\$ 1,177,540	
Pipe Construction – Tunnelling		m	730 m	\$9,900	\$ 7,227,000	
Major Creek Crossings		ea.	1	\$323,000	\$ 1,610,000	(i.e. canal crossing)
Valve & Chambers		ea.	4	\$62,441	\$ 249,762	
Subtotal					\$ 10,264,302	
Construction Uplift	0%	-	-	-	\$ 0	Based on construction environment (i.e. greenfield)
Updated Soils Regulation Uplift	2%	-	-	-	\$ 205,286	Base rate of 2%
Base Construction Cost (Subtotal)					\$ 10,469,588	
<i>Additional Construction Costs</i>	15%	-	-	-	\$ 1,570,438	<i>Based on project complexity and includes items such as mobilization/demobilization, inspection, signage, traffic management, insurance, etc.</i>
Subtotal					\$ 12,040,026	
<i>Provisional Allowance</i>	10%	-	-	-	\$ 1,204,003	<i>Applied to sum of base construction cost and additional construction costs.</i>
Total Construction Cost					\$ 13,244,029	

- **Steps 5 & 6.** Calculate Project Contingency & Soft Costs:

Component	Rate (%)	Sub-Total	Notes
Project Contingency	25.0%	\$ 3,311,007	Based on project complexity
Geotechnical / Hydrogeological / Materials	1.0%	\$ 132,440	
Property / Easements	1.5%	\$ 198,660	
Engineering / Design (Internal)	6.0%	\$ 794,642	Based on project value
Design / Contract Administration (External)	12.0%	\$ 1,589,284	
HST	1.76%	\$ 233,095	
Total Contingency & Soft Costs	-	\$ 6,259,428	

Appendix A Unit Rates

Sewer (5m depth)	
Diameter (mm)	Unit Rate (\$/m)
300	\$923
375	\$976
450	\$1,049
525	\$1,120
600	\$1,438
675	\$1,722
750	\$1,862
825	\$1,978
900	\$2,321
975	\$2,467
1050	\$2,715
1200	\$2,995
1350	\$3,218
1500	\$3,546
1800	\$4,370
2100	\$5,301
2400	\$6,385
3000	\$8,640

Sewer (10m depth)	
Diameter (mm)	Unit Rate (\$/m)
300	\$923
375	\$976
450	\$1,049
525	\$1,120
600	\$1,438
675	\$1,722
750	\$1,862
825	\$1,978
900	\$2,321
975	\$2,467
1050	\$2,715
1200	\$2,995
1350	\$3,218
1500	\$3,546
1800	\$4,370
2100	\$5,301
2400	\$6,385
3000	\$8,640

Watermain and Forcemains	
Diameter (mm)	Unit Rate (\$/m)
150	\$1,190
200	\$1,190
250	\$1,190
300	\$1,190
400	\$1,191
450	\$1,294
500	\$1,471
600	\$1,743
750	\$2,096
900	\$2,638
1050	\$3,010
1200	\$3,534
1350	\$4,274
1500	\$4,665
1650	\$5,365
1800	\$5,931
2100	\$6,758
2400	\$6,000

Sewer Trenchless Crossings For Creeks & Trans Canada ¹		Sewer Trenchless Crossings For Regional Roads, Rail and Hydro Corridors ¹		Sewer Trenchless Crossings For Freeways, Major Creek Crossings ¹	
Length = 20 m		Length = 60 m		Length = 150 m	
Diameter (mm)	Unit Rate (\$/ea)	Diameter (mm)	Unit Rate (\$/ea)	Diameter (mm)	Unit Rate (\$/ea)
200	\$103,000	200	\$185,000	200	\$370,000
250	\$103,000	250	\$185,000	250	\$370,000
300	\$103,000	300	\$185,000	300	\$370,000
375	\$260,000	375	\$656,000	375	\$1,547,000
450	\$307,000	450	\$703,000	450	\$1,594,000
525	\$307,000	525	\$703,000	525	\$1,594,000
600	\$307,000	600	\$703,000	600	\$1,594,000
675	\$385,000	675	\$781,000	675	\$1,672,000
750	\$385,000	750	\$781,000	750	\$1,672,000
825	\$493,000	825	\$1,105,000	825	\$2,482,000
900	\$571,000	900	\$1,183,000	900	\$2,560,000
975	\$571,000	975	\$1,183,000	975	\$2,560,000
1050	\$649,000	1050	\$1,261,000	1050	\$2,638,000
1200	\$649,000	1200	\$1,261,000	1200	\$2,638,000
1350	\$749,000	1350	\$1,561,000	1350	\$3,388,000
1500	\$749,000	1500	\$1,561,000	1500	\$3,388,000
1650	\$749,000	1650	\$1,561,000	1650	\$3,388,000

¹Assumed length stated on table and includes manhole at each side of crossing

Forcemain/Watermain Trenchless Crossings	
For Creeks & Trans Canada ¹	
Length = 20 m	
Diameter (mm)	Unit Rate (\$/ea)
150	\$46,000
200	\$47,000
250	\$48,000
300	\$58,000
350	\$72,000
400	\$307,000
450	\$323,000
500	\$338,000
600	\$370,000
750	\$463,000
900	\$587,000
1050	\$649,000
1200	\$743,000
1350	\$874,000
1500	\$952,000
1650	\$1,030,000
1800	\$1,108,000
2100	\$1,187,000

Forcemain/Watermain Trenchless Crossings	
For Regional Roads, Rail and Hydro Corridors ¹	
Length = 60 m	
Diameter (mm)	Unit Rate (\$/ea)
150	\$128,000
200	\$129,000
250	\$130,000
300	\$140,000
350	\$154,000
400	\$703,000
450	\$719,000
500	\$734,000
600	\$766,000
750	\$859,000
900	\$1,199,000
1050	\$1,261,000
1200	\$1,355,000
1350	\$1,686,000
1500	\$1,764,000
1650	\$1,842,000
1800	\$1,920,000
2100	\$1,999,000

Forcemain/Watermain Trenchless Crossings	
For Freeways, Major Creek Crossings ¹	
Length = 150 m	
Diameter (mm)	Unit Rate (\$/ea)
150	\$312,000
200	\$314,000
250	\$314,000
300	\$325,000
350	\$339,000
400	\$1,594,000
450	\$1,610,000
500	\$1,625,000
600	\$1,657,000
750	\$1,750,000
900	\$2,576,000
1050	\$2,638,000
1200	\$2,732,000
1350	\$3,513,000
1500	\$3,591,000
1650	\$3,669,000
1800	\$3,747,000
2100	\$3,826,000

¹Assumed length stated on table and includes valve at each side of crossing

Manholes		
Diameter (mm)	Unit Rate (\$/ea)	
	5 m depth	10 m depth
1200	\$17,171	\$31,220
1500	\$39,025	\$54,636
1800	\$62,441	\$93,661
2400	\$78,051	\$132,686
3000	\$93,661	\$171,712

Tunnelling Construction	
Diameter (mm)	Unit Rate (\$/m)
150	\$2,050
200	\$2,050
250	\$2,050
300	\$2,050
325	\$2,050
350	\$2,050
375	\$9,900
400	\$9,900
450	\$9,900
500	\$9,900
525	\$9,900
600	\$9,900
675	\$9,900
750	\$9,900
825	\$15,300
900	\$15,300
975	\$15,300
1050	\$15,300
1200	\$15,300
1350	\$20,300
1500	\$20,300
1650	\$20,300
1800	\$20,300
2100	\$20,300
2400	\$20,300
3000	\$20,300

Forcemain/Watermain Valve Costs	
Diameter (mm)	Unit Rate (\$/ea)
150	\$2,498
200	\$3,122
250	\$3,434
300	\$8,586
350	\$15,610
400	\$54,636
450	\$62,441
500	\$70,246
600	\$85,856
750	\$132,686
900	\$140,491
1050	\$171,712
1200	\$218,542
1350	\$234,152
1500	\$273,178
1650	\$312,203
1800	\$351,228
2100	\$390,254

Appendix D Contact List

Stakeholder Register

Project Name: Master Servicing Plan and Wet Weather Management Study
Project Managers: Erik Nickel

Contact Method	Stakeholder Name	Organization	Category (eg. Utilities, Provincial, Ministry)	Internal / External	Title / Role	Address Line 1	Address Line 2	City / Province	Postal Code	Contact Email	Contact Phone Number
Email	City of Niagara Falls	City of Niagara Falls	Local Municipality	Internal	City Clerk	4310 Queen Street	Box 1023	Niagara Falls, ON	L2E 8S5	kim@nfga.niagarafalls.ca	
Email	Regional Municipality of Niagara	City of Niagara Falls	Local Municipality	Internal		4310 Queen Street	Box 1023	Niagara Falls, ON	L2E 8S5	enr@nfga.niagarafalls.ca	
Email	Phil Lambert	Regional Municipality of Niagara	Local Municipality	Internal	Director, Infrastructure Planning & Development Engineering	3651 Schomlony Parkway	P.O. Box 1042	Thornton, ON	L2V 4T7	Phil.Lambert@niagararegion.ca	905-685-6000
Email	Joe Bielec	Regional Municipality of Niagara	Local Municipality	Internal	Manager, Water/Wastewater Infrastructure Planning	3651 Schomlony Parkway	P.O. Box 1042	Thornton, ON	L2V 4T7	Joe.Bielec@niagararegion.ca	905-685-6000
Email	Joe Tronchetti	Regional Municipality of Niagara	Local Municipality	Internal	Director, Water & Wastewater Services	3651 Schomlony Parkway	P.O. Box 1042	Thornton, ON	L2V 4T7	Joe.Tronchetti@niagararegion.ca	905-685-6000
Email & Mail	Chief Mark E. Hill	Six Nations of the Grand River	Indigenous Communities	External	Chief	2408 Chaffee Road	P.O. Box 5000	Oshweken, ON	NDA 1M0	markhill@nationsofthegrandriver.ca	519-445-2001
Email & Mail	Clayton LaForme	Six Nations of the Grand River	Indigenous Communities	External	Secretary	2408 Chaffee Road	P.O. Box 5000	Oshweken, ON	NDA 1M0	clayton@nationsofthegrandriver.ca	
Email & Mail	Tanya Hill-McIntyre, B.A. Hon.	Six Nations of the Grand River	Indigenous Communities	External	Anthropology Supervisor, Six Nations Lands & Resources	2408 Chaffee Road	P.O. Box 5000	Oshweken, ON	NDA 1M0	tanya.hill-mcintyre@nationsofthegrandriver.ca	(519) 753-0666
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Email & Mail	Alley LaForme Lee	Mississauga of the Credit First Nation	Indigenous Communities	External	Consultation Supervisor	2034 4th Line Road	P.O. Box 174, Suite 600	Oshweken, ON	NDA 1M0	alleylee@mississauga1stnation.ca	
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Email & Mail	Dee'f Brashers	Association of Tropeks and Allied Indians	Indigenous Communities	External	Office Manager	3025 Schomlony Parkway	Unit 1A	London, ON	N6B 2A7	deefbrashers@gmail.com	519-434-2761
Email	Daniel Puri	Metis Nation of Ontario, Niagara Region (Metis Council)	Indigenous Communities	External	President	3025 Schomlony Parkway	Unit 1A	London, ON	N6B 2A7	daniel.puri@metis.ca	905-685-5487
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Email	Federal Agencies										
Email	Canadian Space	Canadian Section, International Niagara Board of Control	Federal	External	Secretary	957 Lakeshore Road		Burlington, ON	L7S 1S1	canadian.section@nibac.ca	
Email	Arylia Povungnanthun	Impact Assessment Agency of Canada	Federal	External	Regional Director	55 York Street	Suite 600	Toronto, ON	M5J 1R7	arylia.povungnanthun@iaac-aeac.gc.ca	416-952-1576
Email	Rak Clavering	Department of Fisheries and Oceans Canada	Federal	External	Fish and Fish Habitat Protection Program	887 Lakeshore Road		Burlington, ON	L7S 1A1	klara.povungnanthun@fisheries.gc.ca	
Email	Dr. McDonald	Environment and Climate Change Canada	Federal	External	Manager, Environmental Assessment Section - Ontario Region	4905 Ouellet Street		Dorchester, ON	M5H 5T4	robert.clavering@ec.gc.ca	416-458-9670
Mail	Shannon Doyle	Indigenous and Northern Affairs Canada	Federal	External	Senior Environmental Assessment Officer					shannon.doyle@nrcan.gc.ca	
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Online Submission	Provincial Agencies	Ministry of the Environment, Conservation and Parks	Provincial	External	Project Information Form - Online Submission			West Central Region		enr@ontario.ca	
Email & Mail	Joan Del Villar Cuias	Ministry of the Environment, Conservation and Parks	Provincial	External	EA & Planning Coordinator, West Central Region	119 King St. W	12th Floor	Hamilton, ON	L8P 4T7	joan.delvillar@ontario.ca	
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Email	Nancy Rathford	Infrastructure Ontario	Provincial	External	Project Manager	1 Dundas Street West	Suite 2000	Toronto, ON	M5G 1Z3	nancy.rathford@infrastructureontario.ca	647-264-3861
Email	Ministry of Agriculture, Food and Rural Affairs	Provincial	External	External	Rural Planner	1 Dundas Street West	Suite 2000	Toronto, ON	M5G 1Z3	daniel.macey@infrastructureontario.ca	647-264-3861
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Email	Kathryn Ryan	Ministry of Tourism, Culture, and Sport	Provincial	External	Team Lead, Archaeology	150 St. William Street	7th Floor	Toronto, ON	M5M 0B7	kathryn.ryan@ontario.ca	416-968-9127
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Email	Rachel Anderson	Niagara Parks Commission	Provincial	External	Director, Indigenous Relations	160 Bloor Street East	4th Floor	Toronto, ON	M5M 0B7	rachel.anderson@niagaraparks.com	416-968-9127
Email	Phil Hagerzi	Niagara Parks Commission	Provincial	External	Senior Project Manager	160 Bloor Street East	4th Floor	Toronto, ON	M5M 0B7	phil.hagerzi@niagaraparks.com	416-968-9127
Email	Kim Peters	Niagara Parks Commission	Provincial	External	Project Coordinator	7805 Niagara River Parkway, P.O. Box 150		Niagara Falls, ON	L2E 8T2	kim.peters@niagaraparks.com	905-658-5284
Email	Kim Peters	Niagara Parks Commission	Provincial	External	Project Coordinator	7805 Niagara River Parkway, P.O. Box 150		Niagara Falls, ON	L2E 8T2	kim.peters@niagaraparks.com	905-658-5284
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Email	Kim Peters	Niagara Parks Commission	Provincial	External	Project Coordinator	7805 Niagara River Parkway, P.O. Box 150		Niagara Falls, ON	L2E 8T2	kim.peters@niagaraparks.com	905-658-5284
Email	Kim Peters	Niagara Parks Commission	Provincial	External	Project Coordinator	7805 Niagara River Parkway, P.O. Box 150		Niagara Falls, ON	L2E 8T2	kim.peters@niagaraparks.com	905-658-5284
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Appendix E Notice of Commencement



Notice of Study Commencement

Municipal Class Environmental Assessment For: Master Servicing Plan and Wet Weather Management Strategy

The City of Niagara Falls has initiated the Master Servicing Plan and Wet Weather Management Strategy. This project incorporates ongoing management of the City's water, wastewater, and stormwater infrastructure.

The intent of this study is to complete an evaluation of the City's existing water, wastewater, and stormwater infrastructure and to establish short-term and long-term vision, strategy, and policies to support the management and enhancement of water, wastewater, and stormwater infrastructure.

The Master Servicing Plan and Wet Weather Management Strategy will determine and optimize future water, wastewater, and stormwater infrastructure needs, including operation and maintenance improvements, within the City of Niagara Falls through to 2051 and beyond.

The Master Plan will be completed in accordance with the requirements of the Municipal Engineers Association (MEA) Class Environmental Assessment (EA) process for Master Planning. The study is being undertaken based on Phases 1 and 2 of the Class EA processes for Master Plans. Public and stakeholder input will be sought throughout the process and a Master Plan Report will be prepared and filed for public review.

The City encourages the public and stakeholders to actively participate in this planning process. Two Public Information Centres (PICs) will be conducted to present details about the study, the process used to decide possible solutions, and allow the public the opportunity to share comments and concerns. For more information, visit the project webpage: <https://letstalk.niagarafalls.ca/master-servicing-plan>

Notification of upcoming PICs will be advertised in the local community newspaper and on the abovementioned project website. Upon completion of the study, a Project File Report documenting the study process will be prepared and made available for public review and comment. Anyone who wishes to comment on or to be involved in this study should indicate their interest, preferably in writing to:

Tara Gudgeon
City Project Manager
City of Niagara Falls
4310 Queen Street
Niagara Falls, ON L2E 6X5
905-356-7521 ext. 4398
tgudgeon@niagarafalls.ca

Julien Bell, P.Eng.
Consultant Project Manager
GM Blue Plan Engineering Limited
1266 South Service Rd., Unit C31
Stoney Creek, ON L8E 5R9
416-254-6247
Julien.Bell@gmblueplan.ca

With the exception of personal information, all comments will become part of the public record of the study. The study is being conducted according to the requirements of the Municipal Class Environmental Assessment, which is a planning process approved under Ontario's Environmental Assessment Act.

This notice was first issued on October 10, 2023



Notice of Study Commencement

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This notice was first issued on October 10, 2023



WEEKLY NEWS



Water & Property Tax Rebate

Applications Now Open!



Water & Property Tax Rebate: Do you qualify?

Applications are now available online and in person for this year's Water and Property Tax Rebate. A \$102.00 Water Account and/or a \$80.00 Property Tax Account Rebate is available to those who qualify. Apply by October 31, 2023.



Yarn Bomb: In-person knit-in tomorrow!

Calling all knitters, crocheters & textile artists! Help us 'yarn bomb' The Exchange. Contribute a 6" square for a chance to win a \$75 gift card! The next knit-in is TOMORROW, Saturday, August 12, from 12 pm to 3 pm at the Niagara Falls History Museum (5810 Ferry Street.)



Accepting Applications Now!

The City is now accepting applications from local organizations for our biannual Sport & Recreation Fair, taking place on September 16.

Interested organizations should apply by Friday, August 18.

LEARN MORE BY VISITING [NIAGARAFALLS.CA](https://niagarafalls.ca)

NEXT CITY COUNCIL MEETING:
AUG 15, 2023
1 PM
niagarafalls.ca/council

We're Hiring!

CORPORATE SERVICES

- Software Projects Analyst (Permanent)

PLANNING, BUILDING AND DEVELOPMENT

- Senior Planner - Policy (Permanent)

RECREATION & CULTURE

- Lifeguards & Swim Instructors

TRANSPORTATION SERVICES

- Part-time School Crossing Guards

Ready to apply?

Scan for more info:



Let's Talk: Master Servicing Plan

To support our City's expansion and combat flooding and overflows, we're developing a comprehensive plan to enhance our water and wastewater infrastructure!

To learn more, visit letstalkniagarafalls.ca

Bid Opportunities

Register for all City of Niagara Falls Bid Opportunities at:

niagarafalls.bidsandtenders.ca

CITY OF NIAGARA FALLS
4310 Queen St., Niagara Falls, ON L2E 6X5
905-356-7521 | niagarafalls.ca





CITY OF NIAGARA FALLS

WEEKLY NEWS

**NEXT
CITY COUNCIL
MEETING:**

AUG 15: 1 PM

niagarafalls.ca/council



let's talk
NIAGARA FALLS



Let's Talk: Master Servicing Plan

To support our City's expansion and combat flooding and overflows, we're developing a comprehensive plan to enhance our water and wastewater infrastructure!

To learn more about the plan's key actions and the expected outcomes, or if you have questions or comments, visit letstalkniagarafalls.ca.

August 7 Civic Holiday Closures

City of Niagara Falls facilities will be closed on Monday, August 7, for the Civic Holiday. Have a great long weekend, Niagara!



LEARN MORE BY VISITING NIAGARAFALLS.CA



We're Hiring

CORPORATE SERVICES

- Software Projects Analyst (Permanent)

PLANNING, BUILDING & DEVELOPMENT

- Senior Planner - Policy (Permanent)

RECREATION & CULTURE

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Appendix F Public Information Centres



Notice of Public Information Centre

Municipal Class Environmental Assessment For: Master Servicing Plan and Wet Weather Management Strategy

What is this study?

The City of Niagara Falls is undertaking a Master Servicing Plan and Wet Weather Management Strategy project. This project incorporates ongoing planning, management and operations of the City’s water, wastewater, and stormwater infrastructure.

The intent of this study is to complete an evaluation of the City’s existing water, wastewater, and stormwater infrastructure and to establish short and long-term visions, strategies, and policies to support the management and enhancement of water, wastewater, and stormwater infrastructure.

This study has been developed to determine and optimize future water, wastewater, and stormwater infrastructure needs, including operation and maintenance improvements, within the City of Niagara Falls through to 2051 and beyond.

What is the process?

The Master Plan will be completed in accordance with the requirements of the Municipal Engineers Association (MEA) Class Environmental Assessment (EA) process for Master Planning. This study is being undertaken based on Phases 1 and 2 of the Class EA processes for Master Plans. Public and stakeholder input will be sought throughout the process and a Master Plan Report will be prepared and filed for public review.

How can I participate in this Study?

The City invites residents, agencies, and interested stakeholders to participate in this planning process and learn more about the planning study through attendance at a Public Information Centre (PIC). The PIC will present details about the study, the process used to decide possible solutions, and allow the public the opportunity to share comments and concerns. Members of the project team will be available at the PIC to answer questions and discuss the study progress to date.

