

City of Niagara Falls

Master Servicing Plan and Wet Weather Management Strategy Volume 1: Executive Summary

Niagara Falls, Ontario

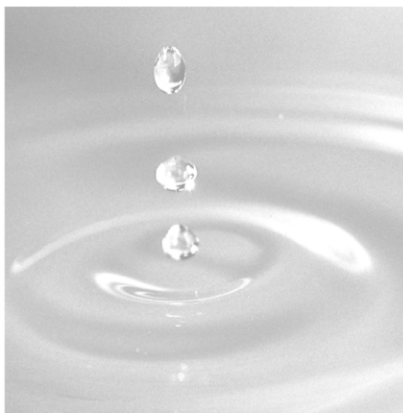
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Standard Limitations and Disclaimer

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Certification

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1. Introduction

1.1. Background

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 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

The key objectives of the 2025 MSP-WWMS are 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 stakeholders 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.

1.3. Components of the Master Servicing Plan

The MSP-WWMS is comprised of three (3) key components:

- **Water:** focuses on the delivery of safe, clean drinking water to homes and businesses within the urban areas.
- **Wastewater:** addresses the collection and treatment of wastewater from the urban areas before returning the treated water to the environment.
- **Stormwater:** concentrates on managing rainfall and surface runoff within urban areas through collection, conveyance, and treatment system.

Recognizing that the needs of the communities are changing, the MSP-WWMS brings together these systems in a coordinated way that allows the City to evolve and support a dynamic and resilient future.

1.4. Vision Statement and Considerations

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 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 MSP-WWMS includes three focused vision statements specific to the study components:

The Water vision serves:

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

The Wastewater vision serves:

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

The Stormwater vision serves:

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

1.5. Problem and Opportunity Statement

The problem and opportunity statement define 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.

1.6. Study Area

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 overall study area with growth plans can be seen in **Figure 1-1**.

2. Planning Context

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. 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 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.”

A master plan must at least satisfy the requirements of Phases 1 and 2 of the Class EA process and incorporate 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 on 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.

2.2. Consultation and Engagement

Public and agency consultation are integral to the Class EA planning process to present information to stakeholders and obtain input and feedback at key stages of the study process. A communication and consultation plan was developed to ensure there were ample opportunities to proactively engage with the public, regulatory agencies, regional and municipal councillors, City staff, Indigenous groups, and other stakeholders. A contact list was regularly maintained throughout the study for all interested parties.

A Notice of Commencement was mailed/emailed to stakeholders on the contact list as well as posted on the City website and advertised in the Niagara Falls Review on August 6, 2023 and August 11, 2023. The same methods were used to advertise Public Information Centre (PIC) #1 and #2, held December 14, 2023 and December 12, 2024, respectively, at the MacBain Community Centre in the City of Niagara Falls. These PICs provided opportunities to present the project information on display 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. Similarly, the Notice of Completion was published in 2025, and the Project File Report was placed on the public record for the required 30-day review period.

2.3. Population and Employment Planning Forecasts

The development of the MSP-WWMS has been guided by a comprehensive planning framework that aligns with municipal, regional, provincial, and federal objectives to support sustainable growth, environmental protection, and long-term service delivery. Population growth projections were developed based on review of numerous City planning documents as well as workshops with City staff as summarized in **Table 2-1**.

Table 2-1. City 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

The Region produces high-level growth projections using Traffic Assessment Zones (TAZs) that cover large geographical blocks, appropriate for traffic analysis, but less suitable for water and wastewater infrastructure analysis which requires a more granular level of detail. A portion of the Region’s TAZ 2051 estimates were less than the City’s, thus the higher values were used to provide more conservative 2051 projections. This discrepancy is anticipated to be reconciled in the Region’s on-going 2026 Master Servicing Plan Update.

The 2051 projections account for the City’s unit data found within existing and active secondary plans, corridor intensification, approved residential development applications, and an assumption of 5% infill through accessory dwelling units. For consistency with the City’s Development Charge Background Study (2024), population projection calculations were based on the population per unit density criteria shown in **Table 2-2**.

Table 2-2. Population Per Unit Criteria

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

To determine buildout growth, the TAZ projections were spatially allocated to property parcels within the water and wastewater service areas for model loading distribution. The buildout considered 10% infill of accessory dwelling units in existing neighbourhoods.

3. Master Servicing Plan Strategy Development

Identifying and evaluating strategy alternatives is a core element of the master planning process. The development of strategies allows for a comprehensive review of potential solutions, supporting informed decision-making, and ensuring the recommendations are both well-founded and defensible.

The MSP-WWMS builds on the recommendations of numerous previous Regional and municipal servicing plans and other studies and used the population projections to develop strategies for infrastructure requirements to accommodate future growth to 2051 and buildout. Along with updated analysis tools, including water, wastewater and stormwater models, these inputs formed a comprehensive and integrated base for understanding and planning infrastructure in the City. This was followed by identifying and evaluating strategy alternatives to allow for a comprehensive and transparent review of potential solutions, supporting informed decision-making and ensuring the recommended strategies are well-founded. Each system was assessed independently, considering the full range of opportunities and considerations.

