

Town of Smooth Rock Falls

Asset Management Plan

Prepared in Accordance with
the Infrastructure for Jobs
and Prosperity Fund and
Ontario Regulation 588/17

June 30th, 2022



Executive Summary

The *Infrastructure for Jobs and Prosperity Act, 2015* (the “Act”) was proclaimed by the Province of Ontario on May 1, 2016 and, along with *Ontario Regulation 588/17: Asset Management Planning for Municipal Infrastructure* (O.Reg. 588/17), establishes the requirement for Ontario municipalities to adopt asset management plans for core infrastructure (roads, bridges, water and wastewater management) by July 1, 2022.

The Town of Smooth Rock Falls (the “Town”) operates and maintains core infrastructure with a historical cost of \$24.5 million and an estimated replacement cost of \$88 million.

While the Town’s core infrastructure is considered to be in a good condition on average, specific components of its core infrastructure are approaching or are at the end of their useful lives. However, the Town’s annual funding for maintenance and capital replacement of core infrastructure is not sufficient to meet its requirements, with the Town forecasted to require an estimated \$41.9 million for lifecycle maintenance activities for core infrastructure over the next ten years. As a result, maintenance and replacement requirements are necessarily deferred, resulting in an increasing infrastructure deficit, continued deterioration of its core infrastructure assets and the potential for reduced levels of service for residents and other users.

Asset management planning is an ongoing process that reflects the strategic asset management policy adopted by the Town and is coordinated with other activities undertaken by the Town, including but not limited to the development of annual service plans for core infrastructure, ongoing needs and conditions assessments undertaken by municipal departments and, arguably most significantly, the Town’s operating and capital budgeting processes. By providing an indication as to the condition, replacement cost, service levels and lifecycle requirements associated with the Town’s core infrastructure, the asset management plan informs other aspects of the Town’s operations, contributing towards a better understanding of the Town’s infrastructure and associated funding requirements so as to ensure the Town meets its service delivery expectations and commitments.

Town of Smooth Rock Falls

Introduction to the Asset Management Plan



Introduction to the Asset Management Plan

A. Background to the asset management plan

The *Infrastructure for Jobs and Prosperity Act, 2015* (the “Act”) was proclaimed by the Province of Ontario on May 1, 2016 and, along with *Ontario Regulation 588/17: Asset Management Planning for Municipal Infrastructure* (O.Reg. 588/17), establishes the requirement for Ontario municipalities to adopt asset management plans for core infrastructure (roads, bridges, water and wastewater management) by July 1, 2022, with asset management plans for remaining municipal assets adopted by July 1, 2024.

The Act and Regulation outline a variety of requirements intended to enhance asset management planning by municipalities, including the need for a strategic asset management policy, prescribed information required to be addressed in the asset management plans and future efforts to be undertaken by the Town with respect to updating and expanding the level of analysis and planning associated with asset management planning for the Town’s assets and related levels of service.

In keeping with these requirements, the Town adopted an amended strategic asset management policy in 2019 that supports the establishment of consistent standards and guidelines for management of the Town’s assets by applying sound technical, social, economic and environmental principles that consider present and future needs of users, and the service expected from the assets. This means leveraging the lowest total lifecycle cost of ownership with regard to the service levels that best meet the needs of the community while ensuring risks are appropriately managed

The Town’s asset management plan addresses the legislative requirements of the Act and provides support for future decision-making with respect to the Town’s investment in its infrastructure and associated levels of service. As required by the Act, the asset management plan includes the following components:

- A summary of the Town’s assets, including average age and estimated replacement cost;
- An assessment of asset condition;
- Community levels of service that provide a general description of the infrastructure in place and linkages to customers; and
- Technical levels of service, representing quantitative indicators that reflect asset condition or performance.

Introduction to the Asset Management Plan

B. Asset management planning defined

Asset management planning is the process of making the best possible decisions regarding the acquisition, operating, maintaining, renewing, replacing and disposing of infrastructure assets. The objective of an asset management plan is to maximize benefits, manage risk and provide satisfactory levels of service to the public in a sustainable manner. In order to be effective, an asset management plan needs to be based on a thorough understanding of the characteristics and condition of infrastructure assets, as well as the service levels expected from them. Recognizing that funding for infrastructure acquisition and maintenance is often limited, a key element of an asset management plan is the setting of strategic priorities to optimize decision-making as to when and how to proceed with investments. The ultimate success or failure of an asset management plan is dependent on the associated financing strategy, which will identify and secure the funds necessary for asset management activities and allow the Town to move from planning to execution.

C. Scope of the asset management plan

Consistent with the requirements of the Act, the asset management plan encompasses those components of the Town's infrastructure that are considered be core infrastructure assets, specifically:

- Roads
- Bridges
- Water
- Wastewater
- Stormwater management

For the purposes of developing the asset management plan, a ten year planning horizon was considered.

Introduction to the Asset Management Plan

D. Asset management planning objectives

In addition to meeting the legislative requirements under the Act, the asset management plan is intended to enhance the Town’s overall policy and planning framework for infrastructure management, while at the same time increasing its internal capacity (through people, information and processes) for effective asset management planning.