The PIC is scheduled to take place at the following:

Public Information Centre	
Date and Time	14 December 2023, 6:00 PM – 8:00 PM
Location	MacBain Community Centre 7150 Montrose Road, Niagara Falls

For more information or to submit comments, you may visit the project webpage or reach out to a member of the project team listed below

City Contact	Consulting Contact
Tara Gudgeon City Project Manager City of Niagara Falls 4310 Queen Street Niagara Falls, ON L2E 6X5 905-356-7521 ext. 4398 tgudgeon@niagarafalls.ca Letstalk.niagarafalls.ca/master-servicing-plan	Julien Bell, P.Eng. Consultant Project Manager GM Blue Plan Engineering Limited, 1266 South Service Rd., Unit C31 Stoney Creek, ON L8E 5R9 416-254-6247 Julien.Bell@gmblueplan.ca

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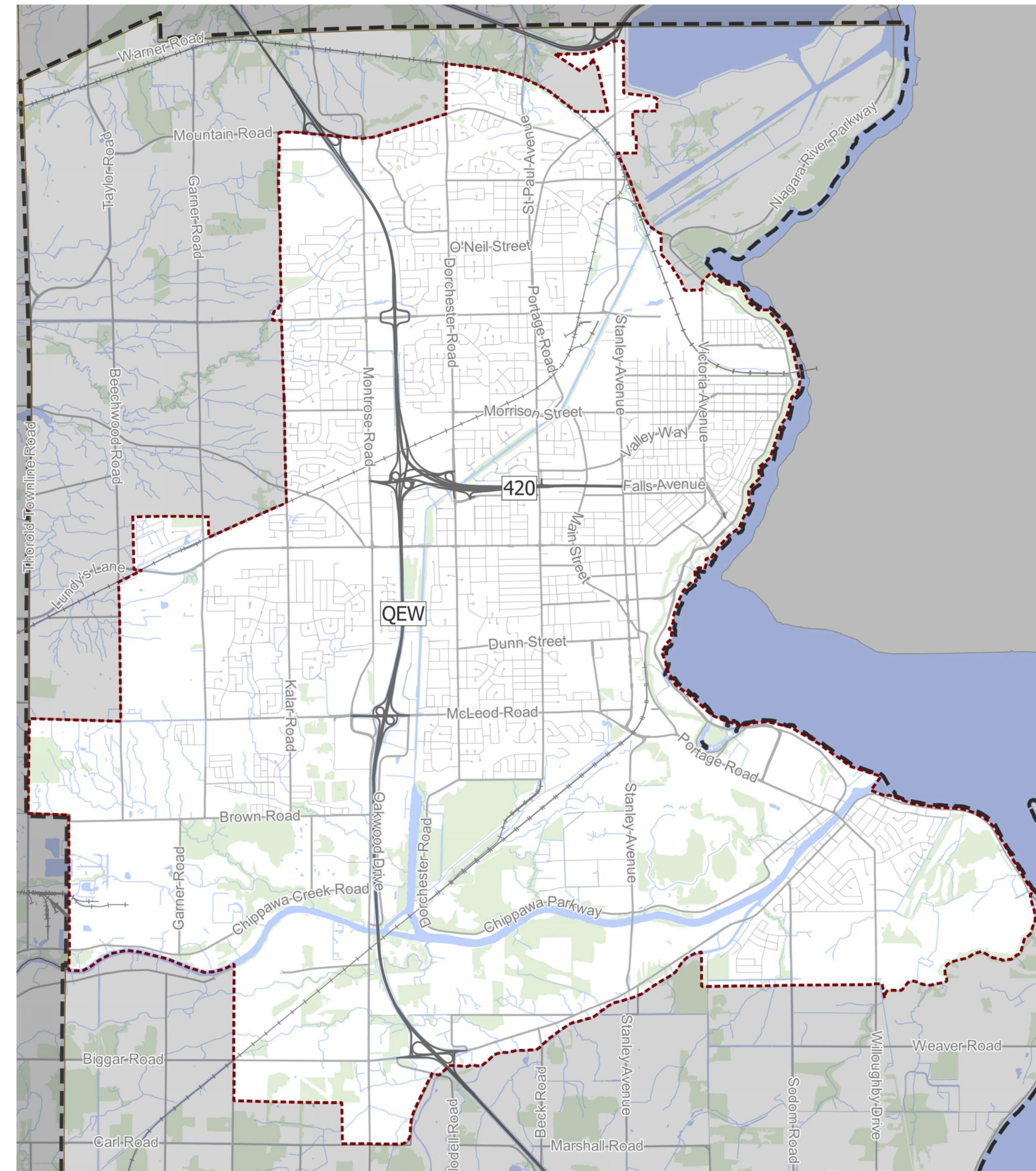
What is this study about? Background and Study Purpose

The City of Niagara Falls is undertaking a **Master Servicing Plan and Wet Weather Management Strategy** project. This initiative incorporates ongoing planning, management and operations of the City's water, wastewater, and stormwater infrastructure. The intent of this study is to:

- Complete an evaluation of the City's existing infrastructure
- Establish short and long-term visions, strategies, and policies to support the management and enhancement of infrastructure
- Optimize future infrastructure needs, including operation and maintenance improvements, within the City of Niagara Falls through to 2051 and beyond

Key Strategic Goals:

- ✓ Fulfil the Class Environment Assessment process.
- ✓ Ensure the best use of the existing water, wastewater, and stormwater infrastructure.
- ✓ Plan for water, wastewater, and stormwater infrastructure required to service future growth.



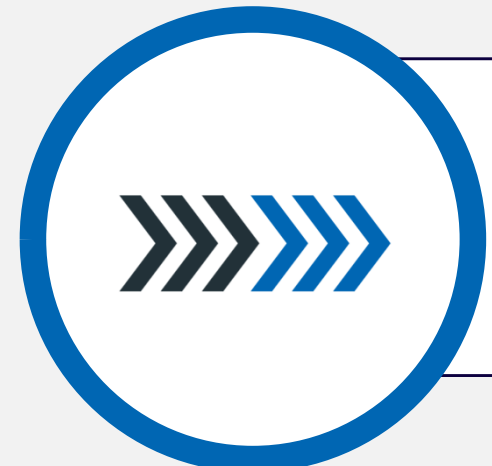
Why are we here?

Public Information Centre (PIC) No. 1

Public Information Centre (PIC) Objectives



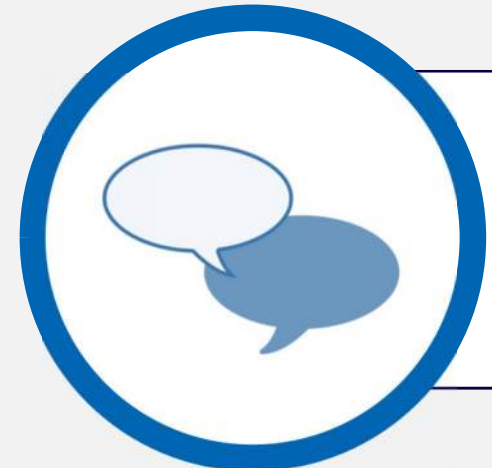
Present the study area and objectives.



Present the environmental assessment process.



Present technical background relevant to the development of servicing alternatives.



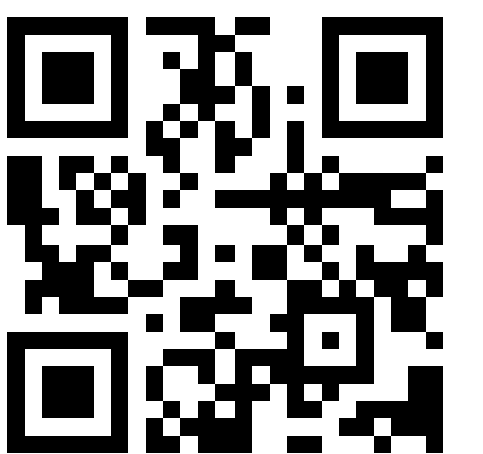
Receive feedback on the study process, and opportunities and constraints.

This is the first of two PICs for this study.

Key Dates

- Notice of Study Commencement – Oct 10, 2023
- **PIC 1 – Dec 14, 2023**
- PIC 2 – Spring/Summer 2024
- Notice of Completion – End of 2024

PIC Materials are available on the project website:
<https://letstalk.niagarafalls.ca/master-servicing-plan>



Stay Engaged!

- ✓ Please sign in and take a comment sheet.
- ✓ Have a look at the project information on display and chat with the Project Team.
- ✓ Provide your feedback regarding the information presented.

How is the study being conducted?

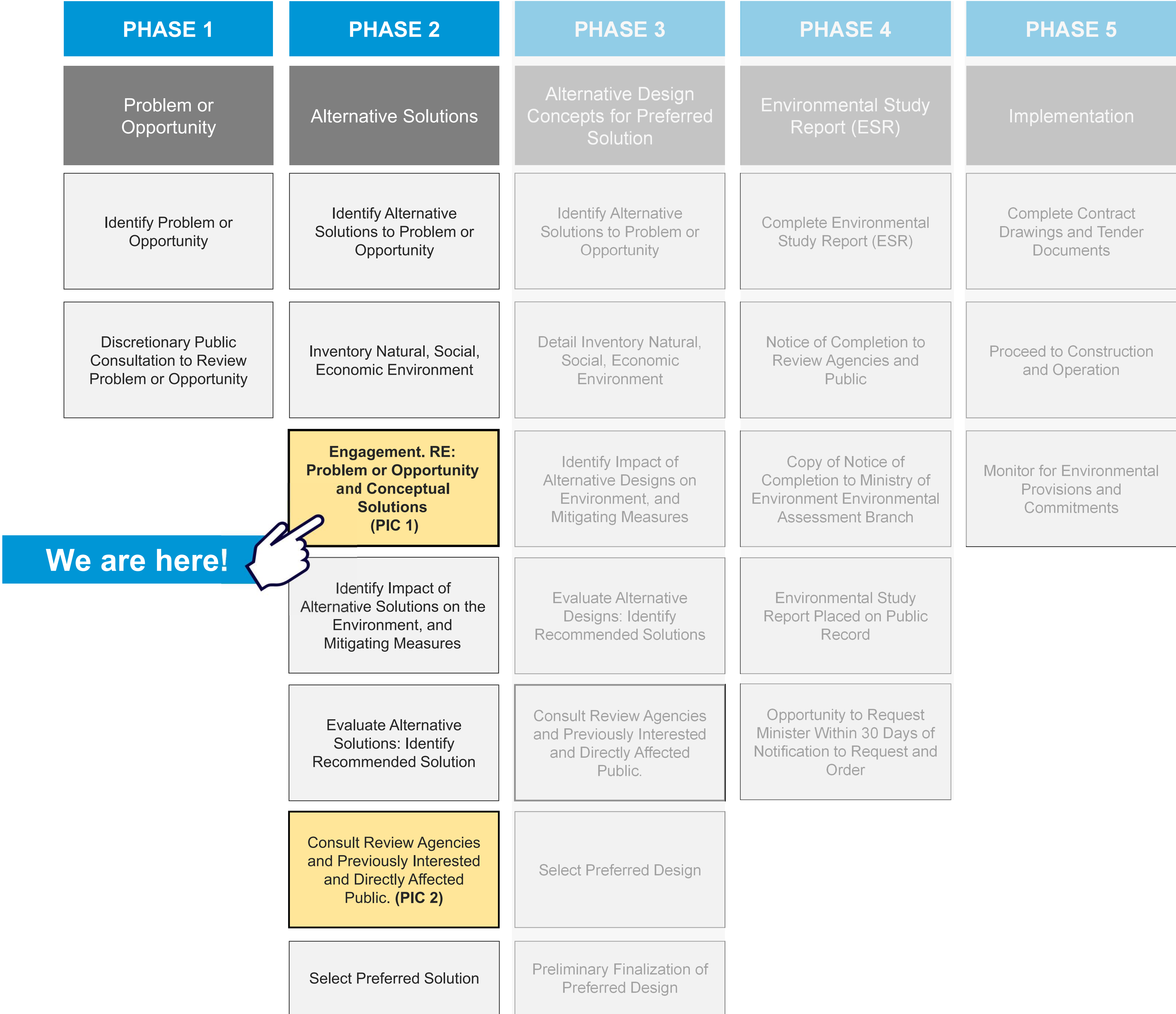
Municipal Class Environmental Assessment Process



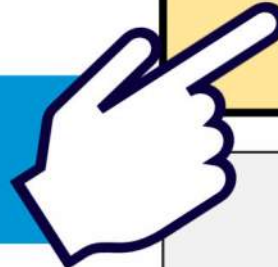
The **Master Servicing Plan and Wet Weather Management Strategy** is being undertaken as a Master Plan under the Municipal Class Environmental Assessment (MCEA) process (October 2000, as amended in 2007, 2011, 2015, and 2023).

The study will satisfy **Phases 1 and 2** of the MCEA process and provide the basis for carrying out follow-up Environmental Assessment Studies for specific components.

This study will hold two Public Information Centres (PICs).



We are here!



Secondary Plans

- Existing City or Region Secondary Plan Areas

Corridor Intensification

- Lands that have been identified as candidate sites for intensification

Passed Residential Development Applications

- Developments which have been approved but not yet constructed

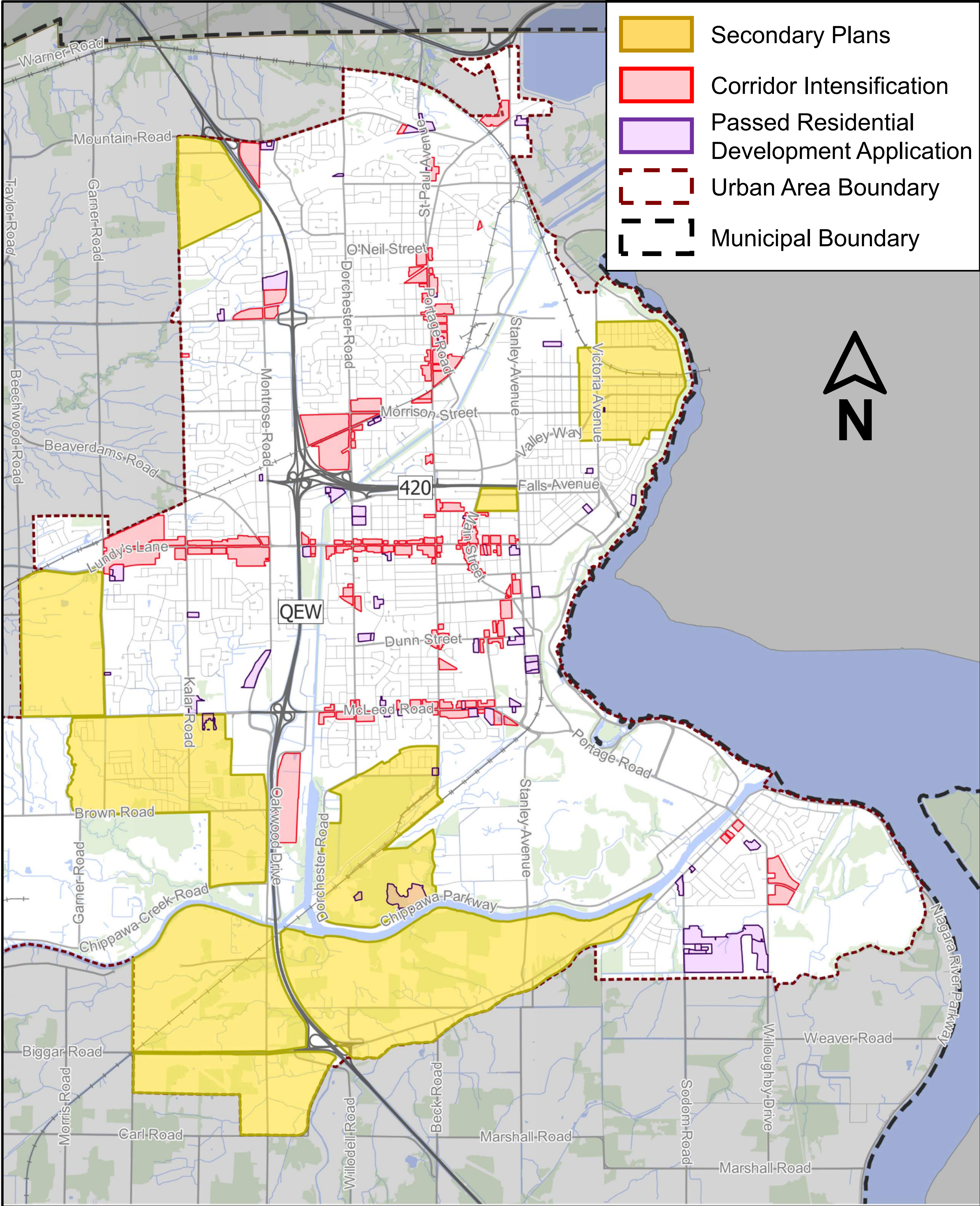
Accessory Dwelling Units

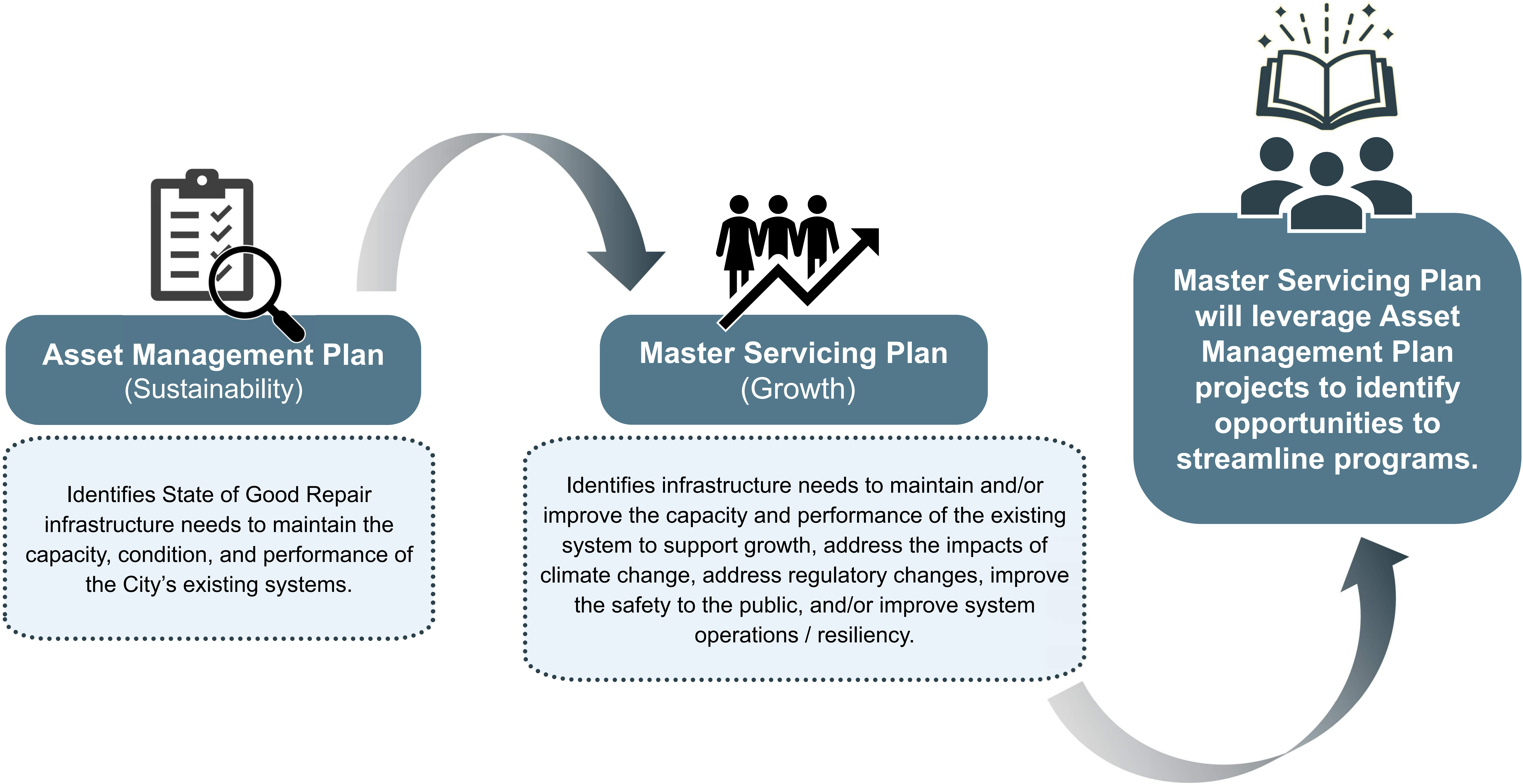
- Secondary units, lot severances, and other localized development

	Existing	2051	2081
Residential	96,720	181,521	239,362
Employment	37,857	73,339	97,574
Total	134,577	254,860	336,936

Focus is on identifying the Water, Wastewater, and Stormwater infrastructure needs to support the City 2051 growth.

Water, Wastewater, and Stormwater infrastructure has a typical lifespan of **50 to 100 years**. Sizing of new infrastructure will consider both 2051 and 2081 growth needs.