The preferred water, wastewater, and stormwater strategies identified through this process will form the foundation of the City's long-term capital and implementation programs to 2051. These programs provide a coordinated framework to guide infrastructure investments, ensure alignment with growth projections, and support sustainable, resilient, and adaptable systems through to 2051 and beyond.

4. Preferred Water Servicing Strategy

4.1. Preferred Servicing Strategy

The Preferred Water Servicing Strategy includes a combination of system-wide recommendations, area-specific solutions, and facility upgrades to collectively address the City's existing and future water needs. This strategy was developed in the context of identifying servicing solutions to address both system-wide and local opportunities and constraints. Key considerations that informed the preferred strategy include:

4.1.1. Regional Strategy

Capital projects identified in the Region's 2021 Master Servicing Plan Update (MSPU) were carried forward into this MSP-WWMS model update and future system analysis. It can be noted that the ongoing Environmental Assessment (EA) for the new Niagara Falls Elevated Tank (W-S-004) has refined the location of the elevated tank (ET); as such, this has been carried forward into future scenarios.

4.1.2. System Wide and Pressure Zone Servicing

The City's water system currently operates under a single pressure zone of 250 m. The water system hydraulic grade line (HGL) is governed by the high elevation at the intersection of Lundy's Lane and Drummond Road near the existing Lundy's Lane ET. Due to the high pressure experienced at areas of low elevation, typically at system extremities, there is opportunity to explore alternative pressure zone strategies to maintain optimize HGLs within a smaller pressure band. Following evaluation and discussion with City staff during technical workshops, primarily due to high associated costs and operational complexity, the City will maintain the existing pressure zone configuration until future needs require adjustment.

4.1.3. Linear Distribution System Upgrades

In addition to system wide and pressure zone servicing strategies, local servicing needs target fire flow deficiencies within the local network which can be addressed through the City's renewal program or state of good repair (SOGR) program. As growth to 2051 and buildout is added to the City's existing demands, growth impacts have to potential to further impact existing fire flow deficiencies and can be partially funded through development charges (DC).

To service growth areas, both greenfield and infill/intensification areas, watermain upgrades or construction of new watermains are necessary. These new watermains include trunk looping to service new greenfield growth areas as well as providing additional local system looping to improve local resiliency. These projects are typically funded through DC.

4.2. Capital Program for the Preferred Servicing Strategy

A detailed capital program has been developed through a detailed process of infrastructure sizing and cost estimation to support long-term servicing needs. The recommended projects were sized to meet intensification growth to full buildout requirements, ensuring that existing and proposed infrastructure can accommodate future demand within the City's urban boundary.

The capital program map for the Preferred Water Servicing Strategy categorized by prioritization is shown in **Figure 4-1**. It illustrates the general locations and extents of the projects that make up the preferred strategy, which will be further refined through further study and/or detailed design.

Table 4-1 presents the summary of the Water Capital Program timeline with the total length and costs, and **Table 4-2** presents the summary of the Water Capital Program prioritization categories with the total length and costs. The capital program was categorized by the type of upgrade to maintain consistency with the City's DC program. All recommended projects are located within existing road rights-of-way or within greenfield growth areas, which are subsequently Schedule A or A+ Environmental Assessment type projects.