A summary of the Town’s current state of asset management planning, as well as the intended future state of its capabilities following adoption of the asset management plan is provided below.

Capacity Element	Current State	Future State
<p>Policy and Governance – The Town has developed a formal asset management planning policy and roadmap and measures its progress over time.</p>	<p>The Town has adopted a strategic asset management policy. The Town considers asset management implications as part of its budgeting and forecasting activities and collects baseline data for some of its assets.</p>	<p>The Town will establish a roadmap that details required asset management planning action items over the next three to five years, with associated performance measures to monitor progress. The Town will also automate its asset management planning through the implementation of an asset management module.</p>
<p>People and Leadership – The Town has cross-functional teams with clear accountabilities, resourcing and support to advance asset management planning.</p>	<p>The Town has functional departments considering asset management planning as part of their budgeting and forecasting activities, with Public Works playing a leading role in asset management planning activities.</p>	<p>The Town will develop a cross-functional team that will work internally and with Council to advance asset management planning.</p>

Introduction to the Asset Management Plan

D. Asset management planning objectives (continued)

Capacity Element	Current State	Future State
<p>Data and Information – The Town is collecting and using relevant data to support effective asset management planning and decision-making.</p>	<p>The Town has an asset inventory based on its tangible capital asset reporting and other available information (e.g. roads needs assessment studies) that is summarized in MS Excel templates.</p>	<p>The Town will have a formal asset inventory that outlines condition assessments and service level standards for critical assets. The implementation of an asset management module will facilitate analysis and optimize capital planning.</p>
<p>Planning and Decision-Making – The Town is documenting and standardizing the approach to establishing asset management planning priorities, capital and operations planning and related budget impacts.</p>	<p>Departments plan for infrastructure renewal based on their individual needs as part of the development of the annual budget and in response to grant opportunities and other considerations. Infrastructure planning decisions are generally inconsistent within the Town.</p>	<p>Asset management planning will be carried out in a more coordinated fashion across the Town, with consideration given to the current and expected levels of service for critical assets. The implementation of an asset management module will support analysis that determines the highest return on investment from a financial and community benefit perspective.</p>
<p>Contribution to Asset Management Practice – The Town supports asset management planning through internal and external knowledge sharing.</p>	<p>Asset management planning knowledge varies across the organization, with different approaches and formats used for data collection and analysis in support of asset management planning. Council and staff are adopting a longer-term approach to asset management planning and are increasing the understanding and use of asset management concepts.</p>	<p>The Town will integrate asset management planning into its budgeting and financial reporting processes and increase the overall understanding of asset management for staff and members of Council.</p>

Introduction to the Asset Management Plan

E. Growth assumptions and implications

The Town continues to experience population declines, with its total population decreasing from 1,330 residents in 2016 to 1,200 residents in 2021 (-9.8%). While the Town has recently experienced an increase in demand for housing, as well as interest in commercial and industrial development on vacant lands in response to its community improvement plan, there is no expectation of significant demand for infrastructure expansion (i.e. investments in new infrastructure components) over the duration of the asset management plan. However, the Town will continue to face investment requirements associated with the replacement of existing infrastructure that is approaching end of useful life.