	Service Objective	City Assets	Regional Assets
Water Infrastructure	To provide an efficient, sustainable, and a safe water system that meets regulatory requirements, minimizes service disruptions, and is capable of accommodating growth.	Distribution - Local watermains - Fire hydrants - Service connections	Treatment - Water treatment plant Transmission - Trunk watermains - Pumping stations - Storage facilities (water towers and reservoirs)
Sewer Infrastructure	To provide an efficient, sustainable, and reliable wastewater system that minimizes environmental impacts and is capable of accommodating growth.	Collections - Local sewers - Local sewage pumping station & forcemain	Treatment - Wastewater treatment plant Transmission - Trunk sewers - Sewage pumping stations & Forcemains
Stormwater Infrastructure	To provide an efficient, sustainable, and reliable stormwater management system that minimizes environmental impacts and protects public health and property.	- Storm sewers - Roadside ditches - Channels and watercourses - Culverts - Catch basins - Stormwater management ponds - Water quality treatment facilities - Any other low impact development (LIDs)	Infrastructure on Regional Roads

Water Key Issues and Considerations

Integrating Regional system upgrades and system reconfiguration

Expansion of the water system to support growth areas

Supporting intensification within the existing system

Optimization of existing and future infrastructure

Integration of watermain replacement program

Seasonal and tourism demands

System fire flows

System high and low pressure

System resiliency

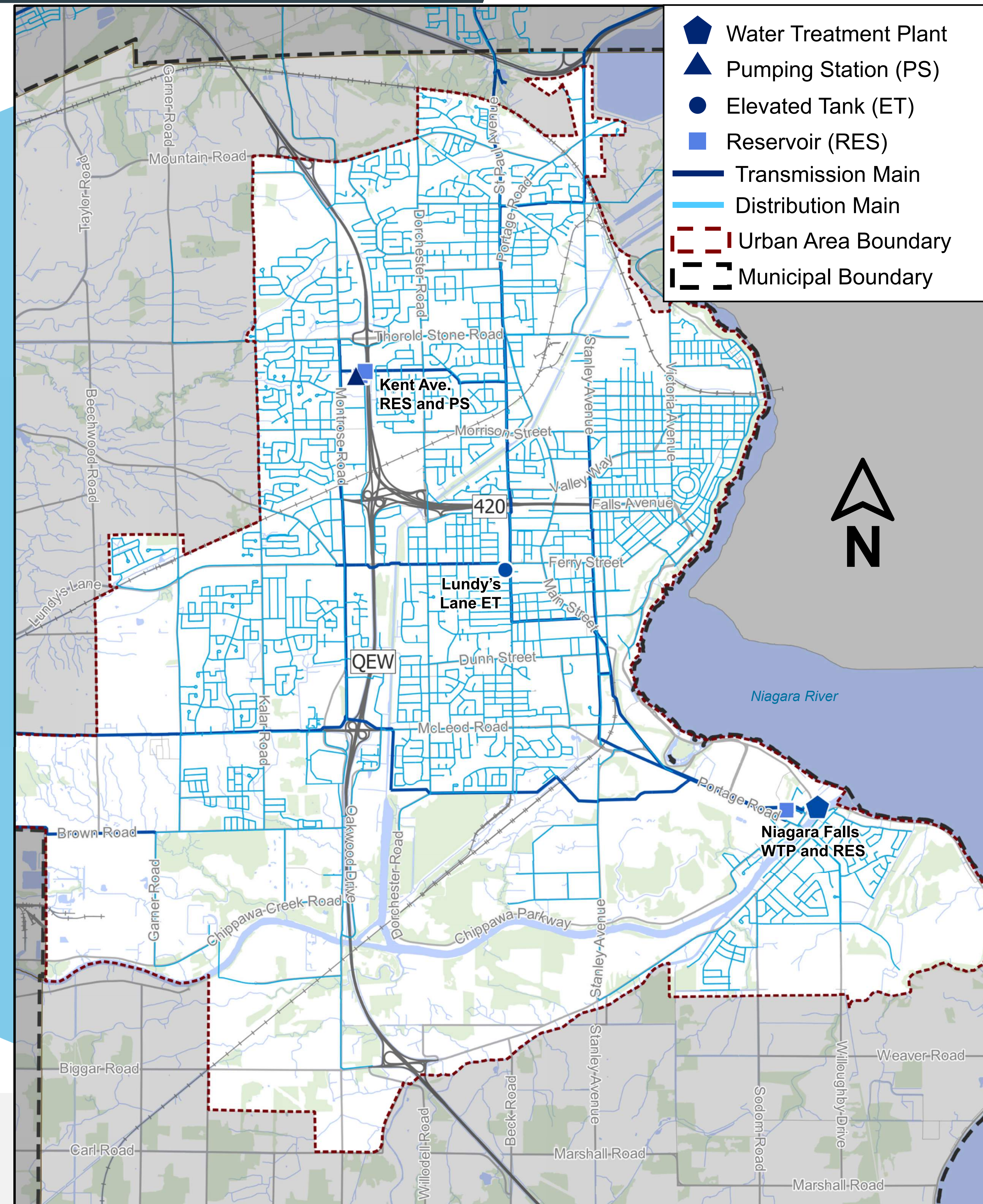
Social / cultural considerations

Environmental considerations

Addressing the impacts of climate change

Constructability of solutions and construction impacts

Financial sustainability of program recommendations



Existing Wastewater System



Integrating Regional system upgrades and system reconfiguration

Expansion of the wastewater system to support growth areas

Supporting intensification within the existing system

Combined Sewer Separations and Replacement Program

Optimization of existing and future infrastructure

Seasonal and tourism demands

Wet weather issues

System basement flooding and overflows

Provincial Environmental Regulations

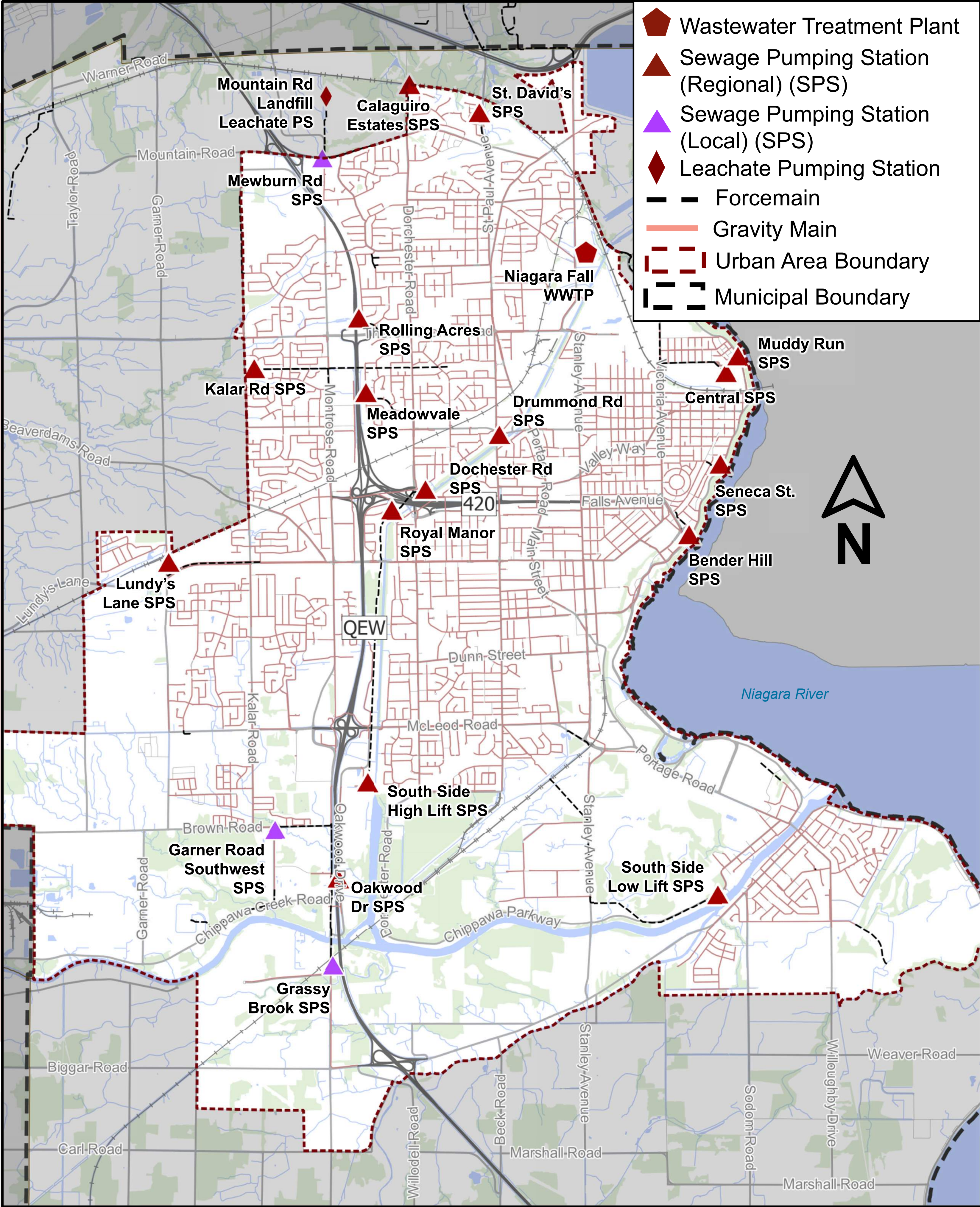
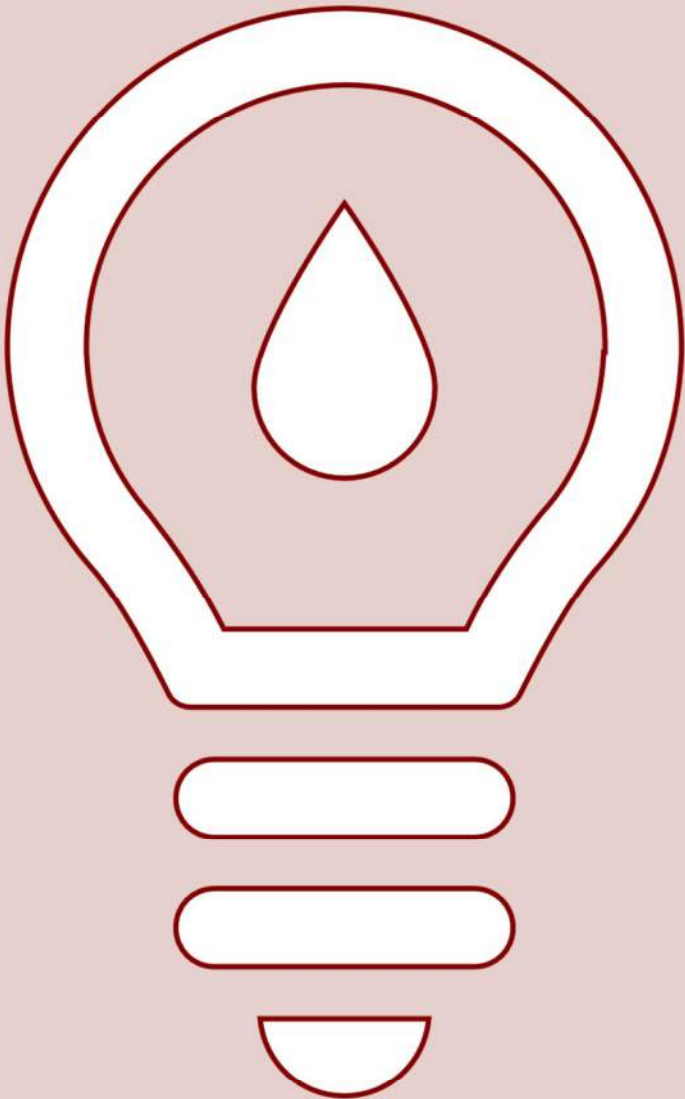
Social / cultural considerations

Environmental considerations

Addressing the impacts of climate change

Constructability of solutions and construction impacts

Financial sustainability of program recommendations



Existing Wastewater System



Integration of improved stormwater management and quality controls

Expansion of the stormwater system to support growth areas

Supporting intensification within the existing system

Optimization of existing and future infrastructure

Combined sewer separations

Addressing the impacts of climate change

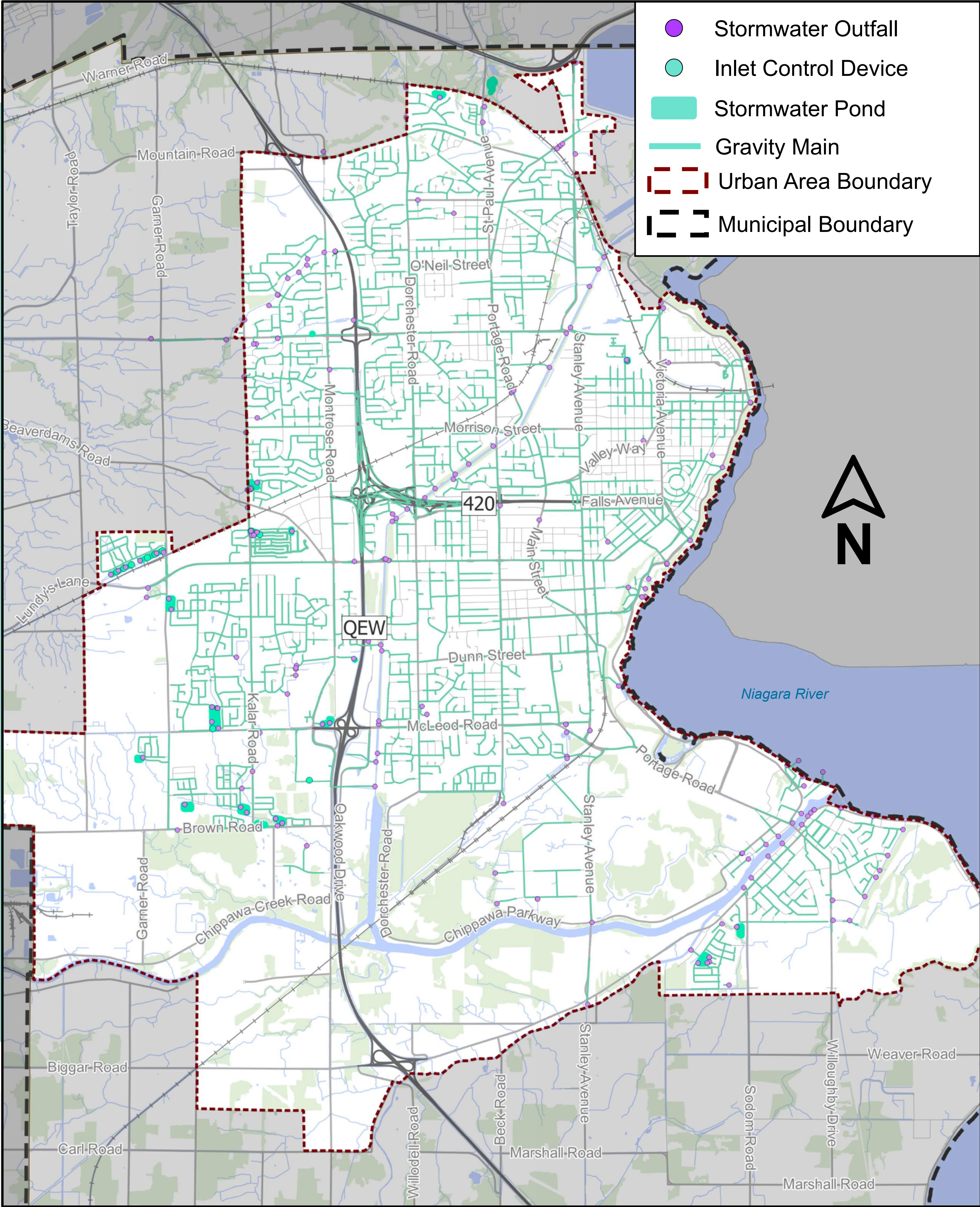
Integration of sewer replacement program

Social / cultural considerations

Environmental considerations

Constructability of solutions and construction impacts

Financial sustainability of program recommendations



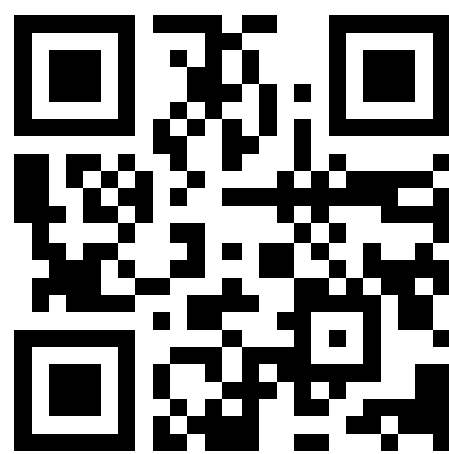
What are we doing next?

- Review and incorporate responses from PIC No. 1
- Investigate alternative water, wastewater, and stormwater servicing strategies and concepts.
- Complete additional supporting technical studies:
 - Hydraulic Modelling Analysis
 - Flow Monitoring and Condition Assessment Program
- Engagement with Indigenous Rights Holders
- Consultation with public review agencies, and other interested stakeholders
- Development of growth scenarios, policies, and alternatives
- Preparation for PIC No. 2
- Final Master Servicing Plan

Do you have any questions, comments, or want to stay up to date?
Please contact us anytime!

City Contact	Consultant Contact
Tara Gudgeon Project Manager, City of Niagara Falls 4310 Queen Street Niagara Falls, ON L2E 6X5 905-356-7521 ext. 4398 tgudgeon@niagarafalls.ca	Julien Bell, P.Eng. Project Manager, GM Blue Plan Engineering Limited 1266 South Service Rd., Unit C31 Stoney Creek, ON L8E 5R9 416-254-6247 Julien.Bell@gmblueplan.ca

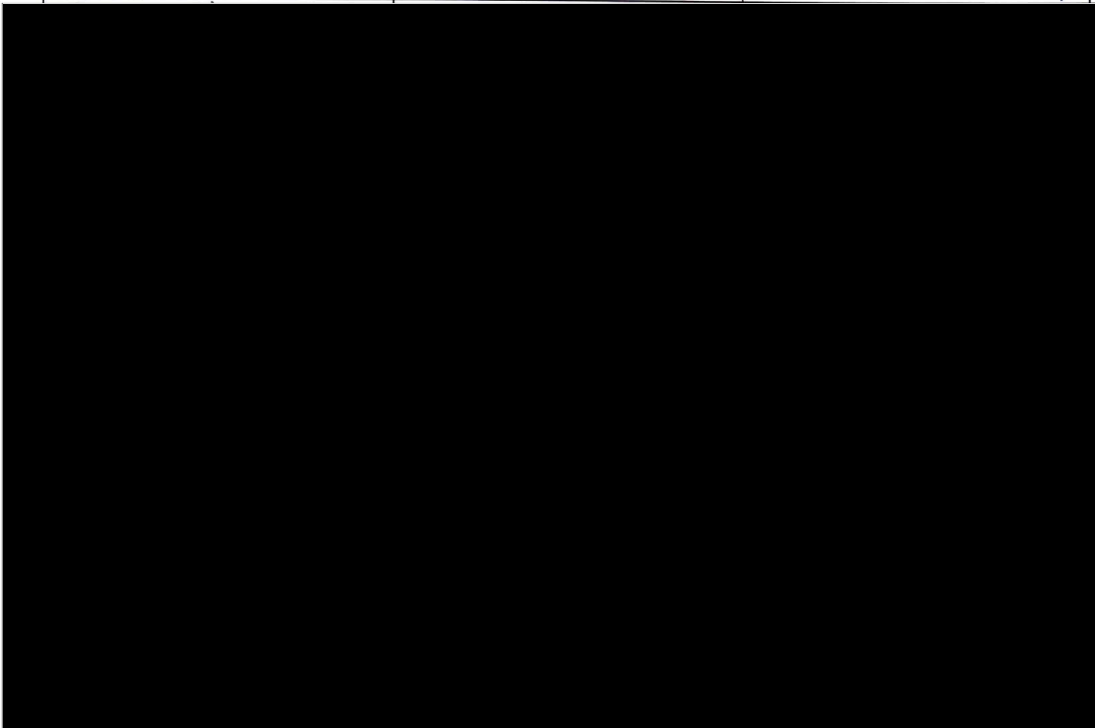
Additional project information can be found on the project website:
<https://letstalk.niagarafalls.ca/master-servicing-plan>





Master Servicing Plan and Wet Weather Management Strategy (MSP)
Transportation Master Plan Update (TMP)
Trails and Active Transportation Master Plan (T&ATMP)
Public Information Centre No. 1
December 14, 2023

SIGN-IN SHEET

Name & Organization	Address	Email Address	Would you like to be added to the contact list? (✓/X)	Attending MSP? (✓/X)	Attending TMP? (✓/X)	Attending T&ATMP? (✓/X)
DOUG BIRRELL NFCHA	STANLEY AV	ADB@NFCHA CA	✓		✓	✓
			✓		✓	✓
			✓		✓	✓
			✓		✓	✓
			✓		✓	✓
			✓	✓	✓	✓
			✓	✓		
			✓	✓	✓	✓
			9:00 ✓		✓	✓

Page 1 of 3

With the exception of personal information, all comments will become part of the public record of the study. The study is being conducted according to the requirements of the Municipal Class Environmental Assessment, which is a planning process approved under Ontario's Environmental Assessment Act.



Master Servicing Plan and Wet Weather Management Strategy (MSP)
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			✓	✓	✓	✓
			CA ✓	✓	✓	✓
			✓	✓	✓	✓
			✓			✓
						✓
			✓		✓	✓

Page 2 of 3

With the exception of personal information, all comments will become part of the public record of the study. The study is being conducted according to the requirements of the Municipal Class Environmental Assessment, which is a planning process approved under Ontario's Environmental Assessment Act.



Master Servicing Plan and Wet Weather Management Strategy (MSP)
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SIGN-IN SHEET

Name & Organization	Address	Email Address	Would you like to be added to the contact list? (✓/X)	Attending MSP? (✓/X)	Attending TMP? (✓/X)	Attending T&ATMP? (✓/X)
			✓		✓	✓
			✓		✓	✓
			✓			✓
			✓			✓
			✓		✓	✓
NIAGARA FALLS						



November 20, 2024

**Re: Notice of Public Information Centre Number 2
City of Niagara Falls
Master Servicing Plan and Wet Weather Management Strategy**

To Whom it May Concern,

The City of Niagara Falls has been working on the Master Servicing Plan and Wet Weather Management Strategy project. At this stage we would like to invite you to attend our second Public Information Centre to learn more about the study results and to meet with the Project Team. Please find the attached Notice of Public Information Centre for further details.

If you have any questions regarding this project, please reach out to the City or Consultant at the contact information below:

City of Niagara Falls Tara Gudgeon, Project Manager Senior Manager Asset Management Municipal Works tgudgeon@niagarafalls.ca 905-356-7521 https://letstalk.niagarafalls.ca/master-servicing-plan	GEI Consultants Mark Zamojc, P.Eng. Vice President, Infrastructure Planning Practice Lead mzamojc@geiconsultants.com 416-703-0667
---	--

Sincerely,
Tara Gudgeon



Notice of Public Information Centre No. 2

Municipal Class Environmental Assessment For: Master Servicing Plan and Wet Weather Management Strategy

What is this study?

The City of Niagara Falls is undertaking a Master Servicing Plan and Wet Weather Management Strategy project. This project incorporates ongoing planning, management and operations of the City’s water, wastewater, and stormwater infrastructure.

This study will complete an evaluation of the City’s existing water, wastewater, and stormwater infrastructure to establish short and long-term vision, strategies, and policies to support the management and enhancement of water, wastewater, and stormwater infrastructure. It will help determine and optimize future water, wastewater, and stormwater infrastructure needs, including operation and maintenance improvements, within the City of Niagara Falls through to 2051 and beyond.

What is the process?

The Master Plan is being completed in accordance with the requirements of the Municipal Engineers Association (MEA) Class Environmental Assessment (EA) process for Master Planning. This study will follow Phases 1 and 2 of the Class EA process. Public and stakeholder input will be sought throughout the process and a Master Plan Report will be prepared and filed for public review.

How can I participate in this Study?

The City invites residents, agencies, and interested stakeholders to participate in this planning process and learn more about the planning study through attendance at a second Public Information Centre (PIC). The PIC will present details about the study, the process used to decide possible solutions, the preliminary preferred solutions, and allow the public the opportunity to share comments and concerns. Members of the project team will be available at the PIC to answer questions and discuss the study progress to date.