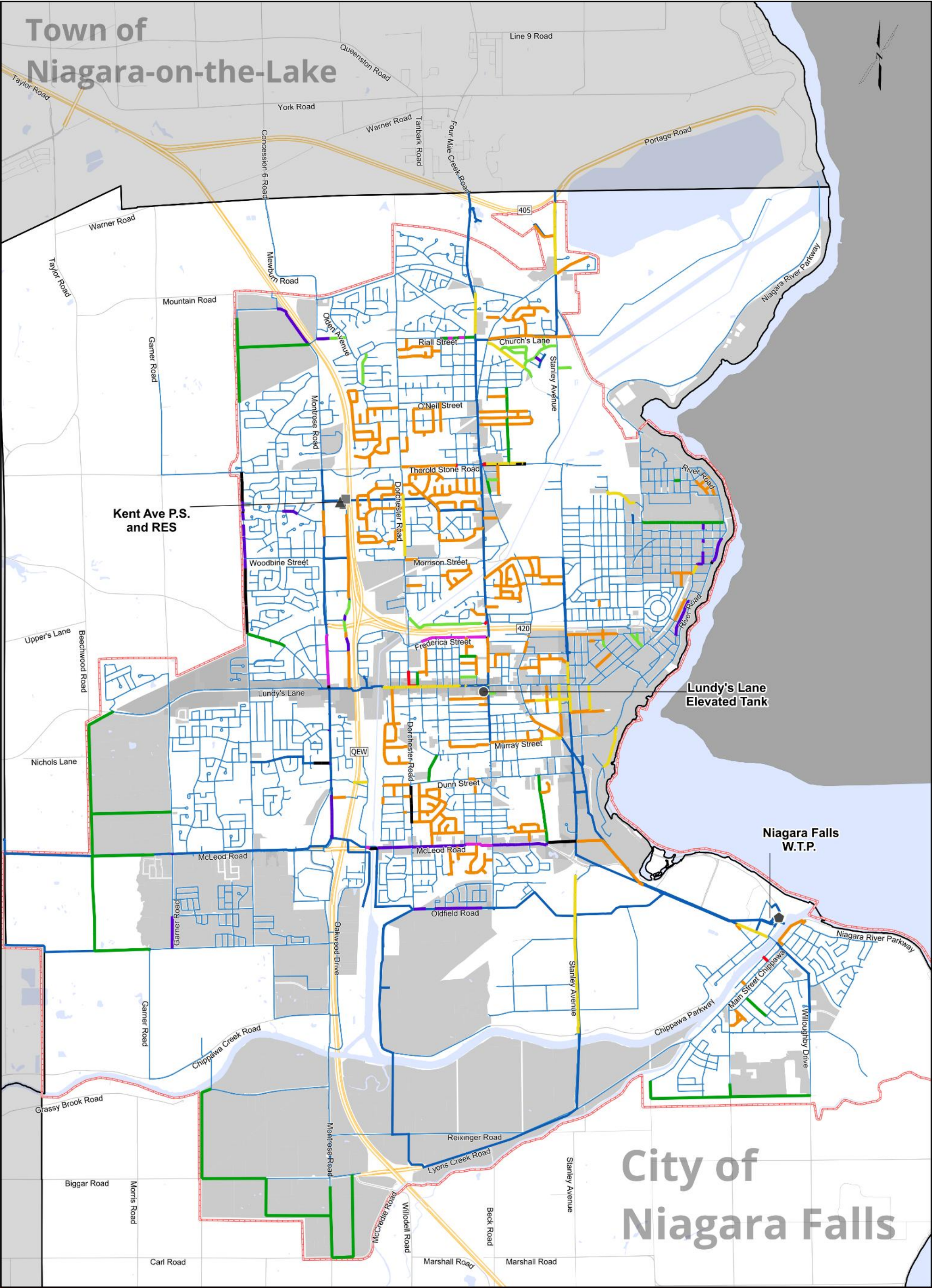
Table 4-1. Water Capital Program Timeline Summary

Project Timeline	Length (m)	Total Cost	DC Cost	OB Cost	City Cost
0 - 2 years	8,672	\$31,927,000	\$11,395,650	\$3,975,900	\$16,555,450
3 - 5 years	10,355	\$29,821,000	\$11,199,550	\$1,126,750	\$17,494,700
5 - 10 years	29,219	\$88,796,000	\$49,935,000	\$6,752,200	\$32,108,800
>10 years	56,431	\$167,212,000	\$29,047,900	\$8,522,150	\$129,641,950
TOTAL	104,677	\$317,756,000	\$101,578,100	\$20,377,000	\$195,800,900

Table 4-2. Water Capital Program Prioritization Summary

Prioritization Category	Length (m)	Total Cost	DC Cost	OB Cost	City Cost
Type 1: SOGR <100 mm CI	379	\$1,742,000	\$651,600	-	\$1,090,400
Type 2A: SOGR 150-200 mm CI - FF Deficiency <50% Target	12,938	\$39,075,000	\$5,715,650	-	\$33,359,350
Type 2B: SOGR 150-200 mm CI - FF Deficiency 50-75% Target	9,623	\$28,422,000	\$4,241,050	\$94,400	\$24,086,550
Type 2C: SOGR 150-200 mm CI - FF Deficiency 75-100% Target	12,074	\$36,346,000	\$5,243,000	-	\$31,103,000
Type 2D: SOGR 150-200 mm CI - No FF Deficiencies	20,419	\$61,332,000	\$10,619,750	-	\$50,712,250
Type 3: SOGR Upsize >250 mm	10,274	\$28,910,000	\$7,623,000	\$233,200	\$21,053,800
Type 4: SOGR 150-200 mm DI	4,779	\$15,645,000	\$3,053,400	-	\$12,591,600
Type 5: Resiliency CI Replace	3,059	\$14,638,000	\$5,848,650	\$4,286,350	\$4,503,000
Type 6: Resiliency DI Replace	2,112	\$6,018,000	\$1,190,600	\$2,186,400	\$2,641,000

Prioritization Category	Length (m)	Total Cost	DC Cost	OB Cost	City Cost
Type 7: Remaining Projects	7,480	\$26,766,000	\$11,289,300	\$6,959,300	\$8,517,400
DC Projects	21,542	\$58,862,000	\$46,102,100	\$6,617,350	\$6,142,550
TOTAL	104,677	\$317,756,000	\$101,578,100	\$20,377,000	\$195,800,900



CP - Prioritization Level

- 1
- 2A, 2B, 2C, 2D
- 3
- 4
- 5
- 6
- 7
- DC

Watermains

- Distribution (< 400mm)
- Transmission (>= 400mm)

Regional Water Facility

- Pumping Station and Reservoir
- Elevated Tank
- Water Treatment Plant (WTP)

General Feature

- Urban Area Boundary
- Municipal Boundary
- Waterbody, Watercourse
- Growth Plan Areas

Reference(s)

1. Projection EPSG:26917
2. Base Data: City of Niagara Falls, 2023

1 2 km

Figure 4-1
Water Capital Program Infrastructure Upgrades

Project Name:
Master Servicing Plan and Wet Weather
Management Strategy

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



5. Preferred Wastewater Servicing Strategy

5.1. Preferred Servicing Strategy

The Preferred Wastewater Servicing Strategy includes a combination of system-wide initiatives and focus area solutions designed to address the City's existing system constraints and support long-term growth. The strategy focuses on accommodating growth within the existing wastewater system to form an overall wastewater servicing and wet weather management strategy for the City. Key considerations that informed the preferred strategy include:-

5.1.1. Regional Strategy

Capital projects identified in the Region's 2021 MSPU were carried forward into this MSP-WWMS model update and future system analysis. It can be noted that the proposed South Niagara Falls Wastewater Treatment Plant (WWTP) Schedule 'C' Class EA study was completed in 2022 and is currently in the detailed design stage with anticipation to complete construction in 2029; as such, this has been carried forward into future scenarios. Additionally, the City's growth projections were generally higher than the growth used in the 2021 Region MSPU. As such, the proposed Sewage Pumping Station (SPS) upgrade capacities were updated based on the City's growth projection flow needs following the Region's SPS assessment framework.

5.1.2. System Wide I&I Reduction

Flow monitoring analysis showed that the existing wastewater system experiences significant wet weather flow, with rainfall-derived inflow and infiltration (RDII) exceeding the Region allowance. Unwanted inflow and infiltration (I&I) can enter the system from a variety of sources, and while some I&I is unavoidable in aging systems, excessive I&I reduces wastewater system capacity, leading to higher storage, pumping, and treatment demands, increased flooding risks, and costly infrastructure upgrades.

Addressing I&I is challenging due to significant capital needs, long timelines, and the complexity of locating sources especially on private property. However, I&I reduction is a critical, cost-effective strategy for sustainable wet weather management, improving system resiliency, deferring upgrades, reducing combined sewer overflows (CSOs), and supporting regulatory compliance.

I&I reduction is most effective when implemented through a tactical, data-driven program that prioritizes high-risk areas and avoids redundant investigations. A typical workflow includes short-term flow monitoring and analysis, targeted field investigations, removal of identified sources, and post-remediation monitoring to inform future decision-making.

The system-wide I&I reduction program is a key component of the MSP-WWMS for the Niagara Falls wastewater system. Successful implementation of I&I program will require collaboration with the Region and neighbouring municipalities, as well as potentially leveraging funding opportunities such as the Region's Combined Sewer Overflow (CSO) Control Costing Sharing Program.

5.1.3. Sewer Separation Strategy

The City's wastewater system is predominantly separated, however approximately 10% remains as combined sewers which collect and convey both storm and sanitary flow in the same pipe. Combined sewers are part of the legacy sewer infrastructure that contributes to I&I and associated critical issues including reducing available capacity in the downstream system, sewer surcharging, basement flooding, and overflow events during wet weather conditions.

Sewer separation is a critical step towards mitigating these risks but faces challenges such as high capital costs, funding limitations, network complexity, logistical challenges, environmental constraints, and long implementation timelines. The MSP-WWMS introduces a strategic, risk-based Sewer Separation Strategy to prioritize high-risk catchments, align investments with other City initiatives, and meet MECP requirements while enhancing system resiliency under climate change and future growth needs.

5.1.4. Linear Distribution System Upgrades

In cases where I&I reduction is infeasible, strategic sewer upgrades provided an alternative solution for addressing existing deficiencies. Growth impacts have the potential to further increase the risk of pipe surcharging and basement flooding in the existing system and can be partially funded through DC.