Public Information Centre No. 2 is planned for:

Public Information Centre No. 2	
Date and Time	December 12, 2024, 6:00 PM – 8:00 PM
Location	MacBain Community Centre 7150 Montrose Road, Niagara Falls

The information presented at the PIC will be posted to the website:

[Letstalk.niagarafalls.ca/master-servicing-plan](https://letstalk.niagarafalls.ca/master-servicing-plan)

For more information or to submit comments, please reach out to a member of the project team listed below:

Tara Gudgeon
City Project Manager
City of Niagara Falls
4310 Queen Street
Niagara Falls, ON L2E 6X5
905-356-7521 ext. 4398
tgudgeon@niagarafalls.ca

Mark Zamojc, P.Eng.
Consultant Project Manager
GEI Consultants Canada Ltd.
1266 South Service Road, Unit C31
Stoney Creek, ON L8E 5R9
416-703-0667
mzamojc@geiconsultants.com

With the exception of personal information, all comments will become part of the public record of the study. The study is being conducted according to the requirements of the Municipal Class Environmental Assessment, which is a planning process approved under Ontario’s Environmental Assessment Act.

This notice was first issued on November 20, 2024.

Public Information Centre (PIC) Objectives

-  Present the study area and objectives
-  Review activities since PIC No.1
-  Present preliminary capital program
-  Receive feedback on the proposed capital program strategies

This is final PIC for this study.

Key Dates

- Notice of Study Commencement – Oct 10, 2023
- PIC 1 – Dec 14, 2023
- **PIC 2 – Dec 12, 2024**
- Notice of Completion – Spring of 2025

PIC Materials are available on the project website:
<https://letstalk.niagarafalls.ca/master-servicing-plan>



Stay Engaged!

- ✓ Please sign in and take a comment sheet.
- ✓ Have a look at the project information on display and chat with the Project Team.
- ✓ Provide your feedback regarding the information presented.

What is this study about?

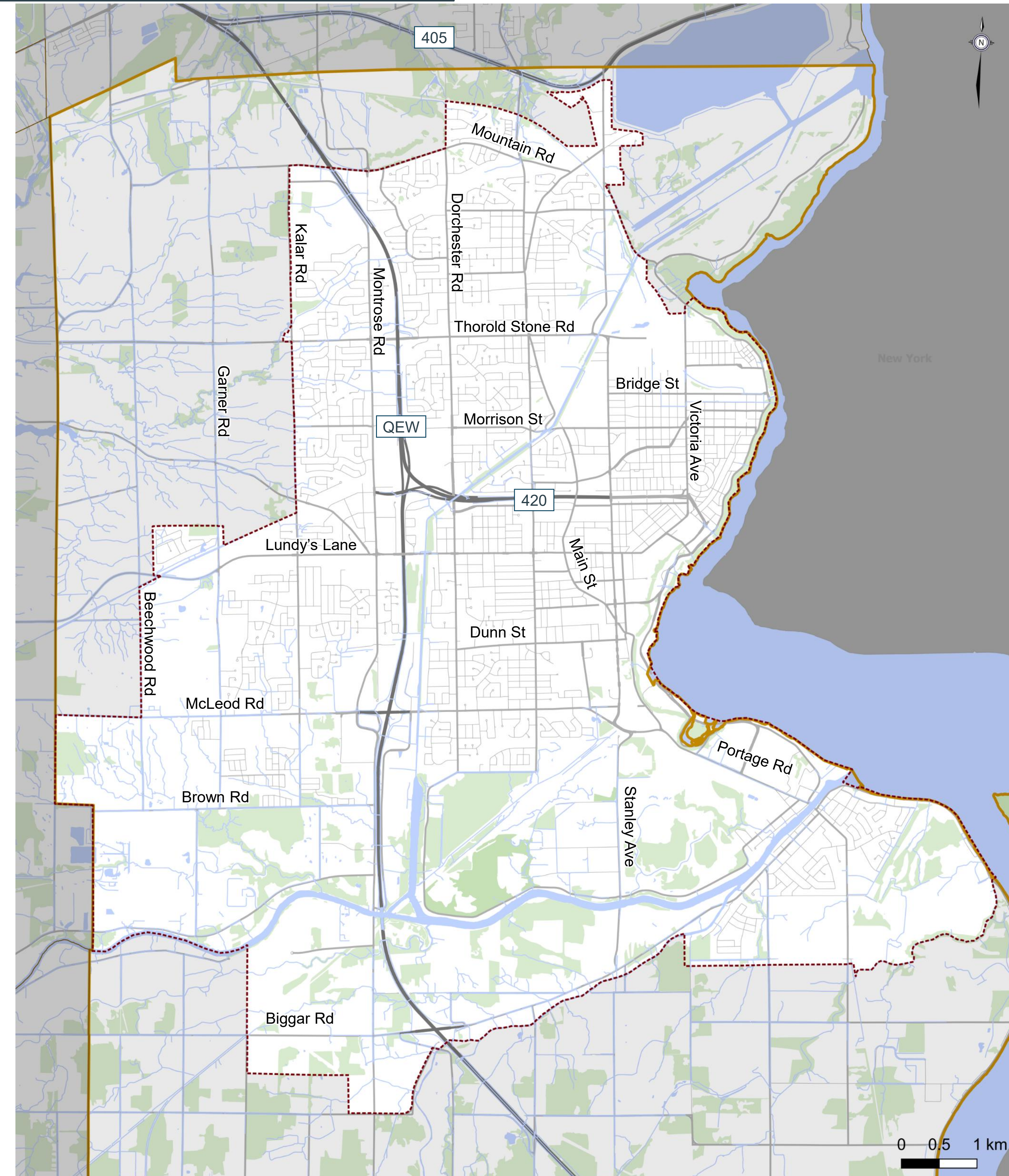
Background and Study Purpose

The City of Niagara Falls is undertaking a **Master Servicing Plan and Wet Weather Management Strategy** project. This initiative incorporates ongoing planning, management and operations of the City's water, wastewater, and stormwater infrastructure. The intent of this study is to:

- Complete an evaluation of the City's existing infrastructure
- Establish short and long-term visions, strategies, and policies to support the management and enhancement of infrastructure
- Optimize future infrastructure needs, including operation and maintenance improvements, within the City of Niagara Falls through to 2051 and beyond

Key Strategic Goals:

- ✓ Fulfill the Class Environment Assessment process.
- ✓ Ensure the best use of the existing water, wastewater, and stormwater infrastructure.
- ✓ Plan for water, wastewater, and stormwater infrastructure required to service future growth.

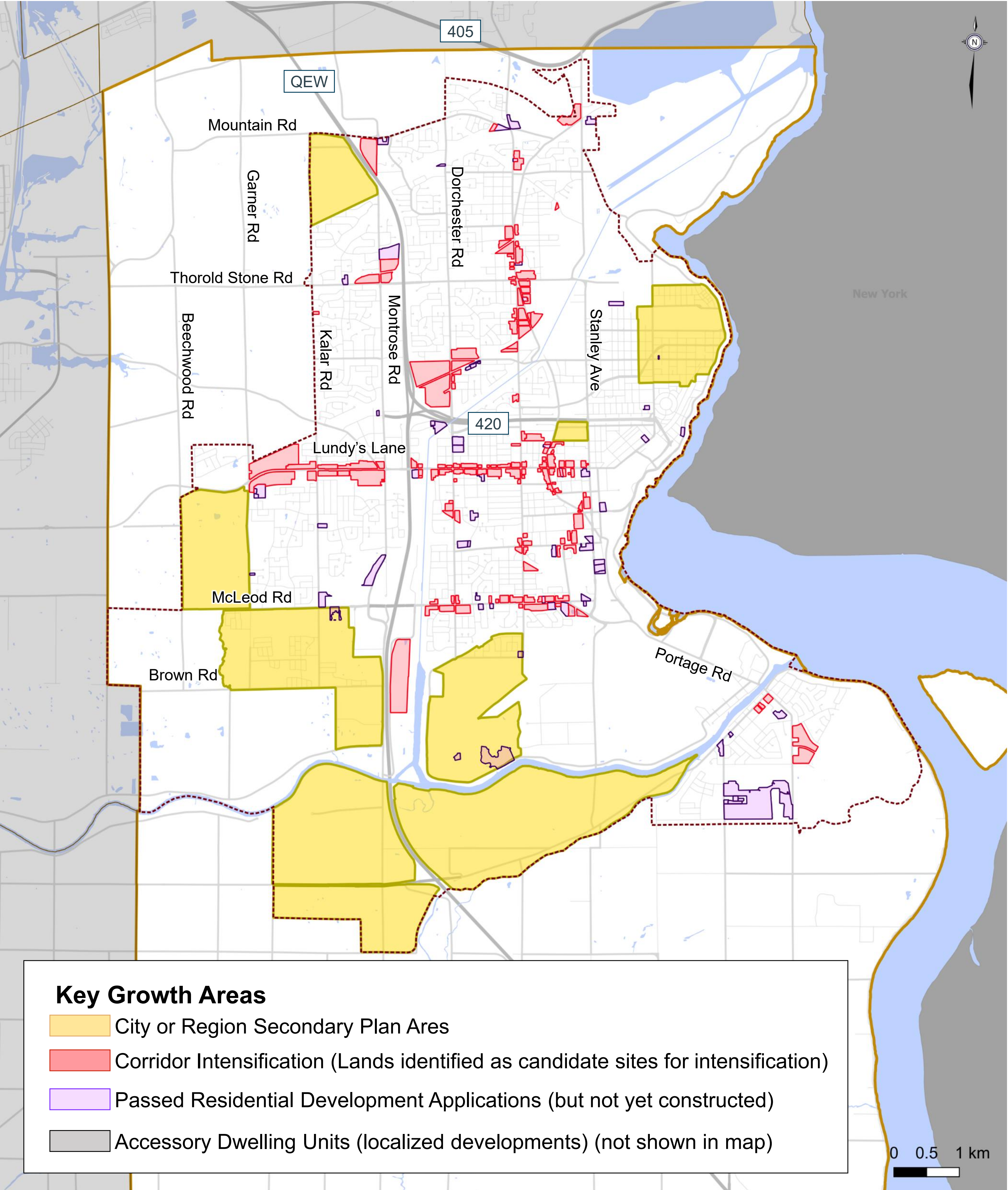
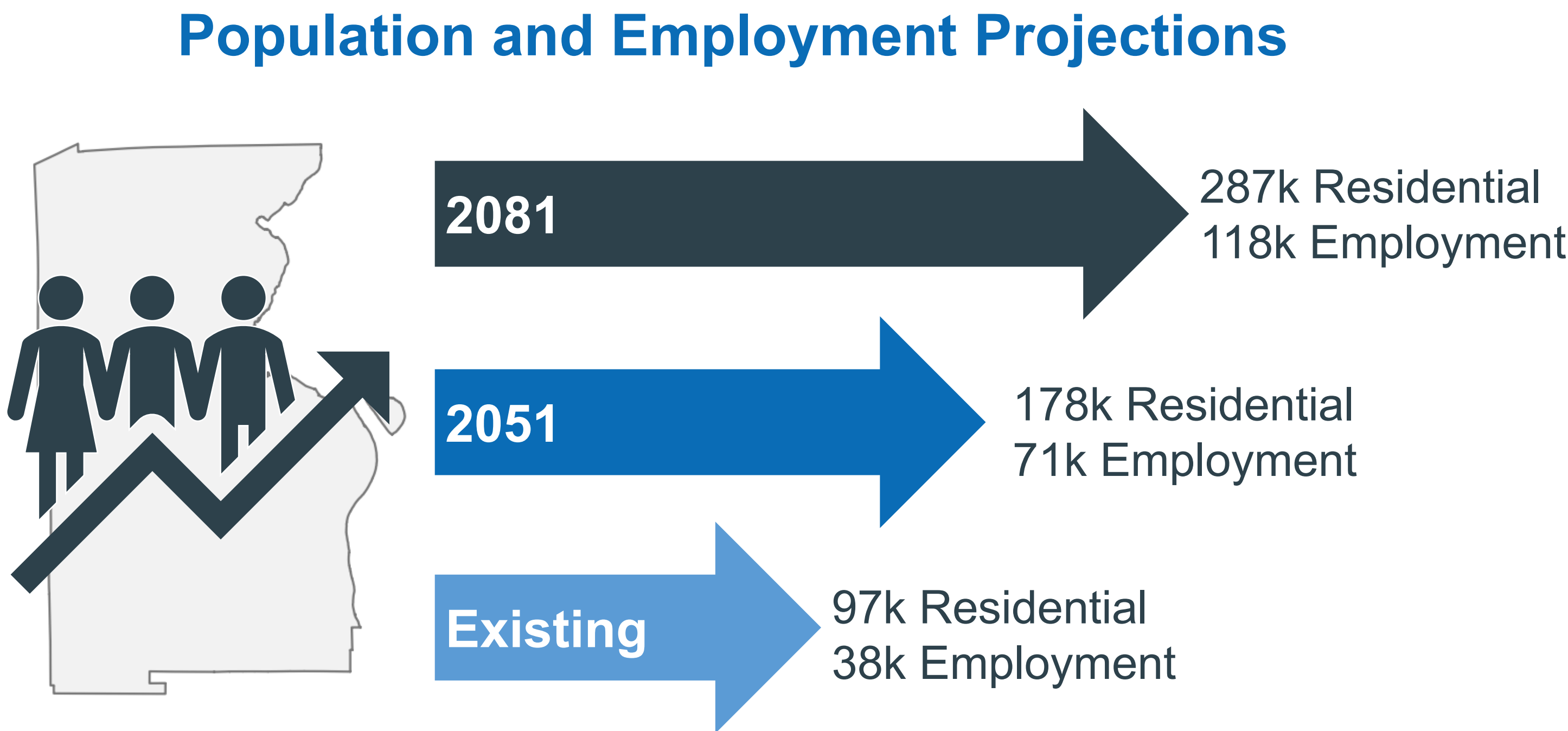


Why is this study being conducted? Planning for Growth



The City of Niagara Falls is growing. Focus is on identifying the water, wastewater, and stormwater infrastructure needs to support the City 2051 growth and beyond.

Water, wastewater, and stormwater infrastructure has a typical lifespan of **50 to 100 years**. Sizing of new infrastructure will consider both 2051 and 2081 growth needs.



How is the study being conducted?

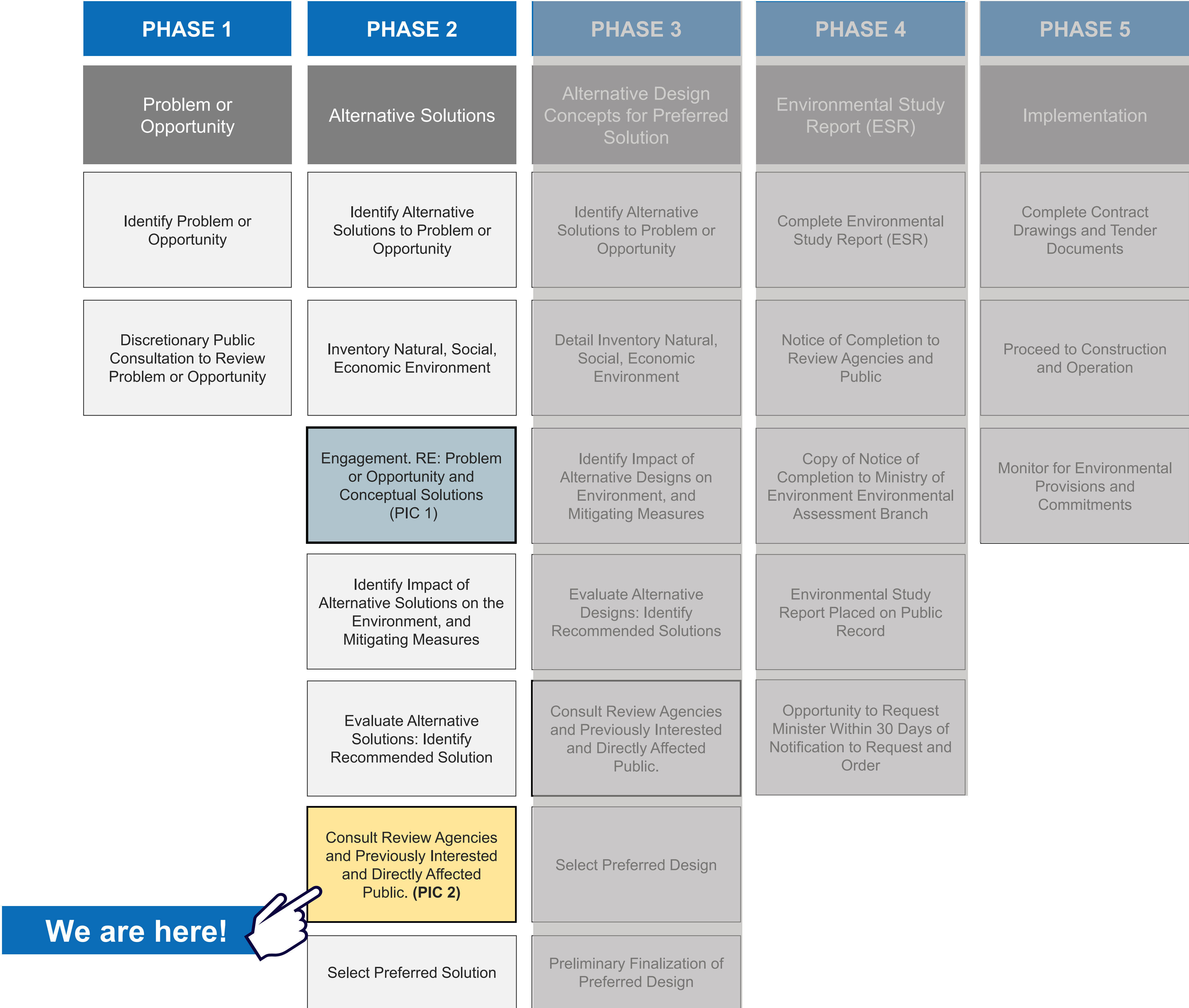
Municipal Class Environmental Assessment Process



The **Master Servicing Plan and Wet Weather Management Strategy** is being undertaken as a Master Plan under the Municipal Class Environmental Assessment (MCEA) process (October 2000, as amended in 2007, 2011, 2015, and 2023).

The study will satisfy **Phases 1 and 2** of the MCEA process and provide the basis for carrying out follow-up Environmental Assessment Studies for specific components.

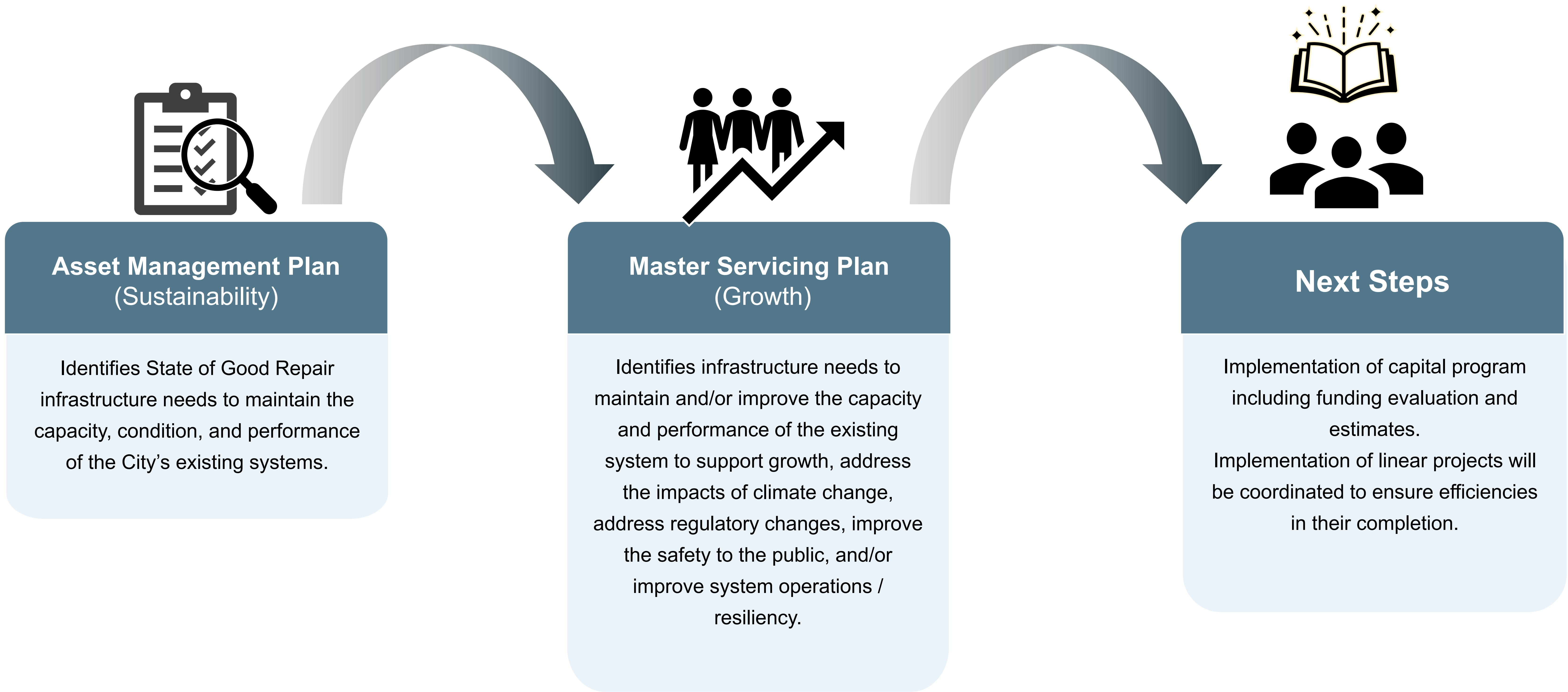
This study will hold two Public Information Centres (PICs).



We are here!

How does this integrate with other plans?

Municipal Servicing Context



What assets are owned and managed by the City?

Municipal Servicing Context



	Service Objective	City Assets	Regional Assets
Water Infrastructure	To provide an efficient, sustainable, and a safe water system that meets regulatory requirements, minimizes service disruptions, and is capable of accommodating growth.	Distribution - Local watermains - Fire hydrants - Service connections	Treatment - Water treatment plant Transmission - Trunk watermains - Pumping stations - Storage facilities (water towers and reservoirs)
Sewer Infrastructure	To provide an efficient, sustainable, and reliable wastewater system that minimizes environmental impacts and is capable of accommodating growth.	Collections - Local sewers - Local sewage pumping station & forcemain	Treatment - Wastewater treatment plant Transmission - Trunk sewers - Sewage pumping stations & Forcemains
Stormwater Infrastructure	To provide an efficient, sustainable, and reliable stormwater management system that minimizes environmental impacts and protects public health and property.	- Storm sewers - Roadside ditches - Channels and watercourses - Culverts - Catch basins - Stormwater management ponds - Water quality treatment facilities - Any other low impact development (LIDs)	Infrastructure on Regional Roads

What are the servicing strategies?