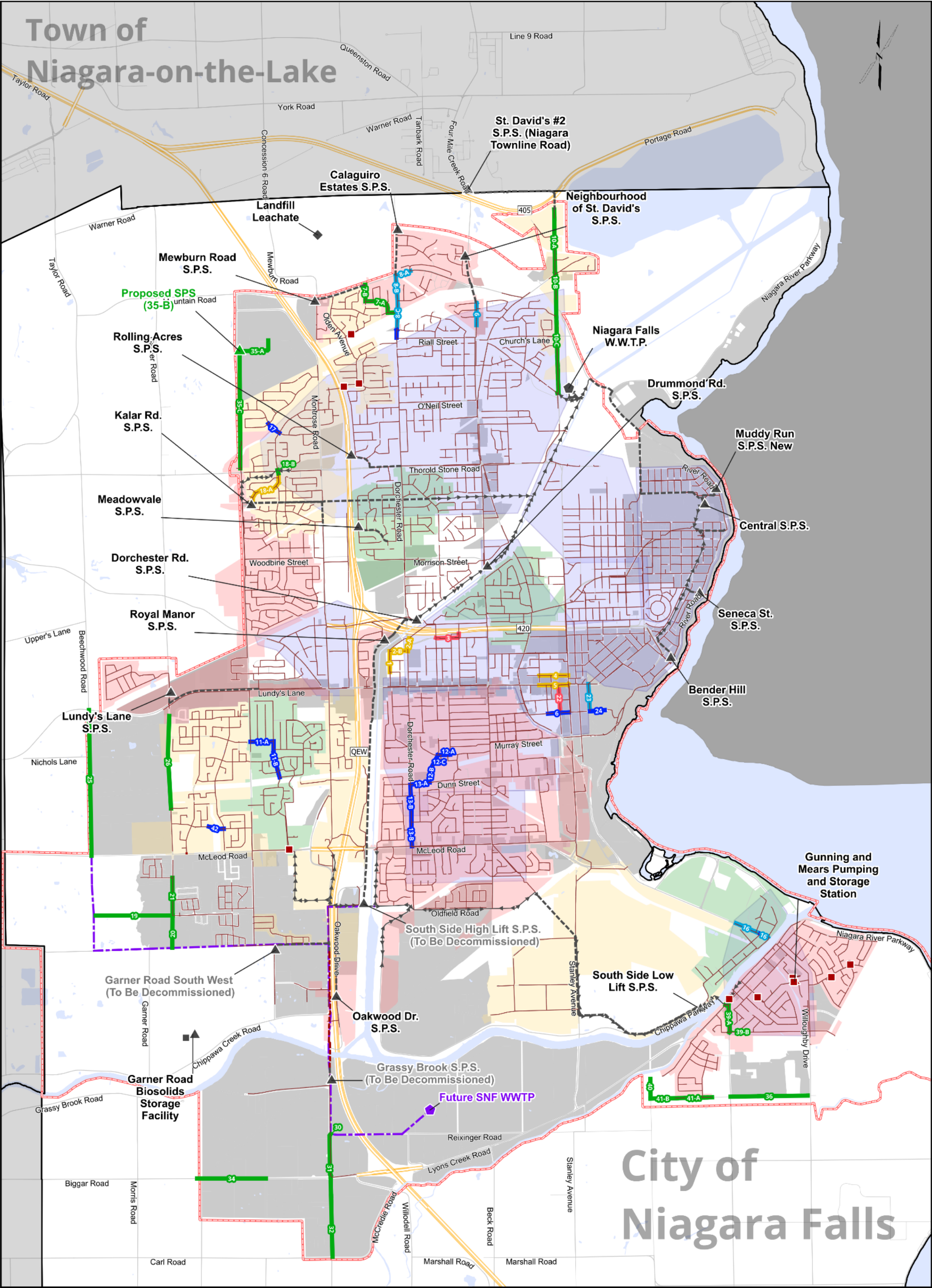
To service growth areas, both greenfield and infill/intensification areas, sewer upgrades or construction of new sewers are necessary. These sewers include new extensions to service new greenfield growth areas, and sewer upgrades in existing areas to provide capacity for existing and growth flows. These projects are typically funded through DC.

5.2. Capital Program for the Preferred Servicing Strategy

A detailed capital program has been developed through a detailed process of infrastructure sizing with consideration for I&I reduction potential and cost estimation to support long-term servicing needs. The Wastewater Capital Program is presented in three parts:

1. Linear upgrades
2. I&I Reduction
3. Sewer Separation Strategy

The capital program map for the Preferred Wastewater Servicing Strategy is shown in **Figure 5-1**. It illustrates the general locations and extents of the linear infrastructure upgrades, I&I reduction catchments, and sewer separation catchments that make up the overall preferred strategy, which will be further refined through further study and/or detailed design.



Regional Sanitary Facility

- Wastewater Treatment Plant (WWTP)
- Sanitary Pumping Station (SPS)
- Biosolids Storage
- Lagoon
- Leachate Pumping Station
- Future SNF WWTP

Municipal Sanitary Facility

- Sanitary Pumping Station
- Sanitary Storage Tanks

Forcemain

- Regional
- Municipal (Niagara Falls)

Gravity Main

- Regional
- Municipal (Niagara Falls)
- Other Municipal (NOTL)
- Future Trunk Sewers

General Feature

- Urban Area Boundary
- Municipal Boundary
- Waterbody, Watercourse

CP - I&I Reduction Catchments

- High
- Medium
- Low
- Sewer Separation Areas

CP - Linear Projects

- Existing and Short-Term Growth Needs
- Existing and Medium-Term Growth Needs
- Existing Risk: High
- Existing Risk: Exceeds Level of Service
- Supports/Triggered By Growth
- Proposed SPS

Reference(s)

- Projection EPSG:26917
- Base Data: City of Niagara Falls, 2023

1 2 km

Figure 5-1
Wastewater Capital Program Infrastructure Upgrades and I&I Reduction Program

Project Name:
Master Servicing Plan and Wet Weather Management Strategy

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

GEI

Last Updated: March 2026
Document ID: 2402014-001

Table 5-1 presents the summary of the Wastewater Capital Program timeline with total lengths and costs. **Table 5-2** presents the summary of the Wastewater Capital Program linear upgrade prioritization categories with the total length and costs. **Table 5-3** presents the summary of the Wastewater Capital Program I&I reduction categorized by timeline with total length and costs. Most recommended sewer upgrade projects and works associated with the I&I reduction program are located within existing road rights-of-way or within greenfield growth areas, which are subsequently Schedule A or A+ Environmental Assessment type projects.

Table 5-1. Wastewater Capital Program Timeline Summary – Linear Upgrades

Project Timeline	Length (m)	Total Cost	DC Cost	OB Cost	City Cost
0 - 2 years	6,619	\$27,396,000	\$21,843,200	\$1,946,500	\$3,606,300
3 - 5 years	5,727	\$35,790,000	\$30,105,000	\$2,713,200	\$2,971,800
5 - 10 years	6,393	\$26,368,000	\$21,165,500	\$1,377,800	\$3,824,700
>10 years	4,787	\$19,678,000	\$11,525,600	-	\$8,152,400
TOTAL	23,526	\$109,232,000	\$84,639,300	\$6,037,500	\$18,555,200

Table 5-2. Wastewater Capital Program Prioritization Summary – Linear Upgrades

Prioritization Category	DC Share	Length (m)	Total Cost	DC Cost	OB Cost	City Cost
Addresses Existing Needs	10%	5,319	\$16,739,000	\$7,035,900	-	\$9,703,100
Addresses Existing Needs and Supports Growth Needs	50%	2,021	\$5,764,000	\$3,356,800	-	\$2,407,200
Addresses Existing Needs and Supports Growth Needs	75%	751	\$1,878,000	\$1,408,500	-	\$469,500
Triggered by Growth	90%	4,637	\$17,566,000	\$13,441,200	-	\$4,124,800
Supports New Growth Area (10% OB Share)	100%	10,798	\$67,285,000	\$59,396,900	\$6,037,500	\$1,850,600
TOTAL		23,526	\$109,232,000	\$84,639,300	\$6,037,500	\$18,555,200

Table 5-3. Wastewater Capital Program Summary – I&I Reduction

Project Timeline	Length (m)	Total Flow Monitoring Cost (Phase 1)	Total Sewer Investigation Cost (Phase 2)	Total Rehab Cost (Phase 3)	Total Cost + Provisional, Contingency, Studies, and Tax	Region Cost (Assuming 25% Share)	DC Cost	City Cost
0 - 10 Years	140,230	\$390,000	\$1,087,724	\$30,509,493	\$48,352,000	\$12,088,000	\$27,198,000	\$9,066,000
10+ Years	199,274	\$450,000	\$556,632	\$15,072,599	\$24,311,000	\$6,077,750	\$12,065,438	\$6,167,813
TOTAL	339,504	\$840,000	\$1,644,356	\$45,582,092	\$72,663,000	\$18,165,750	\$39,263,438	\$15,233,813

Table 5-4 presents the summary of the Wastewater Capital Program Sewer Separation Strategy prioritization with the total length and costs. Projects recommended under the Sewer Separation Strategy may require additional Environmental Assessment studies.

Table 5-4. Wastewater Capital Program Prioritization Summary – Sewer Separation Strategy

Catchment #	Catchment Name	% Sewers At Risk of Flooding	% Sewer Surcharging	Peak Growth Flow	Cost to Install New Sewer	Average Ranking Score	Overall Ranking Score	Priority	Cost
4	Falls Ave	1	1	3	3	0.45	1	High	\$9,400,000
7	Frederica St	3	2	4	4	0.8	2	High	\$14,839,000
8	Belmont Ave	2	4	7	6	1.075	3	High	\$20,608,000
6	Main St	6	6	2	9	1.2	4	Medium	\$45,121,000
3	Bridge St.	7	5	1	7	1.275	5	High	\$59,288,000
9	South Niagara Falls	5	3	8	2	1.3	6	Medium	\$16,956,000
2	Stanley Ave	4	8	6	5	1.375	7	Medium	\$16,956,000
1	Thorold Stone Rd	8	7	5	8	1.725	8	Low	\$53,699,000
5	Portage Rd	9	9	9	1	2.05	9	Low	\$3,810,000
TOTAL									\$227,633,000

6. Preferred Stormwater Servicing Strategy

6.1. Preferred Servicing Strategy

The Preferred Stormwater Servicing Strategy consists of both system-wide and local initiatives to address the City's existing system constraints and opportunities. This strategy focuses on supporting growth and identifying existing system deficiencies to form a comprehensive stormwater servicing strategy for the City. Key considerations that informed the preferred strategy include:-

6.1.1. Collection System Upgrades

Existing system deficiencies resulting in a risk of surface flooding were identified and linear upgrade projects have been recommended. Intensification growth is not anticipated to increase flows to the existing system, as developers are required to match post- to pre-development flows on-site in accordance with City stormwater policies. However, recommended projects addressing existing deficiencies along intensification corridors may also provide growth-related benefits and may be eligible for DC funding.

To service greenfield growth areas, new storm sewer mains and outlets are necessary. These projects will exclusively service growth and are expected to be 100% developer led.