Capital Program Overview



The Master Servicing Plan and Wet Weather Management Strategy’s preliminary capital program evaluated alternatives to identify water, wastewater, and stormwater **system needs** and **triggers for upgrades**.

The preliminary preferred capital program aimed to:

- Make improvements to the existing networks
 - Optimization of replacement of older linear works
 - Deliver a consistent and sustainable level of service to existing customers
- Support areas of proposed growth
 - Identification of new infrastructure or upgrades to the existing system to support growth areas
- Increase overall resiliency and performance
 - Strengthen systems through key upgrades and key initiatives
 - Undertake key operations and maintenance activities to improve system performance
 - Identify potential funding sources for the capital program (Development Charges, Rate Reserves, grants, etc.)

Program Components	Cost Estimate
Water Capital Projects	\$363 million
Wastewater Capital Projects	\$184 million
Stormwater Capital Projects	\$71 million
Inflow and Infiltration Prioritization Capital Projects	\$95 million
Sewer Separation	\$205 million

\$ 918 Million
Total

What are the servicing strategies?

Preliminary Preferred Capital Program – Water



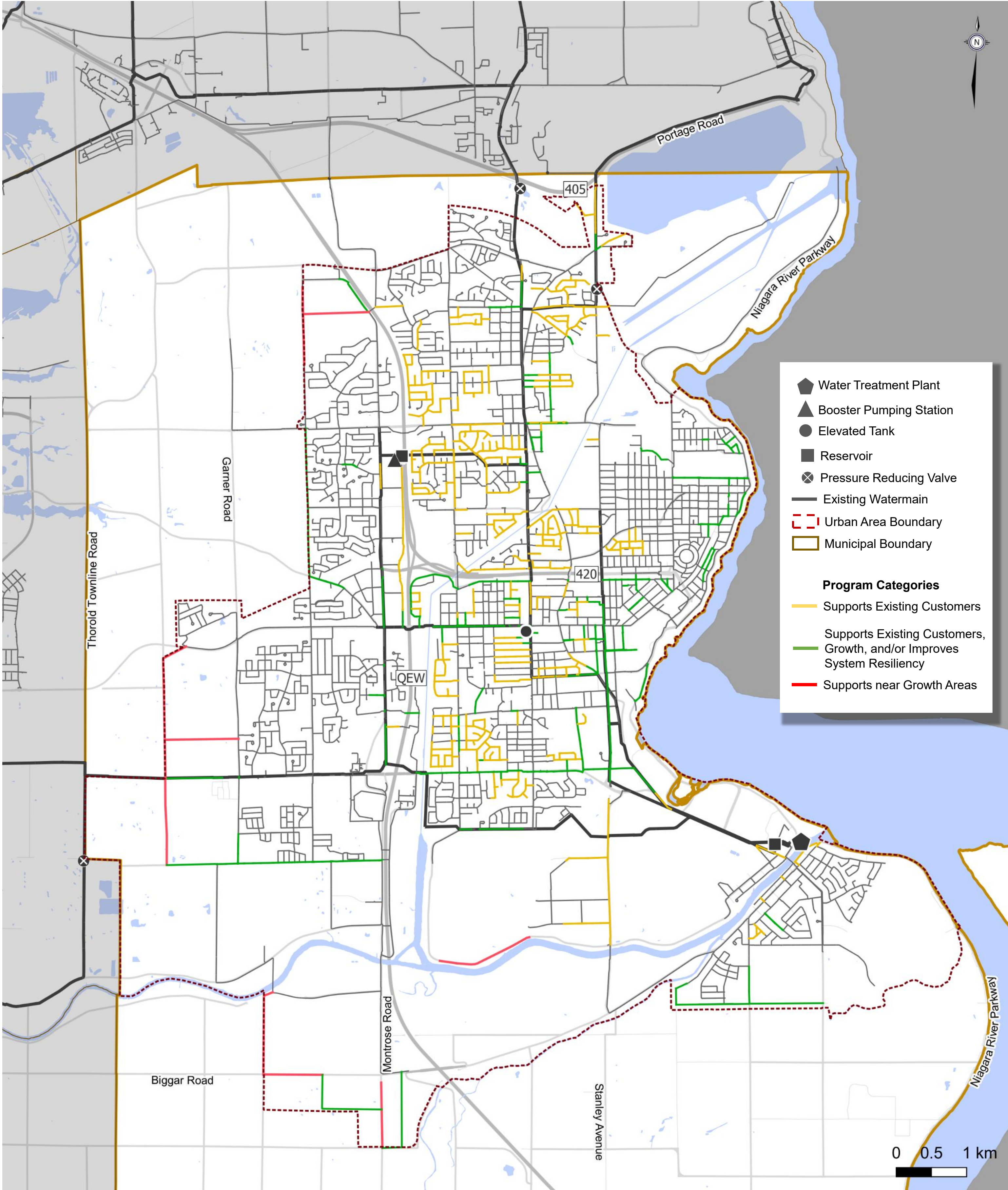
The preliminary preferred water capital program enhances the existing water system through:

- Strategic replacement of aging watermains to improve overall water capacity and level of service
- Upsizes existing watermains to support intensification and growth
- Construction of new watermains to support greenfield growth areas
- Improvement of overall system resiliency through key watermain upsizing

Additional recommended next step programs and studies for ongoing water system needs include:

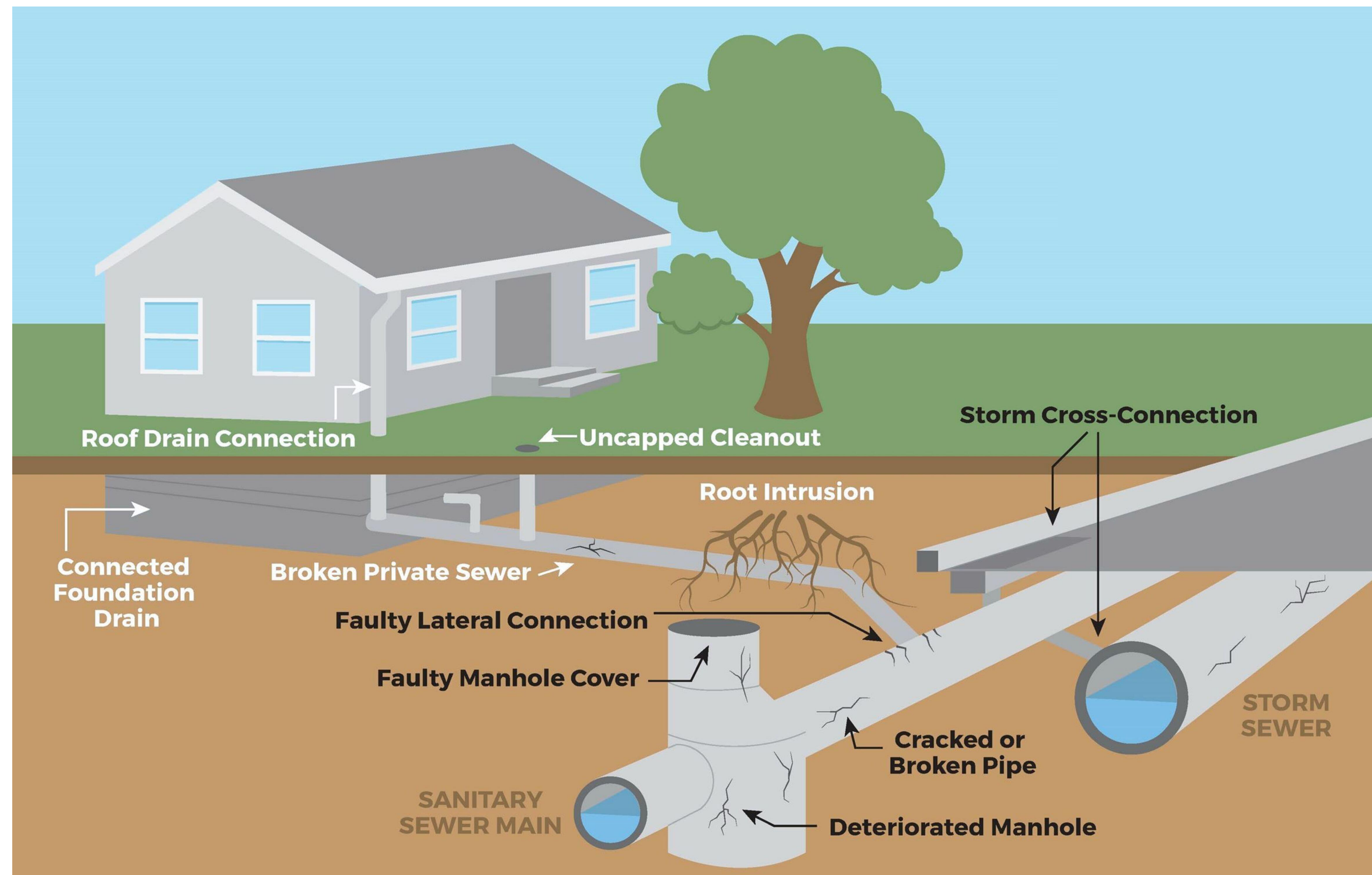
- Sampling and flushing program
- Valve turning program
- Back flow prevention
- Tracking non-revenue water
- Ductile iron corrosion study

Program Categories	0 to 10 Year Cost	> 10 Year Cost
Supports existing customers	\$47 million	\$155 million
Supports existing customers, growth, and/or improves system resiliency	\$108 million	\$15 million
Supports near growth areas	\$27 million	\$11 million
		\$363 Million Total



System Opportunities and Challenges

What is Inflow and Infiltration?



What is Inflow and Infiltration?

Groundwater and stormwater that enters the wastewater (or sanitary) sewer system through cross connections with the stormwater system or through cracks and other imperfections within the wastewater system.

Is Inflow and Infiltration Expected in the City's Infrastructure?

Inflow and infiltration is a normal component of municipal wastewater sewer systems. Municipalities allow for a certain rate of inflow and infiltration in the design of wastewater infrastructure. The goal is to minimize inflow and infiltration in order to:

- Minimize additional cost of pumping and treating the extraneous flows
- Maximize the existing capacity of wastewater infrastructure

What are the servicing strategies?

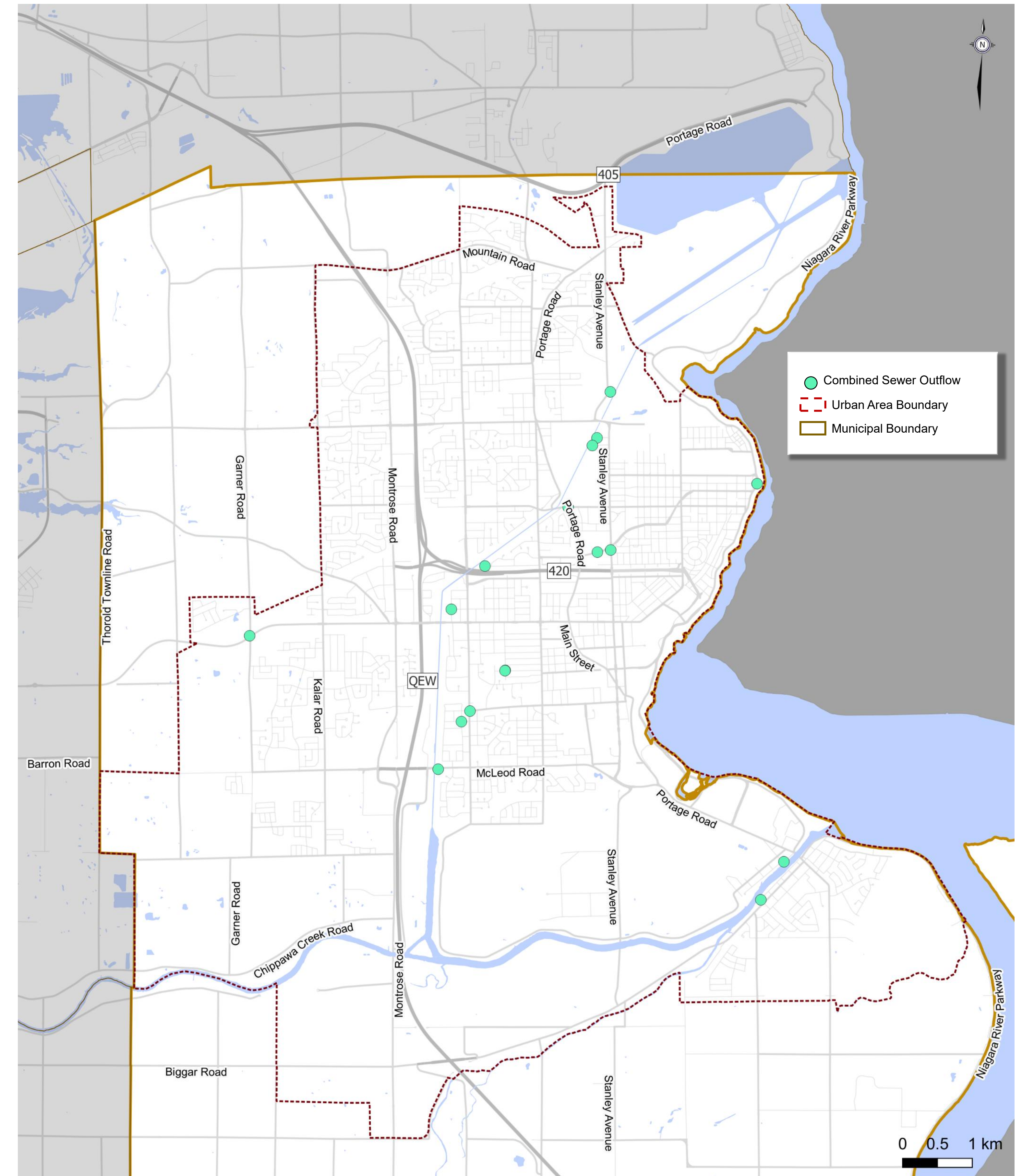
Preliminary Preferred Capital Program – MECP F-5-5 Procedure

The Ministry of Environment, Conservation, and Parks (MECP) F-5-5 Procedure defines the rules for treating municipal and private combined and partially separated sewers. Combined sewers receive wastewater sewage and stormwater flows in the same pipe. Within the City, combined sewers make up approximately 12% of all wastewater sewers and approximately 16% of all stormwater sewers. Partially separated sewers may receive stormwater from private connections such as downspouts and foundation drains. When it rains, sewer capacity can be used up from stormwater runoff and cause the sewer system to be overwhelmed. In an effort to reduce basement flooding risk, Sewer systems may have regulators, or combined system overflows, which can release untreated sewage and stormwater to the environment when the system is overwhelmed.

The F-5-5 procedure requires wastewater systems to:

- Treat 100% of dry weather flows
- Treat 90% of wet weather flows from April to October in an average year
- Maintain or improve the existing level of treated sewage
- Provide recommendations through an implementation plan to satisfy procedure

The recommendations from this study, including the implementation plan, helps the City to satisfy the F-5-5 Procedure.



What are the servicing strategies?

Preliminary Preferred Capital Program – Wastewater



The preliminary preferred wastewater capital program enhances the existing wastewater system through:

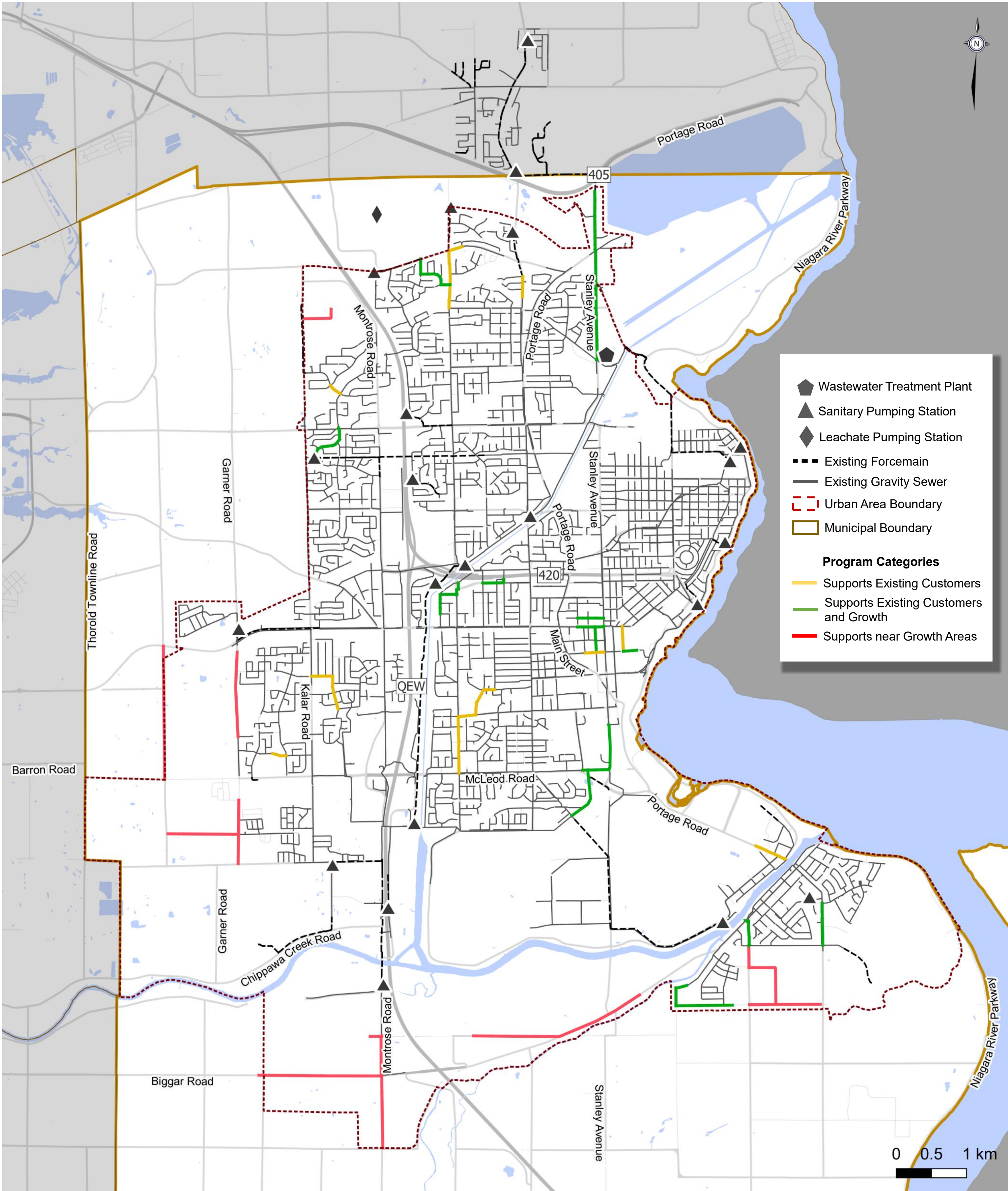
- Strategic upsizing of undersized wastewater sewers to accommodate existing flows
- Upsizes existing wastewater sewers to support intensification and growth
- Construction of new sewers to support greenfield growth areas

Recommended next step programs and studies for ongoing wastewater system needs include:

- Flow monitoring program to confirm sewer capacity and overflow volumes
- Inflow and Infiltration (Wet Weather Flows) reduction program
- Completion of F-5-5 reporting

Program Categories	0 to 10 Year Cost	> 10 Year Cost
Supports existing customers	\$52 million	\$8 million
Supports existing customers and growth	\$22 million	\$12 million
Supports near growth areas	\$82 million	\$8 million

\$184 Million
Total



What are the servicing strategies?

Preliminary Preferred Capital Program – Inflow and Infiltration Program



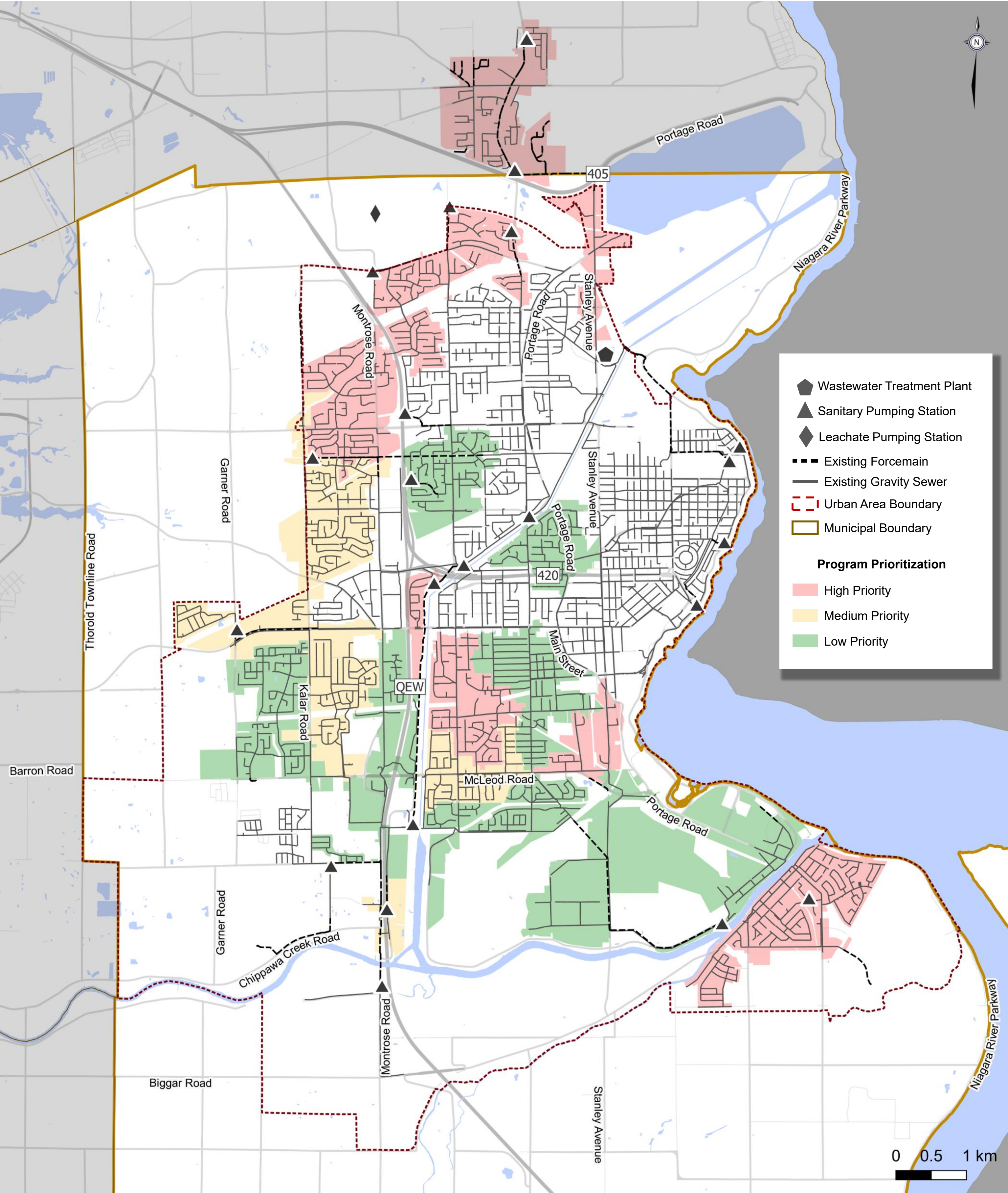
Areas of high Inflow and Infiltration (I&I) result in wastewater system capacity restrictions and poses an increased risk of basement flooding. The I&I reduction program is prioritized with aims to:

- Remove undesirable wet weather flows
- Maximize existing system capacity
- Provide climate change resiliency

The I&I reduction program may consist of the following components:

- Flow monitoring (pre/post completion of works)
- CCTV sewer inspection and review
- Smoke and dye testing
- Curbside drainage surveys
- Lateral (sanitary service connection) inspections
- Downspout and weeping tile disconnections
- New subdivision flow monitoring and acceptance criteria
- Combined sewer separation

Program Prioritization	Estimated Cost
High	\$48 million
Medium	\$12 million
Low	\$35 million
\$95 Million Total	



What are the servicing strategies?