6.1.2. Growth-Related Studies

Limitations in the quality of data used for model development constrain the level of confidence in recommendations. A key recommendation is to continue ongoing model updates as new data become available, and to update the Master Servicing Plan periodically with improved certainty.

6.1.3. Prioritization Strategy

Areas are prioritized based on growth needs, existing deficiencies, and established DC timelines to ensure the stormwater network is able to support planned growth and address current deficiencies. The prioritization strategy categorizes projects into existing needs and potentially growth needs in the short-term or medium-term, existing needs driven by DC or exceeds the level of service, and supporting new growth areas. In general, this prioritization can be overlaid with works proposed within each right-of-way to further optimize overall replacements and system improvements.

6.2. Capital Program for the Preferred Servicing Strategy

A detailed capital program has been developed through a detailed process of infrastructure sizing and cost estimation to support long-term servicing needs. The recommended projects were sized to meet growth to full buildout requirements, ensuring adequate future system capacity.

The capital program map for the Preferred Stormwater Servicing Strategy categorized by prioritization is shown in **Figure 6-1**. It illustrates the general locations and extents of the projects that make up the preferred strategy, which will be further refined through further study and/or detailed design.

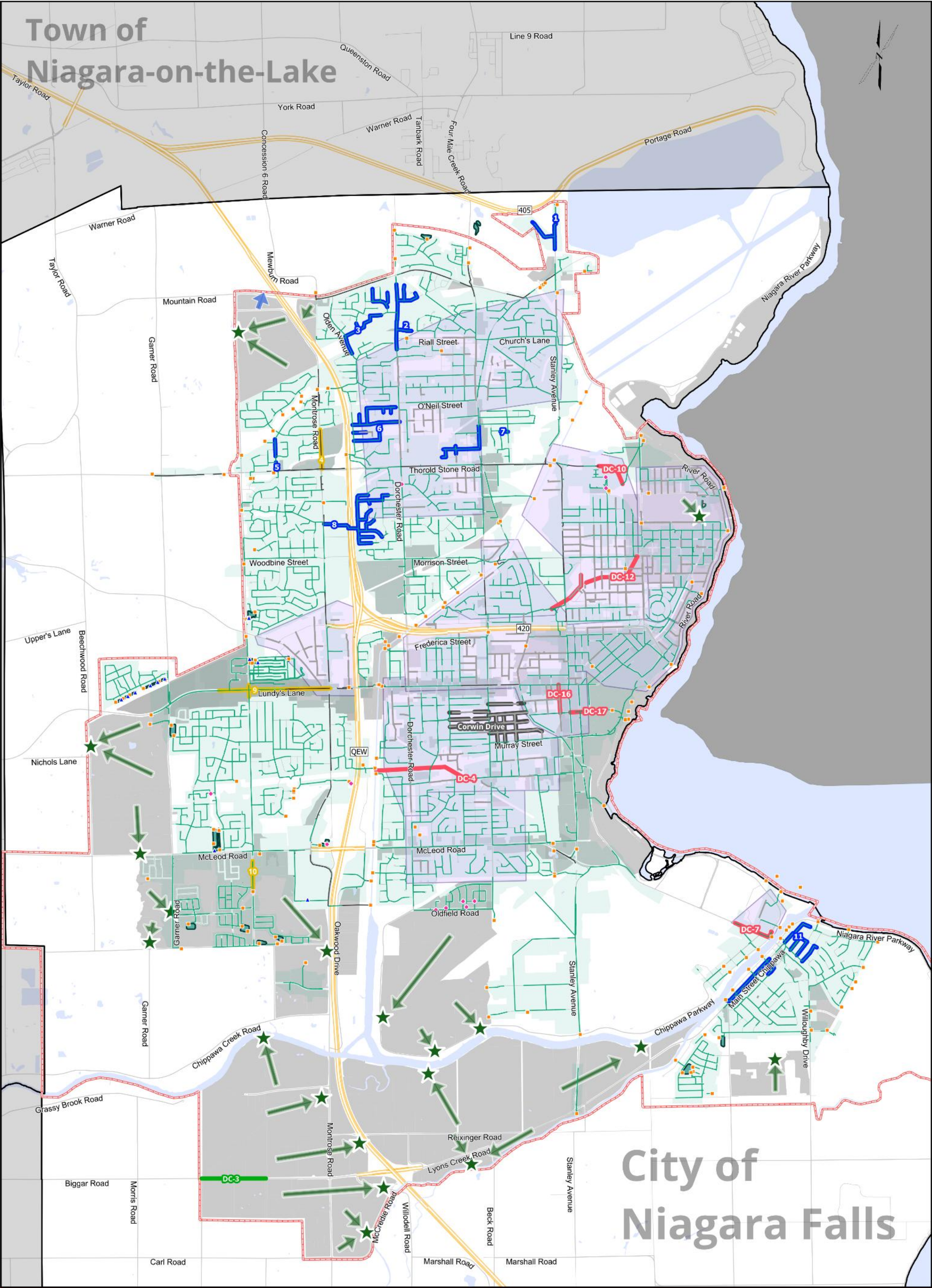
Table 6-1 presents the summary of the Stormwater Capital Program timeline with the total length and costs. **Table 6-2** presents the summary of the Stormwater Capital Program prioritization categories with the total length and costs. The capital program was categorized by the type of upgrade to maintain consistency with the City's DC program. All recommended projects are located within existing road rights-of-way or within greenfield growth areas, which are subsequently Schedule A or A+ Environmental Assessment type projects.