Preliminary Preferred Capital Program – Stormwater



The preliminary preferred stormwater capital program enhances the existing stormwater system through:

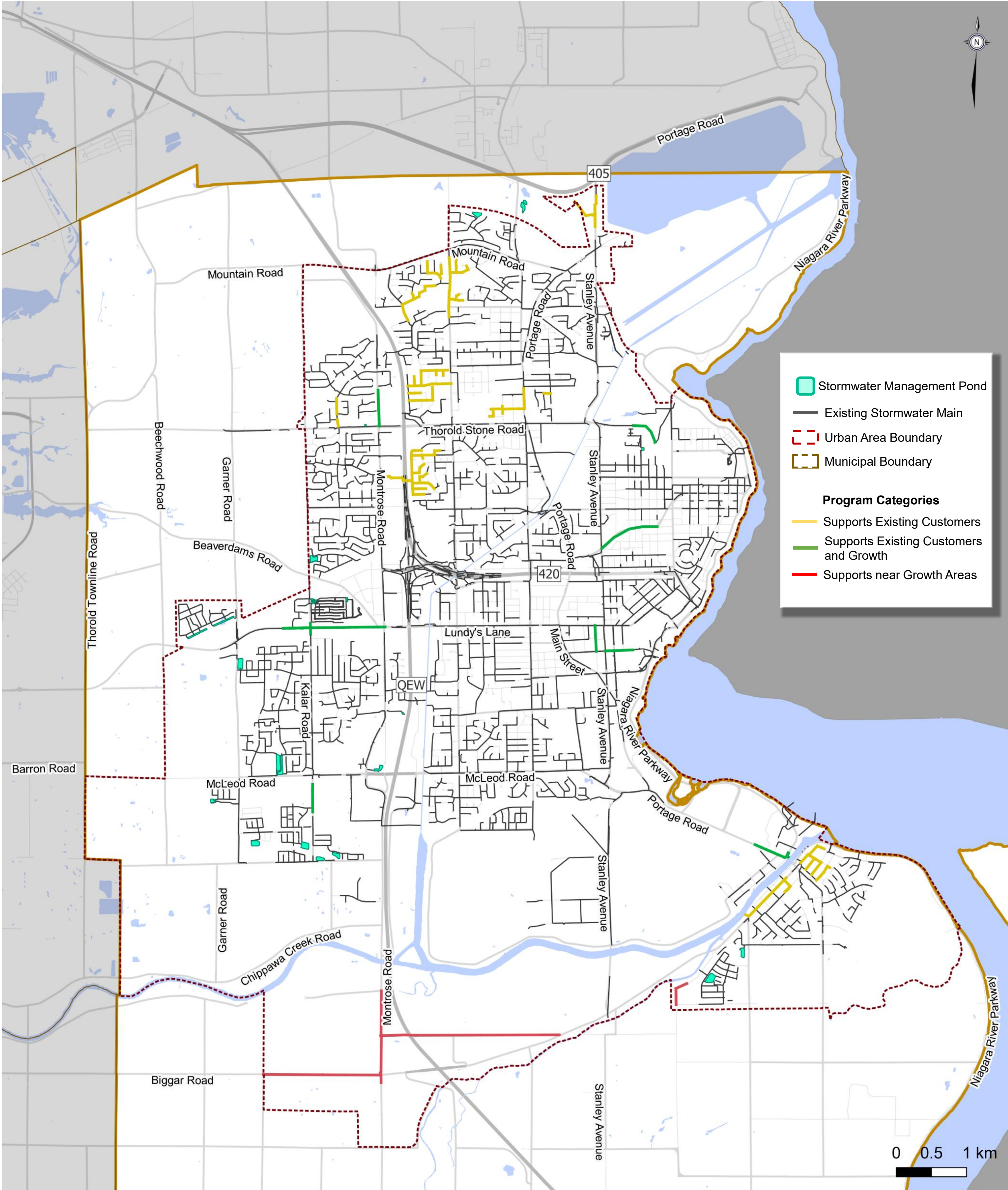
- Strategic upsizing of undersized stormwater sewers to accommodate existing flows
- Upsizes existing stormwater sewers to along intensification corridors
- Construction of new sewers to support greenfield growth areas

Recommended next step programs and studies for ongoing stormwater system needs include:

- Flow monitoring program to confirm sewer capacity and overflow volumes
- Water quality monitoring
- Enhanced data collection for a more comprehensive understanding of the existing stormwater system
- Combined sewer Environmental Assessments
- Catch basin disconnection and reconnection
- Maintenance and rehabilitation of stormwater management ponds as needed

Program Categories	0 to 10 Year Cost	> 10 Year Cost
Supports existing customers	-	\$54 million
Supports existing customers and growth	\$15 million	-
Supports near growth areas	\$2 million	-

\$71 Million
Total



What are the servicing strategies?

Preliminary Preferred Capital Program – Sewer Separation



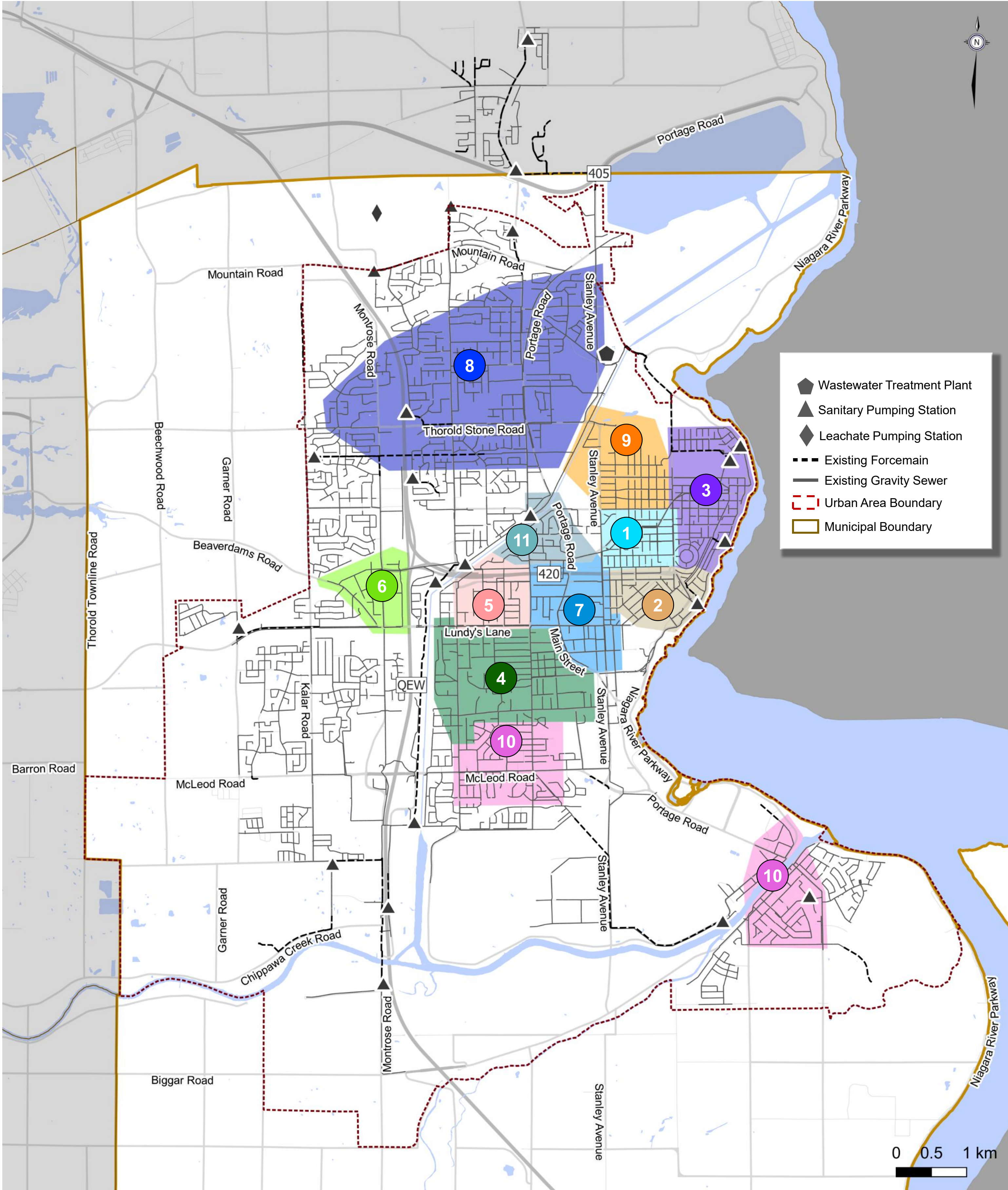
The sewer separation strategy aims to separate the combined wastewater and stormwater systems with the following objectives:

- Reduce the risk of flooding and surcharging
- Reduce combined sewer overflow discharges to the storm water network and downstream water courses
- Reduce the costs related to wet weather flows entering pumping stations and treatment works
- Provide additional capacity in the sewer system and at facilities

The separation of the wastewater and stormwater sewers was prioritized to ensure the more critical and higher risk areas in need for separation are addressed first.

Prioritization Rank	Catchment Area	Estimated Length	Estimated Project Cost
1	Valley Way	6.2 km	\$36 million
2	Falls Avenue	1.7 km	\$13 million
3	Bridge Street	9.0 km	\$35 million
4	Corwin	9.2 km	\$7 million
5	Frederica Street	2.7 km	\$3 million
6	Belmont Avenue	3.5 km	\$23 million
7	Main Street	5.9 km	\$10 million
8	Thorold Stone Road	9.1 km	\$14 million
9	Stanley Avenue	3.2 km	\$24 million
10	South Niagara Falls	1.1 km	\$36 million
11	Portage Road	0.7 km	\$4 million

49.5 km Total \$205 Million Total



What are we doing next?

- Confirmation of the Capital Program following the completion of PIC 2 and receipt of any comments
- Completion of the Master Servicing Plan and Wet Weather Management Strategy Final Report
- 30-day Public Review of Completed Report

Additional project information can be found on the project website:
<https://letstalk.niagarafalls.ca/master-servicing-plan>



This is the final PIC for this study.

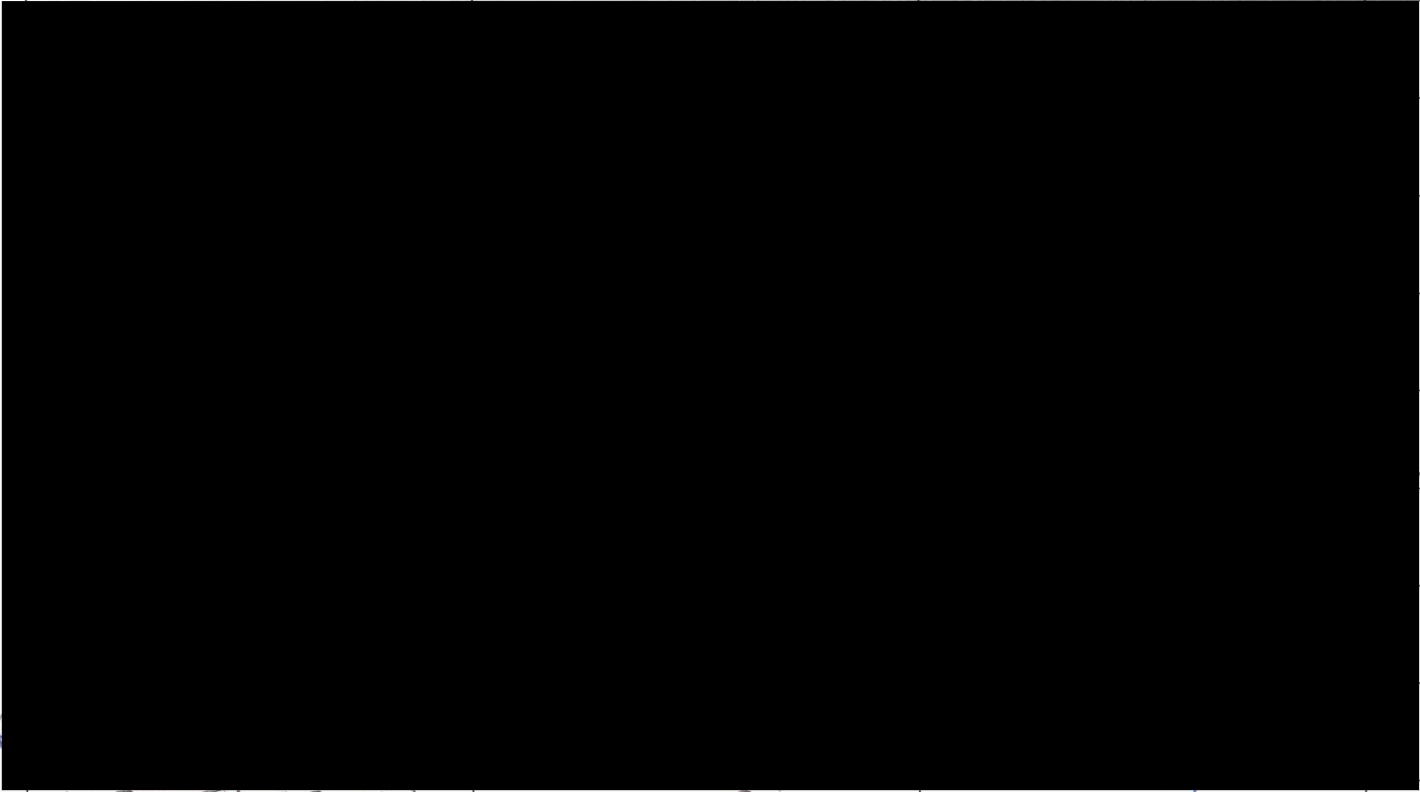
Do you have any questions, comments, or want to stay up to date?
Please contact us anytime!

City Contact	Consultant Contact
Tara Gudgeon Project Manager, City of Niagara Falls 4310 Queen Street Niagara Falls, ON L2E 6X5 905-356-7521 ext. 4398 tgudgeon@niagarafalls.ca	Mark Zamojc, P.Eng. Project Manager, GEI Consultants Canada Ltd. 1266 South Service Road, Unit C31 Stoney Creek, ON L8E 5R9 416-703-0667 mzamojc@geiconsultants.com



Master Servicing Plan and Wet Weather Management Strategy (MSP)
Transportation Master Plan Update (TMP)
Public Information Centre No. 2
December 12, 2024

SIGN-IN SHEET

Name & Organization	Address	Email Address	Attending MSP? (✓/X)	Attending TMP? (✓/X)
			✓ com	
				✓
				✓
				✓
				✓
				✓
				✓
			✓	
MEREDITH CROUCH ONTARIO POWER GENERATION	14000 Niagara Parkway Niagara-on-the-Lake	meredith.crouch@ opg.com	✓	



Master Servicing Plan and Wet Weather Management Strategy (MSP)
Transportation Master Plan Update (TMP)
Public Information Centre No. 2
December 12, 2024

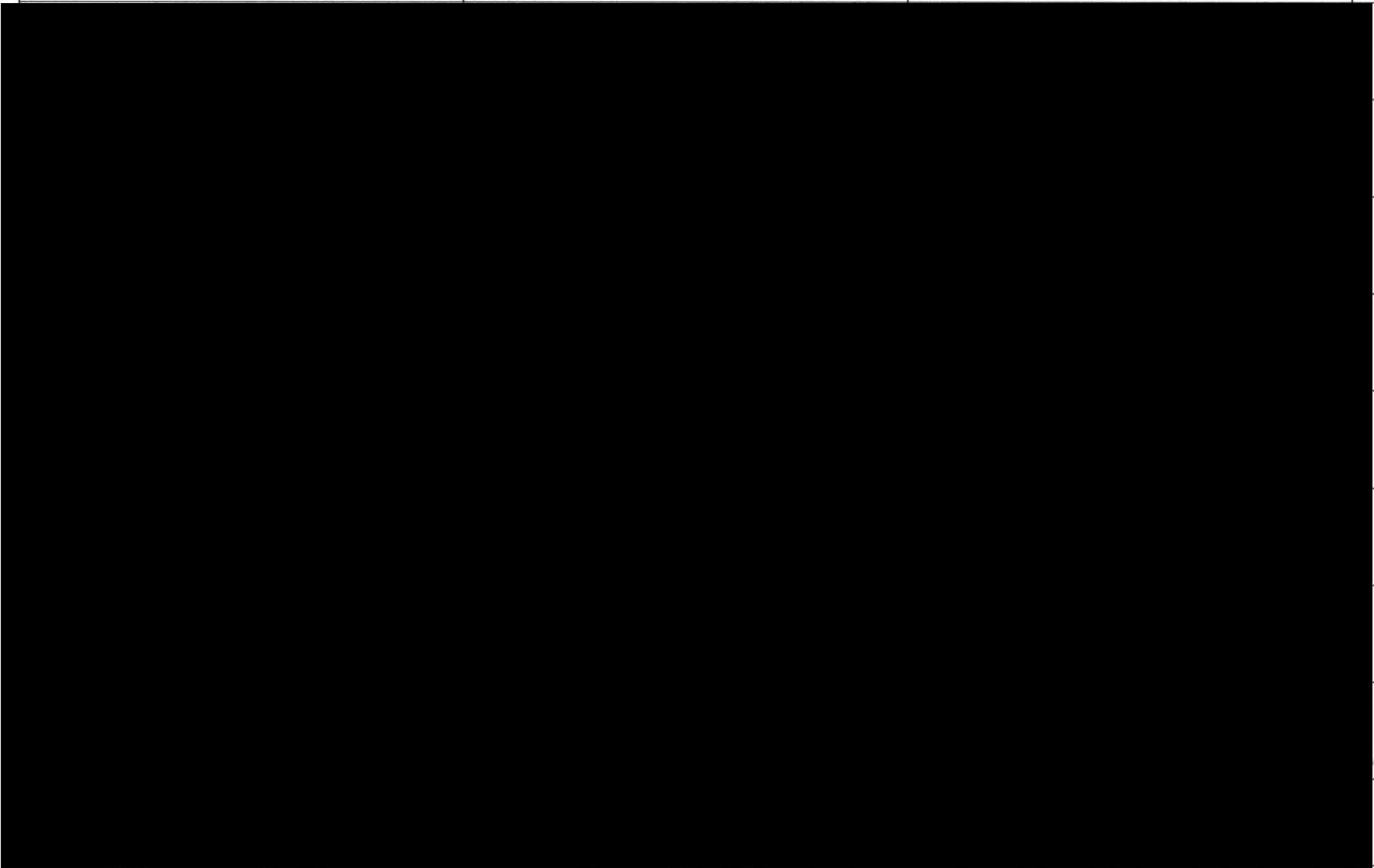
SIGN-IN SHEET

Name & Organization	Address	Email Address	Attending MSP? (✓/X)	Attending TMP? (✓/X)
[REDACTED]			✓	
			✓	
			m	✓
Karine Ohanian		Karine.ohanian@niagaregion.ca		✓
[REDACTED]			com	✓
				✓
				✓
			✓	✓
			✓	✓



Master Servicing Plan and Wet Weather Management Strategy (MSP)
Transportation Master Plan Update (TMP)
Public Information Centre No. 2
December 12, 2024

SIGN-IN SHEET

Name & Organization	Address	Email Address	Attending MSP? (✓/X)	Attending TMP? (✓/X)
			✓	✓
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				✓
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			✓	✓



Master Servicing Plan and Wet Weather Management Strategy (MSP)
Transportation Master Plan Update (TMP)
Public Information Centre No. 2
December 12, 2024

SIGN-IN SHEET

Name & Organization	Address	Email Address	Attending MSP? (✓/X)	Attending TMP? (✓/X)
[Redacted]				TB
				TMP ✓
				✓
Jackie Gervais		jackie.gervais@niagararegion.ca		✓
[Redacted]				
Steve Tukonic	8080 Costabile Dr	sttukonic@Niagarafalls.ca		✓
[Redacted]				✓
			✓	✓
			✓	✓

Appendix G Comments Received

Kochanski, Alyssa

From: Lindsay Currie - GM BluePlan
Sent: Wednesday, October 25, 2023 5:55 AM
To: Kristen Farrell - GM BluePlan
Subject: FW: Notice of Commencement – City of Niagara Falls Master Servicing Plan and Wet Weather Management Strategy
Attachments: MNRF_Response_2023-10-13.pdf

Lindsay Currie, M.Sc., P.Eng.
Infrastructure Management

GM BluePlan Engineering Limited
1266 South Service Rd, Unit C3-1 | Stoney Creek, ON | L8E 5R9
t: 905.643.6688 ext. 6244 | c: 647.226.9190
lindsay.currie@gmblueplan.ca | www.gmblueplan.ca



My work day may look different than yours. Please do not feel obligated to respond outside of your normal working hours.