Table 6-1. Stormwater Capital Program Timeline Summary

Project Timeline	Length (m)	Total Cost	DC Cost	OB Cost	City Cost
0 - 2 years	2,290	\$17,299,650	\$3,981,600	-	\$13,318,050
3 - 5 years	0	-	-	-	-
5 - 10 years	7,360	\$61,810,950	\$5,572,350	\$80,000	\$56,158,600
>10 years	15,649	\$65,318,000	\$1,156,700	-	\$64,161,300
TOTAL	25,299	\$144,428,600	\$10,710,650	\$80,000	\$133,637,950

Table 6-2. Stormwater Capital Program Prioritization Summary

Prioritization Category	DC Share	Length (m)	Total Cost	DC Cost	OB Cost	City Cost
Addresses Existing Needs	0%	13,075	\$54,101,000	-	-	\$54,101,000
Addresses Existing Needs and Supports Growth Needs	10%	2,574	\$11,567,000	\$1,156,700	-	\$10,410,300
Addresses Existing Needs and Supports Growth Needs	20%	3,140	\$28,553,500	\$5,710,700	-	\$22,842,800
Addresses Existing Needs and Supports Growth Needs	50%	810	\$1,738,900	\$869,450	-	\$869,450
Addresses Existing Needs and Supports Growth Needs	100%	700	\$1,000,000	\$1,000,000	-	\$0
Triggered by Growth	20%	0	\$2,868,000	\$573,600	-	\$2,294,400
Triggered by Growth	100%	850	\$1,480,200	\$1,400,200	\$80,000	\$0
Completed EA	0%	4,150	\$43,120,000	-	-	\$43,120,000
TOTAL		25,299	\$144,428,600	\$10,710,650	\$80,000	\$133,637,950



Stormwater Facilities

▲

Inlet Control Device

◆

Oil and Grit Separator

■

Stormwater Outfall

■

Stormwater Pond

Future Infrastructure

➡

Greenfield Flow to Watercourse

➡

Greenfield Flow to Future Stormwater Pond

★

Future Stormwater Pond

CP - Linear Projects

—

Existing and Short-Term Growth Needs

—

Existing and Medium-Term Growth Needs

—

Existing Risk: Exceeds Level of Service

—

Supports/Triggered By Growth

—

Completed EA

—

Sewer Separation Area

Stormwater Main

—

Regional

—

Municipal

—

Combined Sewers

General Feature

—

Urban Area Boundary

—

Municipal Boundary

—

Waterbody, Watercourse

—

Stormwater Catchment

—

Growth Plans

Reference(s)

1. Projection EPSG:26917

2. Base Data: City of Niagara Falls, 2023

1

2 km

Figure 6-1

Stormwater Capital Program Infrastructure Projects

Project Name:

Master Servicing Plan and Wet Weather Management Strategy

Client Name:

City of Niagara Falls
(Ontario, Canada)

GEI

Geomatics Engineering Inc.

Canada

Last Updated: March 2026

Document ID: 2402014-001

7. Implementation

The MSP-WWMS is designed to support long-term growth and maintain reliable and efficient service delivery to 2051 and beyond buildout, which can be achieved through a detailed implementation plan for the water, wastewater, and stormwater systems. This plan will serve as a framework for ongoing monitoring and subsequent studies to ensure that infrastructure delivery responds to growth priorities, system conditions, and regulatory requirements.

The total cost of the program to support growth within the next 10 years is approximately \$150.5 million for water, \$89.6 million for wastewater linear upgrades, \$48.4 million for I&I reduction, and \$79.1 million for stormwater. It can be noted that the sewer separation strategy costing was estimated over an extended period of time that is not limited to be completed within 10 years as it primarily depends on the funding and staff capacity. This approach ensures timely implementation while optimizing resources and minimizing disruption. This program provides a high-level baseline estimate for the City's capital budget. These costs will be further developed and refined during implementation as detailed information becomes available.

Key components of the implementation plan include, but not limited to:

- Capital program implementation plan with planning horizons and phasing plan for efficiency
- Monitoring and adaptive management to ensure successful delivery of recommended projects and alignment with evolving conditions and priorities
- Effective operation and maintenance practices to ensure the long-term reliability, safety and performance of the systems; these consist of:
 - Water: Sampling and flushing program, water meter replacement program, valve turning program, non-revenue water program, water rate study
 - Wastewater: Combined sewage overflow monitoring and reporting, household drainage survey
 - Stormwater: Pond inspection program, pond cleanouts
- Development review process to evaluate the system capacity during the planning and approval or new developments
- Model maintenance and updates based on the latest information such as updated hydrant testing, Regional operations flow data validation, flow monitoring data, as-built drawings, field surveys, etc.