From: Tara Gudgeon <tgudgeon@niagarafalls.ca>
Sent: Friday, October 13, 2023 4:30 PM
To: Lindsay Currie - GM BluePlan <Lindsay.Currie@gmblueplan.ca>; Julien Bell - GM BluePlan <julien.bell@gmblueplan.ca>; Melissa Terry <mterry@niagarafalls.ca>
Subject: FW: Notice of Commencement – City of Niagara Falls Master Servicing Plan and Wet Weather Management Strategy

FYI

Tara Gudgeon | Senior Manager Asset Management | City of Niagara Falls
4310 Queen Street | Niagara Falls, ON L2E 6X5 | 905-356-7521 ext 4398 | tgudgeon@niagarafalls.ca

From: Southern Region Planning Inbox (MNRF) <SR.Planning@ontario.ca>
Sent: Friday, October 13, 2023 4:27 PM
To: Tara Gudgeon <tgudgeon@niagarafalls.ca>
Subject: RE: Notice of Commencement – City of Niagara Falls Master Servicing Plan and Wet Weather Management Strategy

Dear Tara,

Thank you for circulating your Notice of Study Commencement regarding the Master Servicing Plan and Wet Weather Management Strategy at the City of Niagara Falls to us. Please see the attached for information from the MNRF to support your project.

Please feel free to contact me if you have any questions.

Matthew Shakespeare

Regional Lands Intern | Southern Region
Ministry of Natural Resources and Forestry
(705) 772-9310
matthew.shakespeare@ontario.ca

Kochanski, Alyssa

From: Lindsay Currie - GM BluePlan
Sent: Wednesday, October 25, 2023 5:51 AM
To: Kristen Farrell - GM BluePlan
Subject: FW: Niagara Falls MEA Class EA Master Servicing Plan - MECP Notification
Attachments: MECP Acknowledgement of NOC - Niagara Fall MSP.pdf; Client Guide to Preliminary Screening-May 2019.pdf

Lindsay Currie, M.Sc., P.Eng.
Infrastructure Management

GM BluePlan Engineering Limited
1266 South Service Rd, Unit C3-1 | Stoney Creek, ON | L8E 5R9
t: 905.643.6688 ext. 6244 | c: 647.226.9190
lindsay.currie@gmblueplan.ca | www.gmblueplan.ca



My work day may look different than yours. Please do not feel obligated to respond outside of your normal working hours.

From: EA Notices to WCRegion (MECP) <eanotification.wcregion@ontario.ca>
Sent: Monday, October 16, 2023 2:48 PM
To: Tara Gudgeon <tgudgeon@niagarafalls.ca>; Julien Bell - GM BluePlan <julien.bell@gmblueplan.ca>
Cc: Lindsay Currie - GM BluePlan <Lindsay.Currie@gmblueplan.ca>; Groombridge, Kim (She/Her) (MECP) <Kim.Groombridge@ontario.ca>
Subject: RE: Niagara Falls MEA Class EA Master Servicing Plan - MECP Notification

Good afternoon,

Please find attached MECP's Letter of Acknowledgement and attachment in response to the Notice of Commencement for the City of Niagara Falls, MEA Class EA, Master Servicing Plan.

Please do not hesitate to contact me if you have any questions.

Regards,

Joan Del Villar Cuicas (she/her)
Regional Environmental Planner
Project Review Unit | Environmental Assessment Branch
Ontario Ministry of the Environment, Conservation and Parks
Joan.delvillarcuicas@ontario.ca | Phone: 365-889-1180

From: Lindsay Currie - GM BluePlan <Lindsay.Currie@gmblueplan.ca>
Sent: October 13, 2023 10:06 AM

To: EA Notices to WRegion (MECP) <eanotification.wregion@ontario.ca>

Cc: Tara Gudgeon <tgudgeon@niagarafalls.ca>; Julien Bell - GM BluePlan <julien.bell@gmblueplan.ca>

Subject: Niagara Falls MEA Class EA Master Servicing Plan - MECP Notification

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Good morning,

The City of Niagara Falls is undertaking a Master Servicing Plan and Wet Weather Management Strategy, under the Municipal Class Environmental Assessment Master Plan process. I have attached the Project Information Form, as well as the Notice of Commencement for this study.

Should you have any questions regarding this project, please contact myself or Tara Gudgeon from the City of Niagara Falls (tgudgeon@niagarafalls.ca).

Kind Regards,

Lindsay Currie, M.Sc., P.Eng.

Infrastructure Management

GM BluePlan Engineering Limited

1266 South Service Rd, Unit C3-1 | Stoney Creek, ON | L8E 5R9

t: 905.643.6688 ext. 6244 | c: 647.226.9190

lindsay.currie@gmblueplan.ca | www.gmblueplan.ca



My work day may look different than yours. Please do not feel obligated to respond outside of your normal working hours.

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Kochanski, Alyssa

From: Lindsay Currie - GM BluePlan
Sent: Wednesday, October 25, 2023 5:50 AM
To: Kristen Farrell - GM BluePlan
Subject: FW: Notice of Commencement – City of Niagara Falls Master Servicing Plan and Wet Weather Management Strategy

Lindsay Currie, M.Sc., P.Eng.
Infrastructure Management

GM BluePlan Engineering Limited
1266 South Service Rd, Unit C3-1 | Stoney Creek, ON | L8E 5R9
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lindsay.currie@gmblueplan.ca | www.gmblueplan.ca



My work day may look different than yours. Please do not feel obligated to respond outside of your normal working hours.

From: Tara Gudgeon <tgudgeon@niagarafalls.ca>
Sent: Tuesday, October 17, 2023 12:24 PM
To: Pillay, David (MTO) <David.Pillay@ontario.ca>; Pilla, Angelo (MTO) <Angelo.Pilla@ontario.ca>; Nunes, Paul (MTO) <Paul.Nunes@ontario.ca>
Cc: Melissa Terry <mterry@niagarafalls.ca>; Lindsay Currie - GM BluePlan <Lindsay.Currie@gmblueplan.ca>
Subject: RE: Notice of Commencement – City of Niagara Falls Master Servicing Plan and Wet Weather Management Strategy

Will do David – thanks again!

Tara Gudgeon | Senior Manager Asset Management | City of Niagara Falls
4310 Queen Street | Niagara Falls, ON L2E 6X5 | 905-356-7521 ext 4398 | tgudgeon@niagarafalls.ca

From: Pillay, David (MTO) <David.Pillay@ontario.ca>
Sent: Tuesday, October 17, 2023 11:50 AM
To: Tara Gudgeon <tgudgeon@niagarafalls.ca>; Pilla, Angelo (MTO) <Angelo.Pilla@ontario.ca>; Nunes, Paul (MTO) <Paul.Nunes@ontario.ca>
Subject: RE: Notice of Commencement – City of Niagara Falls Master Servicing Plan and Wet Weather Management Strategy

That's right, yes. You can include all three of us [@Pilla, Angelo \(MTO\)@Nunes, Paul \(MTO\)](#) on any communication with the MTO.

Thanks,

David

From: Tara Gudgeon <tgudgeon@niagarafalls.ca>

Sent: October 17, 2023 11:29 AM

To: Pillay, David (MTO) <David.Pillay@ontario.ca>; Melissa Terry <mterry@niagarafalls.ca>; Julien.bell@gmblueplan.ca; Lindsay Currie - GM BluePlan <Lindsay.Currie@gmblueplan.ca>

Cc: Pilla, Angelo (MTO) <Angelo.Pilla@ontario.ca>; Nunes, Paul (MTO) <Paul.Nunes@ontario.ca>

Subject: RE: Notice of Commencement – City of Niagara Falls Master Servicing Plan and Wet Weather Management Strategy

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Thank you for your reply David – can we continue to include you on the project contact list for project updates?

Tara Gudgeon | Senior Manager Asset Management | City of Niagara Falls

4310 Queen Street | Niagara Falls, ON L2E 6X5 | 905-356-7521 ext 4398 | tgudgeon@niagarafalls.ca

From: Pillay, David (MTO) <David.Pillay@ontario.ca>

Sent: Tuesday, October 17, 2023 10:15 AM

To: Melissa Terry <mterry@niagarafalls.ca>; Tara Gudgeon <tgudgeon@niagarafalls.ca>; Julien.bell@gmblueplan.ca

Cc: Pilla, Angelo (MTO) <Angelo.Pilla@ontario.ca>; Nunes, Paul (MTO) <Paul.Nunes@ontario.ca>

Subject: Re: Notice of Commencement – City of Niagara Falls Master Servicing Plan and Wet Weather Management Strategy

Hi All,

As the MTO Corridor Management Officer for Niagara Encroachments, I'd like to thank you all at the City of Niagara Falls for reaching out to the Highway Corridor Management Section.

Under the Public Transportation and Highway Improvement Act (PTHIA), permits are issued for the purpose of responsibly “controlling and regulating buildings, land use, business establishments, encroachments, entrances, plantings, signs, and miscellaneous structures and installations on or within the Ministry’s area of control, adjacent to a Provincial Highway.”

As such, please consider MTO permitting requirements should any future plans fall within Ministry’s Controlled Areas. You can use the following link as a tool to determine if you are within the MTO Controlled Areas for grading, buildings, signs, entrances and utility/activities on the highway; [here](#).

We look forward to working together in the future to help build and improve infrastructure in a rapidly expanding part of Central Ontario. By doing so within the permitting framework, we can to continue support economic growth while ensuring the safe and efficient movement of people and goods across the province.

Please don't hesitate to reach out with any questions you have about the Highway Corridor via email. As well, you can always submit [a general inquiry](#) on the Highway Corridor Management Website.

Thank you,

David Pillay | Corridor Management Officer (Hamilton/Niagara)

Highway Corridor Management Section | Central Operations | Ministry of Transportation
159 Sir William Hearst Avenue, 7th Floor, Toronto, ON. M3M 0B7
Telephone: 416-508-8745 | Email: david.pillay@ontario.ca



Kochanski, Alyssa

From: Lindsay Currie - GM BluePlan
Sent: Wednesday, October 25, 2023 5:50 AM
To: Kristen Farrell - GM BluePlan
Subject: FW: Notice of Commencement – City of Niagara Falls Master Servicing Plan and Wet Weather Management Strategy

Lindsay Currie, M.Sc., P.Eng.
Infrastructure Management

GM BluePlan Engineering Limited
1266 South Service Rd, Unit C3-1 | Stoney Creek, ON | L8E 5R9
t: 905.643.6688 ext. 6244 | c: 647.226.9190
lindsay.currie@gmblueplan.ca | www.gmblueplan.ca



My work day may look different than yours. Please do not feel obligated to respond outside of your normal working hours.

From: Tara Gudgeon <tgudgeon@niagarafalls.ca>
Sent: Tuesday, October 17, 2023 11:27 AM
To: Tansony, Cheryl (MNRF) <Cheryl.Tansony@ontario.ca>; Melissa Terry <mterry@niagarafalls.ca>
Cc: Lindsay Currie - GM BluePlan <Lindsay.Currie@gmblueplan.ca>; Julien Bell - GM BluePlan <julien.bell@gmblueplan.ca>
Subject: RE: Notice of Commencement – City of Niagara Falls Master Servicing Plan and Wet Weather Management Strategy

Thank you, Cheryl, happy to have you as a contact for the project.

Tara Gudgeon | Senior Manager Asset Management | City of Niagara Falls
4310 Queen Street | Niagara Falls, ON L2E 6X5 | 905-356-7521 ext 4398 | tgudgeon@niagarafalls.ca

From: Tansony, Cheryl (MNRF) <Cheryl.Tansony@ontario.ca>
Sent: Tuesday, October 17, 2023 10:16 AM
To: Melissa Terry <mterry@niagarafalls.ca>
Cc: Tara Gudgeon <tgudgeon@niagarafalls.ca>
Subject: RE: Notice of Commencement – City of Niagara Falls Master Servicing Plan and Wet Weather Management - Strategy

Good morning,

Thank you for including the Niagara Escarpment Commission in the notice of study commencement. The NEC's interest will be with any proposed improvements within or near the Niagara Escarpment Plan Area. Within the Niagara Escarpment Plan Area, the policies of the Niagara Escarpment Plan

will apply. A Development Permit may be required for any future work within the NEC's Development Control Area.

Please keep me as a contact (information below).

Kind regards,

Cheryl Tansony

Senior Planner | Niagara Escarpment Commission
232 Guelph Street, Georgetown, Ontario, L7G 4B1
905-703-5354 | www.escarpment.org



Niagara Escarpment Commission
An agency of the Government of Ontario

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

The NEC **requires** that you make an appointment to meet with staff in person: <https://escarpment.org/appointments>. Alternatively, the NEC will continue to provide services via telephone and email.

From: Melissa Terry <mterry@niagarafalls.ca>

Sent: October 13, 2023 12:03 PM

To: Melissa Terry <mterry@niagarafalls.ca>

Subject: Notice of Commencement – City of Niagara Falls Master Servicing Plan and Wet Weather Management Strategy

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Date: October 13, 2023

Re: Notice of Commencement – City of Niagara Falls Master Servicing Plan and Wet Weather Management Strategy

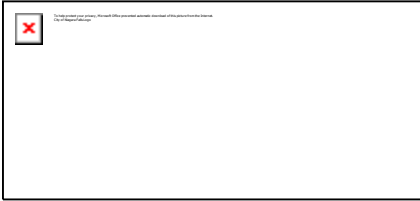
The City of Niagara Falls has initiated the Master Servicing Plan and Wet Weather Management Strategy project. Please find the attached Notice of Study Commencement and Fact Sheet which contain further details about this important study.

As part of the study's engagement program, you are currently included in the study contact list. Feedback from the community is important for this study. If you have any questions regarding this project or if you wish to provide an alternate contact person, please reach out to the City's Project Manager, Tara Gudgeon who's contact information is provided below:

Tara Gudgeon | Senior Manager Asset Management | City of Niagara Falls
4310 Queen Street | Niagara Falls, ON L2E 6X5 | 905-356-7521 ext 4398 | tgudgeon@niagarafalls.ca

Thank you,

Melissa Terry | Project Administrator | Asset Management | City of Niagara Falls
4310 Queen Street | Niagara Falls, ON L2E 6X5 | (905) 356-7521x4230 | Fax 289-296-0048 | mterry@niagarafalls.ca



niagarafalls.ca

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Kochanski, Alyssa

From: Lindsay Currie - GM BluePlan
Sent: Wednesday, October 25, 2023 5:48 AM
To: Kristen Farrell - GM BluePlan
Subject: FW: [EXTERNAL]-Fwd: Notice of Commencement – City of Niagara Falls Master Servicing Plan and Wet Weather Management Strategy

Follow Up Flag: Follow up
Flag Status: Flagged

Please also note the changes to HDI for other projects

Lindsay Currie, M.Sc., P.Eng.
Infrastructure Management

GM BluePlan Engineering Limited
1266 South Service Rd, Unit C3-1 | Stoney Creek, ON | L8E 5R9
t: 905.643.6688 ext. 6244 | c: 647.226.9190
lindsay.currie@gmblueplan.ca | www.gmblueplan.ca



My work day may look different than yours. Please do not feel obligated to respond outside of your normal working hours.

From: Tara Gudgeon <tgudgeon@niagarafalls.ca>
Sent: Wednesday, October 18, 2023 11:00 AM
To: Tracey General <traceyghdi@gmail.com>; Melissa Terry <mterry@niagarafalls.ca>; Lindsay Currie - GM BluePlan <Lindsay.Currie@gmblueplan.ca>; Julien Bell - GM BluePlan <julien.bell@gmblueplan.ca>
Subject: RE: [EXTERNAL]-Fwd: Notice of Commencement – City of Niagara Falls Master Servicing Plan and Wet Weather Management Strategy

Good morning Tracey,

We'll absolutely make those changes in the communication schedule.

Thanks so much,
Tara

Tara Gudgeon | Senior Manager Asset Management | City of Niagara Falls
4310 Queen Street | Niagara Falls, ON L2E 6X5 | 905-356-7521 ext 4398 | tgudgeon@niagarafalls.ca

From: Tracey General <traceyghdi@gmail.com>
Sent: Wednesday, October 18, 2023 10:32 AM
To: Melissa Terry <mterry@niagarafalls.ca>; Tara Gudgeon <tgudgeon@niagarafalls.ca>
Subject: [EXTERNAL]-Fwd: Notice of Commencement – City of Niagara Falls Master Servicing Plan and Wet Weather Management Strategy

Good Morning:

I received this information in the mail for Tracey General, Raechelle Williams, Wayne Hill (No longer at HDI), Todd Williams & Janice Bomberry.

Can you please remove all except myself Tracey General, from your mailing address?

Once I receive I forward to my team.

Thank you!
Tracey

Begin forwarded message:

From: Melissa Terry <mterry@niagarafalls.ca>
Subject: Notice of Commencement – City of Niagara Falls Master Servicing Plan and Wet Weather Management Strategy
Date: October 13, 2023 at 12:03:13 PM EDT
To: Melissa Terry <mterry@niagarafalls.ca>

Date: October 13, 2023

Re: Notice of Commencement – City of Niagara Falls Master Servicing Plan and Wet Weather Management Strategy

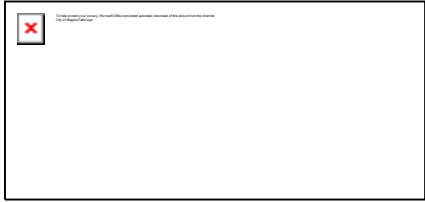
The City of Niagara Falls has initiated the Master Servicing Plan and Wet Weather Management Strategy project. Please find the attached Notice of Study Commencement and Fact Sheet which contain further details about this important study.

As part of the study's engagement program, you are currently included in the study contact list. Feedback from the community is important for this study. If you have any questions regarding this project or if you wish to provide an alternate contact person, please reach out to the City's Project Manager, Tara Gudgeon who's contact information is provided below:

Tara Gudgeon | Senior Manager Asset Management | City of Niagara Falls
4310 Queen Street | Niagara Falls, ON L2E 6X5 | 905-356-7521 ext 4398 | tgudgeon@niagarafalls.ca

Thank you,

Melissa Terry | Project Administrator | Asset Management | City of Niagara Falls
4310 Queen Street | Niagara Falls, ON L2E 6X5 | (905) 356-7521x4230 | Fax 289-296-0048 | mterry@niagarafalls.ca



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Kochanski, Alyssa

From: Lindsay Currie - GM BluePlan
Sent: Wednesday, October 25, 2023 5:49 AM
To: Kristen Farrell - GM BluePlan
Subject: FW: [EXTERNAL]-Wet weather stratigy

Lindsay Currie, M.Sc., P.Eng.
Infrastructure Management

GM BluePlan Engineering Limited
1266 South Service Rd, Unit C3-1 | Stoney Creek, ON | L8E 5R9
t: 905.643.6688 ext. 6244 | c: 647.226.9190
lindsay.currie@gmblueplan.ca | www.gmblueplan.ca



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From: Tara Gudgeon <tgudgeon@niagarafalls.ca>
Sent: Wednesday, October 18, 2023 8:22 AM
To: Fabio Magazzeni <fmagazzeni@niagaraparks.com>
Cc: Savanagh Fraser <sfraser@niagaraparks.com>; Rachel Adamsky <radamsky@niagaraparks.com>; Lindsay Currie - GM BluePlan <Lindsay.Currie@gmblueplan.ca>; Julien Bell - GM BluePlan <julien.bell@gmblueplan.ca>; Melissa Terry <mterry@niagarafalls.ca>
Subject: RE: [EXTERNAL]-Wet weather stratigy

Good morning Fabio,

Thank-you for your response. We'll keep you in the loop of the project progresseand make sure to follow up with you directly if any of the project recommendations could impact the Parkway.

Thank-you,
Tara

Tara Gudgeon | Senior Manager Asset Management | City of Niagara Falls
4310 Queen Street | Niagara Falls, ON L2E 6X5 | 905-356-7521 ext 4398 | tgudgeon@niagarafalls.ca

From: Fabio Magazzeni <fmagazzeni@niagaraparks.com>
Sent: Wednesday, October 18, 2023 7:05 AM
To: Tara Gudgeon <tgudgeon@niagarafalls.ca>
Cc: Savanagh Fraser <sfraser@niagaraparks.com>; Rachel Adamsky <radamsky@niagaraparks.com>
Subject: [EXTERNAL]-Wet weather stratigy

Good morning, Tara,

We received your notice for the Master Servicing Plan and Wet Weather Strategy. Please keep us in the loop with anything that may affect the Parkway as you progress through this.

Thanks



Fabio Magazzeni
DIRECTOR, PARKS OPERATIONS



P 905.295.4396 x3238 **M** 905.658.5284
7805 Niagara Parkway
Niagara Falls, Ontario, Canada L2G 6R5
fmagazzeni@niagaraparks.com
niagaraparks.com

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Kochanski, Alyssa

From: Lindsay Currie - GM BluePlan
Sent: Wednesday, October 25, 2023 10:30 AM
To: Kristen Farrell - GM BluePlan
Subject: Fwd: [External/Externe]: Notice of Commencement – City of Niagara Falls Master Servicing Plan and Wet Weather Management Strategy
Attachments: NF MSP Project Fact Sheet.pdf; NF MSP Notice of Study Commencement.pdf

Lindsay Currie, [M.Sc.](#), P.Eng
Infrastructure Management

GM BluePlan Engineering Limited

1266 South Service Rd, Unit C3-1 | Stoney Creek, ON | L8E 5R9
t: [905.643.6688 ext. 6244](tel:905.643.6688) | c: [647.226.9190](tel:647.226.9190)
lindsay.currie@gmblueplan.ca | www.gmblueplan.ca

From: Melissa Terry <mterry@niagarafalls.ca>
Sent: Wednesday, October 25, 2023 8:45:19 AM
To: Tara Gudgeon <tgudgeon@niagarafalls.ca>
Cc: Lindsay Currie - GM BluePlan <Lindsay.Currie@gmblueplan.ca>; Julien Bell - GM BluePlan <julien.bell@gmblueplan.ca>
Subject: FW: [External/Externe]: Notice of Commencement – City of Niagara Falls Master Servicing Plan and Wet Weather Management Strategy

Good Morning,

Please see below.

Thank you,

Melissa Terry | Project Administrator | Asset Management | City of Niagara Falls
4310 Queen Street | Niagara Falls, ON L2E 6X5 | (905) 356-7521x4230 | Fax 289-296-0048 | mterry@niagarafalls.ca

From: ONT Environment / Environnement ONT <EnviroOnt@tc.gc.ca>
Sent: Tuesday, October 24, 2023 2:30 PM
To: Melissa Terry <mterry@niagarafalls.ca>
Subject: RE: [External/Externe]: Notice of Commencement – City of Niagara Falls Master Servicing Plan and Wet Weather Management Strategy

Greetings,

Thank you for your correspondence.

Please note Transport Canada does not require receipt of all Individual or Class EA related notifications. We request that project proponents self-assess whether their project:

1. Will interact with a federal property and/or waterway by reviewing the Directory of Federal Real Property, available at www.tbs-sct.gc.ca/dfrp-rbif/; and
2. Will require approval and/or authorization under any Acts administered by Transport Canada* available at <http://www.tc.gc.ca/eng/acts-regulations/menu.htm>.

Proposed projects that will occur on federal property (including reserve lands or lands owned by federal departments other than Transport Canada) will be subject to an Impact Assessment per Section 82 of the *Impact Assessment Act, 2019* prior to exercising a federal power (including full or partial funding), and/or performing a function or duty (e.g. regulatory approval or issuance of a lease) in relation to that project.

If the criteria above do not apply, Transport Canada's Environmental Assessment program should not be included in any further correspondence, and future notifications will not receive a response. If there is a role under the program, correspondence should be forwarded to: EnviroOnt@tc.gc.ca with a **brief description of Transport Canada's expected role**.

*Below is a summary of the most common Acts that apply to projects in an Environmental Assessment context:

- **Canadian Navigable Waters Act (CNWA)** – the Act applies primarily to works constructed or placed in, on, over, under, through, or across navigable waters set out under the Act. The Navigation Protection Program administers the CNWA through the review and authorization of works affecting navigable waters. Information about the Program, CNWA and approval process is available at: <http://www.tc.gc.ca/eng/programs-621.html>. Inquiries can be directed to NPPONT-PPNONT@tc.gc.ca or by calling (519) 383-1863.
- **Railway Safety Act (RSA)** – the Act provides the regulatory framework for railway safety, security, and some of the environmental impacts of railway operations in Canada. The Rail Safety Program develops and enforces regulations, rules, standards and procedures governing safe railway operations. Additional information about the Program is available at: <https://www.tc.gc.ca/eng/railsafety/menu.htm>. Inquiries can be directed to RailSafety@tc.gc.ca or by calling (613) 998-2985.
- **Transportation of Dangerous Goods Act (TDGA)** – the transportation of dangerous goods by air, marine, rail and road is regulated under the TDGA. Transport Canada, based on risks, develops safety standards and regulations, provides oversight and gives expert advice on dangerous goods to promote public safety. Additional information about the transportation of dangerous goods is available at: <https://www.tc.gc.ca/eng/tdg/safety-menu.htm>. Inquiries can be directed to TDG-TMDOntario@tc.gc.ca or by calling (416) 973-1868.
- **Aeronautics Act** – this Act and the associated Canadian Aviation Regulations (CARs) govern civil aviation in Canada. Transport Canada should be notified of projects involving aerodromes and associated structures, or activities that could affect aviation safety. Elevated structures, such as wind turbines and communication towers, are examples of projects that must be assessed for lighting and marking requirements in accordance with the CARs. Transport Canada also has an interest in projects that have the potential to cause interference between wildlife and aviation activities. One example would be waste facilities, which may attract birds into commercial and recreational flight paths. Additional guidance can be found in the *Land Use In The Vicinity of Aerodromes* publication, available at: <https://www.tc.gc.ca/eng/civilaviation/publications/tp1247-menu-1418.htm>. Information about Transport Canada's Civil Aviation program can be found at: <https://tc.canada.ca/en/aviation>. Inquires can be directed to aviation.ont@tc.gc.ca or by calling 1 (800) 305-2059 / (416) 952-0230.

Please advise if additional information is needed.

Thank you,

Environmental Assessment Program, Ontario Region

Transport Canada / Government of Canada / 4900 Yonge St., Toronto, ON M2N 6A5

EnviroOnt@tc.gc.ca

Programme d'évaluation environnementale, Région de l'Ontario

Transports Canada / Gouvernement du Canada / 4900, rue Yonge, Toronto, ON, M2N 6A5

EnviroOnt@tc.gc.ca

From: Melissa Terry <mterry@niagarafalls.ca>

Sent: Friday, October 13, 2023 12:03 PM

To: Melissa Terry <mterry@niagarafalls.ca>

Subject: [External/Externe]: Notice of Commencement – City of Niagara Falls Master Servicing Plan and Wet Weather Management Strategy

Date: October 13, 2023

Re: Notice of Commencement – City of Niagara Falls Master Servicing Plan and Wet Weather Management Strategy

The City of Niagara Falls has initiated the Master Servicing Plan and Wet Weather Management Strategy project. Please find the attached Notice of Study Commencement and Fact Sheet which contain further details about this important study.

As part of the study's engagement program, you are currently included in the study contact list. Feedback from the community is important for this study. If you have any questions regarding this project or if you wish to provide an alternate contact person, please reach out to the City's Project Manager, Tara Gudgeon who's contact information is provided below:

Tara Gudgeon | Senior Manager Asset Management | City of Niagara Falls

4310 Queen Street | Niagara Falls, ON L2E 6X5 | 905-356-7521 ext 4398 | tgudgeon@niagarafalls.ca

Thank you,

Melissa Terry | Project Administrator | Asset Management | City of Niagara Falls

4310 Queen Street | Niagara Falls, ON L2E 6X5 | (905) 356-7521x4230 | Fax 289-296-0048 | mterry@niagarafalls.ca



niagarafalls.ca

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Kochanski, Alyssa

From: Julien Bell - GM BluePlan
Sent: Tuesday, November 7, 2023 7:12 PM
To: Lindsay Currie - GM BluePlan
Cc: Kristen Farrell - GM BluePlan
Subject: FW: [EXTERNAL] Notice of Commencement – City of Niagara Falls Master Servicing Plan and Wet Weather Management Strategy
Attachments: NF MSP Project Fact Sheet.pdf; NF MSP Notice of Study Commencement.pdf; 50266 TCPL Environmental Assessment Response Letter - Nov. 7 2023.pdf
Follow Up Flag: Follow up
Flag Status: Flagged

Julien Bell, P.Eng.
Infrastructure Planning, Partner

GM BluePlan Engineering Limited
330 Trillium Drive, Unit D | Kitchener ON N2E 3J2
t: 519.748.1440 ext. 4264 | c: 416.254.6247
julien.bell@gmblueplan.ca | www.gmblueplan.ca



From: TC Energy <tcenergy@mhbcpplan.com>
Sent: Tuesday, November 07, 2023 1:49 PM
To: Tgudgeon@niagarafalls.ca; Julien Bell - GM BluePlan <julien.bell@gmblueplan.ca>
Cc: mterry@niagarafalls.ca
Subject: FW: [EXTERNAL] Notice of Commencement – City of Niagara Falls Master Servicing Plan and Wet Weather Management Strategy

Good afternoon,

On behalf of TransCanada PipeLines Ltd. (TCPL), please be advised that TCPL has two high-pressure natural gas pipeline contained within an easement crossing the City of Niagara Falls. Please see attached response letter for this study. Please kindly subscribe TCEnergy@mhbcpplan.com to the notification list for this study.

Kind regards,

Aleksandra Skrzat, BA | Planner

MHBC Planning, Urban Design & Landscape Architecture
On behalf of TransCanada PipeLines Ltd. (TCPL)

442 Brant Street, Suite 204 | Burlington | ON | L7R 2G4 | T 905 639 8686 x 224 | C 905 746 1128 | tcenergy@mhbcpplan.com

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From: Melissa Terry <mterry@niagarafalls.ca>
Sent: Friday, October 13, 2023 12:03:13 PM
To: Melissa Terry <mterry@niagarafalls.ca>
Subject: [EXTERNAL] Notice of Commencement – City of Niagara Falls Master Servicing Plan and Wet Weather Management Strategy

Some people who received this message don't often get email from mterry@niagarafalls.ca. [Learn why this is important](#)

EXTERNAL EMAIL: PROCEED WITH CAUTION.

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Date: October 13, 2023

Re: Notice of Commencement – City of Niagara Falls Master Servicing Plan and Wet Weather Management Strategy

The City of Niagara Falls has initiated the Master Servicing Plan and Wet Weather Management Strategy project. Please find the attached Notice of Study Commencement and Fact Sheet which contain further details about this important study.

As part of the study's engagement program, you are currently included in the study contact list. Feedback from the community is important for this study. If you have any questions regarding this project or if you wish to provide an alternate contact person, please reach out to the City's Project Manager, Tara Gudgeon who's contact information is provided below:

Tara Gudgeon | Senior Manager Asset Management | City of Niagara Falls
4310 Queen Street | Niagara Falls, ON L2E 6X5 | 905-356-7521 ext 4398 | tgudgeon@niagarafalls.ca

Thank you,

Melissa Terry | Project Administrator | Asset Management | City of Niagara Falls

4310 Queen Street | Niagara Falls, ON L2E 6X5 | (905) 356-7521x4230 | Fax 289-296-0048 | mterry@niagarafalls.ca



niagarafalls.ca

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Kochanski, Alyssa

From: Lindsay Currie - GM BluePlan
Sent: Thursday, November 16, 2023 2:00 PM
To: Kristen Farrell - GM BluePlan
Subject: FW: MCM Comments: Notice of Commencement – City of Niagara Falls Master Servicing Plan and Wet Weather Management Strategy
Attachments: NF MSP Project Fact Sheet.pdf; NF MSP Notice of Study Commencement.pdf; 2023-11-16 MasterServicingPlan_MCM Comments FINAL.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Kristen – can you please file the MCM comments attached?

Lindsay Currie, M.Sc., P.Eng.
Infrastructure Management

GM BluePlan Engineering Limited
1266 South Service Rd, Unit C3-1 | Stoney Creek, ON | L8E 5R9
t: 905.643.6688 ext. 6244 | c: 647.226.9190
lindsay.currie@gmblueplan.ca | www.gmblueplan.ca



My work day may look different than yours. Please do not feel obligated to respond outside of your normal working hours.

From: Julien Bell - GM BluePlan <julien.bell@gmblueplan.ca>
Sent: Thursday, November 16, 2023 1:45 PM
To: Lindsay Currie - GM BluePlan <Lindsay.Currie@gmblueplan.ca>
Subject: FW: MCM Comments: Notice of Commencement – City of Niagara Falls Master Servicing Plan and Wet Weather Management Strategy

Julien Bell, P.Eng.
Infrastructure Planning, Partner

GM BluePlan Engineering Limited
330 Trillium Drive, Unit D | Kitchener ON N2E 3J2
t: 519.748.1440 ext. 4264 | c: 416.254.6247
julien.bell@gmblueplan.ca | www.gmblueplan.ca



From: Barboza, Karla (She/Her) (MCM) <Karla.Barboza@ontario.ca>
Sent: Thursday, November 16, 2023 1:41 PM
To: tgudgeon@niagarafalls.ca

Cc: Melissa Terry <mterry@niagarafalls.ca>; Julien Bell - GM BluePlan <julien.bell@gmblueplan.ca>

Subject: MCM Comments: Notice of Commencement – City of Niagara Falls Master Servicing Plan and Wet Weather Management Strategy

Hi Tara,

Thanks for sending the Notice of Commencement for the above-mentioned project to the Ministry of Citizenship and Multiculturalism (MCM).

Please find attached MCM's initial comments on this project. Let me know if you have any questions.

Thanks again,
Karla

Karla Barboza, (She/Her) RPP, MCIP, CAHP

Team Lead, Heritage | Heritage Planning Unit | **Ministry of Citizenship and Multiculturalism** | 416-660-1027 | karla.barboza@ontario.ca

From: Melissa Terry <mterry@niagarafalls.ca>

Sent: October 13, 2023 12:03 PM

To: Melissa Terry <mterry@niagarafalls.ca>

Subject: Notice of Commencement – City of Niagara Falls Master Servicing Plan and Wet Weather Management Strategy

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Date: October 13, 2023

Re: Notice of Commencement – City of Niagara Falls Master Servicing Plan and Wet Weather Management Strategy

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Tara Gudgeon | Senior Manager Asset Management | City of Niagara Falls

4310 Queen Street | Niagara Falls, ON L2E 6X5 | 905-356-7521 ext 4398 | tgudgeon@niagarafalls.ca

Thank you,

Melissa Terry | Project Administrator | Asset Management | City of Niagara Falls

4310 Queen Street | Niagara Falls, ON L2E 6X5 | (905) 356-7521x4230 | Fax 289-296-0048 | mterry@niagarafalls.ca



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November 27, 2023

Re: Master Servicing Plan and Wet Weather Management Strategy

Attention:
Tara Gudgeon
City Project Manager
City of Niagara Falls

Thank you for sending us notification regarding (Master Servicing Plan and Wet Weather Management Strategy). In our preliminary assessment, we have confirmed that Hydro One has existing high voltage Transmission facilities within your study area. At this time we do not have sufficient information to comment on the potential resulting impacts that your project may have on our infrastructure. As such, we must stay informed as more information becomes available so that we can advise if any of the alternative solutions present actual conflicts with our assets, and if so; what resulting measures and costs could be incurred by the proponent. Note that this response does not constitute approval for your plans and is being sent to you as a courtesy to inform you that we must continue to be consulted on your project.

In addition to the existing infrastructure mentioned above, the applicable transmission corridor may have provisions for future lines or already contain secondary land uses (e.g., pipelines, watermains, parking). Please take this into consideration in your planning.

Also, we would like to bring to your attention that should (Master Servicing Plan and Wet Weather Management Strategy) result in a Hydro One station expansion or transmission line replacement and/or relocation, an Environmental Assessment (EA) will be required as described under the Class Environmental Assessment for Minor Transmission Facilities (Hydro One, 2016). This EA process would require a minimum of 6 months for a Class EA Screening Process (or up to 18 months if a Full Class EA were to be required) to be completed. Associated costs will be allocated and recovered from proponents in accordance with the Transmission System Code. If triggered, Hydro One will rely on studies completed as part of the EA you are current undertaking.

Consulting with Hydro One on such matters during your project's EA process is critical to avoiding conflicts where possible or, where not possible, to streamlining processes (e.g., ensuring study coverage of expansion/relocation areas within the current EA). Once in receipt of more specific project information regarding the potential for conflicts (e.g., siting, routing), Hydro One will be in a better position to communicate objections or not objections to alternatives proposed.

If possible at this stage, please formally confirm that Hydro One infrastructure and associated rights-of-way will be completely avoided, or if not possible, allocate appropriate lead-time in your project schedule to collaboratively work through potential conflicts with Hydro One, which ultimately could result in timelines identified above.

In planning, note that developments should not reduce line clearances or limit access to our infrastructure at any time. Any construction activities must maintain the electrical clearance from the transmission line conductors as specified in the Ontario Health and Safety Act for the respective line voltage.

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

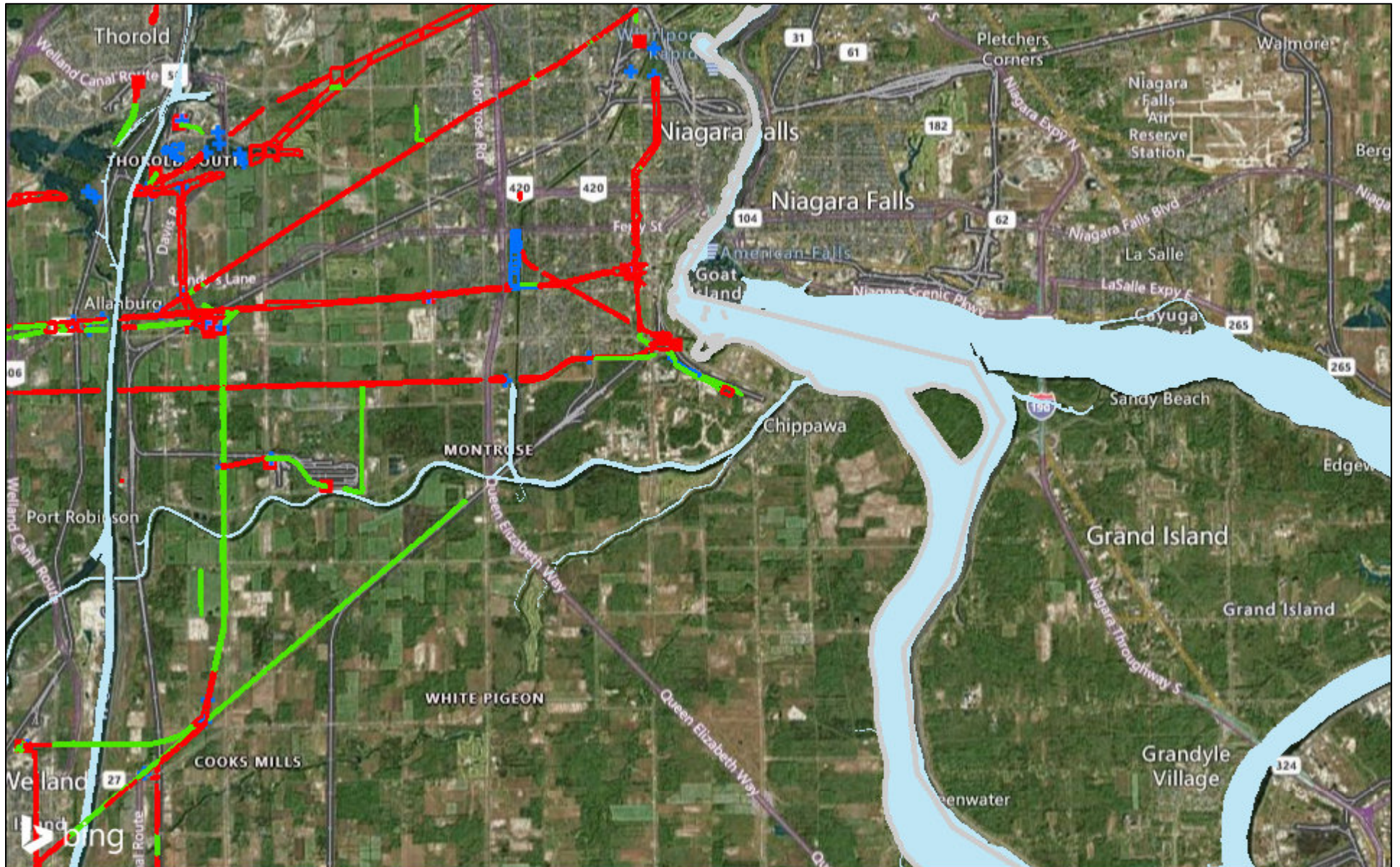
Please note that the proponent will be held responsible for all costs associated with modifications or relocations of Hydro One infrastructure that result from your project, as well as any added costs that may be incurred due to increased efforts to maintain said infrastructure.

We reiterate that this message does not constitute any form of approval for your project. Hydro One must be consulted during all stages of your project. Please ensure that all future communications about this and future project(s) are sent to us electronically to secondarylanduse@hydroone.com

Sent on behalf of,

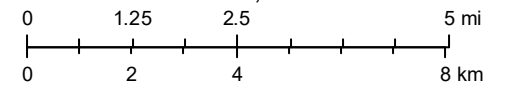
***Secondary Land Use
Asset Optimization
Strategy & Integrated Planning
Hydro One Networks Inc.***

Landscape PDF



October 16, 2023

1:144,448



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Appendix H Notice of Master Plan



Notice of Master Plan

Municipal Class Environmental Assessment For:

2025 Master Servicing Plan and Wet Weather Management Strategy

About the Study

The City of Niagara Falls has completed the Master Servicing Plan and Wet Weather Management Strategy project. This project reviewed ongoing planning, management and operations of the City's water, wastewater, and stormwater infrastructure.

As part of this study, an evaluation of the City's existing water, wastewater, and stormwater infrastructure was completed to establish short and long-term vision, strategies, and policies to support the management and enhancement of water, wastewater, and stormwater infrastructure. The preferred strategies consist of system-wide and local initiatives, area specific solutions and facility upgrades to address the City's existing system constraints and opportunities and to support long-term growth.

What is the process?

The Study was completed in accordance with the requirements of the Municipal Engineers Association (MEA) Class Environmental Assessment (EA) process for Master Planning. The Master Servicing Plan and Wet Weather Management Strategy followed Approach #1 of the master planning process which involved preparing a Master Plan Report at the conclusion of Phase 2 of the Class EA process. Additional investigations will be carried out at a later date and published to meet Schedule B or C project Class EA requirements or approvals through the Planning Act as described in the report.

How can I participate in this Study?

The City invites residents, agencies, and interested stakeholders to participate in this study. You are invited to review the final Master Servicing Plan and Wet Weather Management Strategy Report. An electronic copy of the report, which documents all phases of the study process will be made available for public review on the project website starting on September 5, 2026, for 30 days.

You can access the electronic copy of the report using the link below

[Letstalk.niagarafalls.ca/master-servicing-plan](http://letstalk.niagarafalls.ca/master-servicing-plan)

If you have questions and or comments, please reach out to a member of the project team listed below:

Erik Nickel
**General Manager of Municipal Works/
City Engineer**
City of Niagara Falls
4310 Queen Street
Niagara Falls, ON L2E 6X5
905-356-7521 ext. 4219
enickel@niagarafalls.ca

Mark Zamojc, P.Eng.
Consultant Project Manager
GEI Consultants Canada Ltd.
1266 South Service Road
Unit C31
Stoney Creek, ON L8E 5R9
416-703-0667
mzamojc@geiconsultants.com

If you have concerns related to Indigenous treaty rights which cannot be resolved, you may send your Section 16 Order request to the MECP and Director of the Environmental Assessment Branch as the addresses listed below. A copy of the request should also be sent to the Project Team. All requests must be received by the Project Team within the public review period by October 6, 2026. If you require accommodations to provide comments and/or feedback, please contact the Project Manager.

Hon. Andrea Khanjin, Minister
Ministry of the Environment,
Conservation and Parks
777 Bay Street, 5th Floor, Toronto, ON,
M7A 2J3
Minister.MECP@ontario.ca

**Director, Environmental Assessment
Branch**
Ministry of the Environment,
Conservation and Parks
135 St. Clair Ave. W., 1st Floor, Toronto,
ON, M4V 1P5
EABDirector@ontario.ca

If there are no outstanding concerns after the end of the public review period, the study will be considered to have met the requirements of the Municipal Class EA.

With the exception of personal information, all comments will become part of the public record of the study. The study is being conducted according to the requirements of the Municipal Class Environmental Assessment, which is a planning process approved under Ontario's Environmental Assessment Act.

This notice was first issued on September 5, 2026.