Town of Smooth Rock Falls

Asset Management Planning for Roads

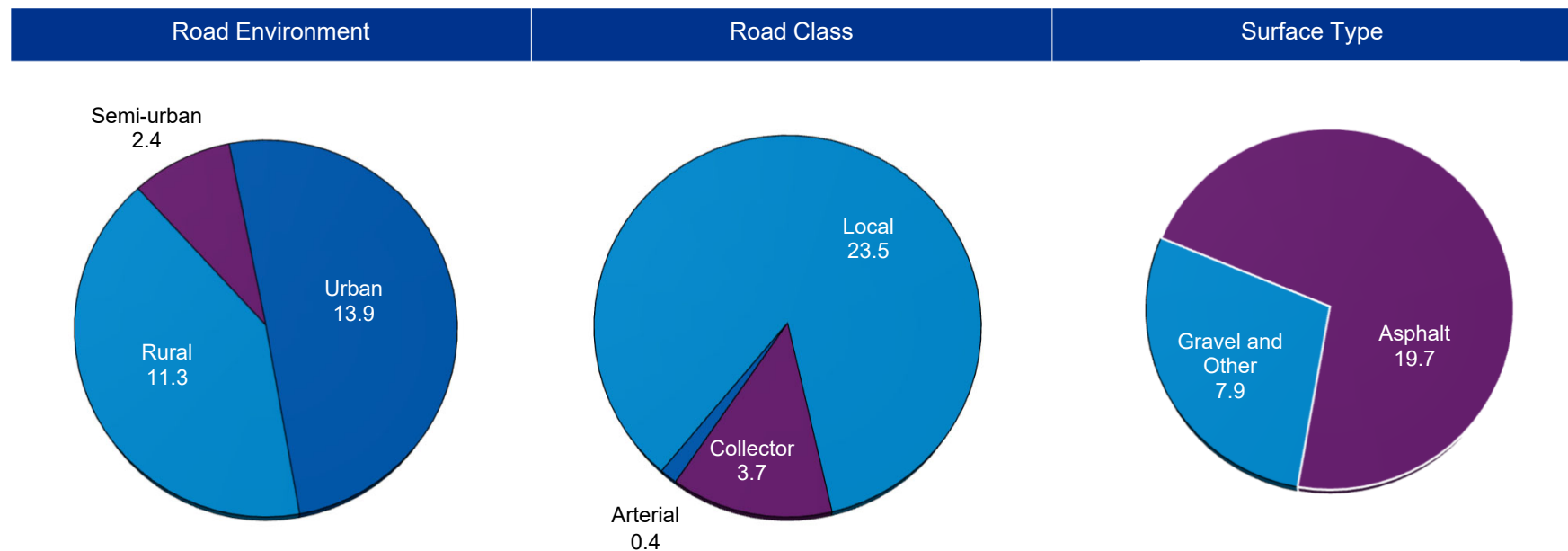


Asset Management Planning for Roads

A. Overview of the Town's road network

The Town's municipal road network is comprised of 27.6 kilometers of roads that connect properties within the municipality to each other and other communities through connections with the Provincial Highway system. As identified by the most recent roads need study completed in July and August 2021 (the "Roads Needs Study"), the majority of the Town's road network is classified as Class 5 roads under *Ontario Regulation 239/02: Minimum Maintenance Standards for Municipal Highways* ("O.Reg. 239/20")¹.

A summary of the Town's road network is provided below.



¹ Reflects the classification of roads under O.Reg. 239/20, which is determined based on traffic volumes and speed limits. O.Reg. 239/20 establishes minimum maintenance standards based on the classification of roads, with Class 1 roads having the highest standards and Class 6 roads having no minimum standards. The Town currently does not have any roads that classify as Class 1 or Class 2 roads.

Asset Management Planning for Roads

A. Overview of the Town's road network (continued)

The road network for the Town is comprised of two components:

- Road subsurface, comprised of the granular base that provides drainage and structural support;
- Road surface, which consists of a top layer of either gravel or asphalt (i.e. high class bituminous) that transfers the weight of vehicles to the granular subsurface and underlying ground.

The historical cost of the Town's road network is reported to be \$17.1 million, with an estimated replacement cost (2021) in the order of \$41.7 million.

Surface Type	Number of Kilometers	Average Age (in years)		
		Estimated Useful Life ²	Average Age	Average Remaining Useful Life
Gravel and Other	7.9	30	14.9	50.4%
Asphalt	19.7	30		
Total	27.6			

Asset Management Planning for Roads

B. Condition assessment

Condition assessments for the Town's road network were determined as part of the Roads Needs Study based on authoritative guidance that reflect engineering best practices and standards, including but not limited to:

- Pavement Condition Index (PCI) for Flexible Pavement, Ministry of Transportation
- SP-021 Manual for Condition Rating of Surface-Treated Pavements, Distress Manifestations, Ministry of Transportation
- SP-022 Flexible Pavement Condition Rating Guidelines for Municipalities, Ministry of Transportation
- SP-024 Manual for Condition Rating of Flexible Pavements, Distress Manifestations, Ministry of Transportation
- SP-025 Manual for Condition Rating of Gravel Surface Roads, Ministry of Transportation
- Measuring the Condition of Municipal Roads, Ontario Good Roads Association, Ministry of Transportation

As outlined in the Roads Needs Study, condition assessments involved visual inspections of the Town's road network in order to assess the severity and density of distresses in road segments (surface defects, surface deformations and cracking).

The results of the visual inspections were used to determine the structural adequacy and pavement condition index, which provides an indication as to the overall condition of the road segment, as well as the nature and timing of required capital improvements. A summary of condition indices and the associated impact on reinvestment requirements is provided on the following page.

Asset Management Planning for Roads

B. Condition assessment (continued)

Condition Rating	Reinvestment Requirement
Good	None
Fair	Resurface (1-5 years)
Poor	Resurface or reconstruct (immediate)

Based on this approach, the majority of the Town's road network has been classified as being in fair condition (50%), with an average PCI of 72.1.

Condition Rating	Gravel and Other		Asphalt		Total	
	Length (km)	Percentage	Length (km)	Percentage	Length (km)	Percentage
Good	0.4	5%	7.1	36%	7.5	28%
Fair	7.5	95%	10.4	53%	17.9	7%
Poor	–	–	2.2	11%	2.2	10%
Average condition rating	Fair		Fair		Fair	

Asset Management Planning for Roads

C. Current service levels

The majority of the Town’s road network consists primarily of urban and rural roads, accounting for 50.4% and 40.9% of the road network, respectively. The remaining road network is comprised of semi-urban roads. Traffic counts conducted as part of the Roads Needs Study indicated the majority of the Town’s roads (63%) are used by less than 50 vehicles daily, with a further 28% of roads used by less than 100 vehicles daily.

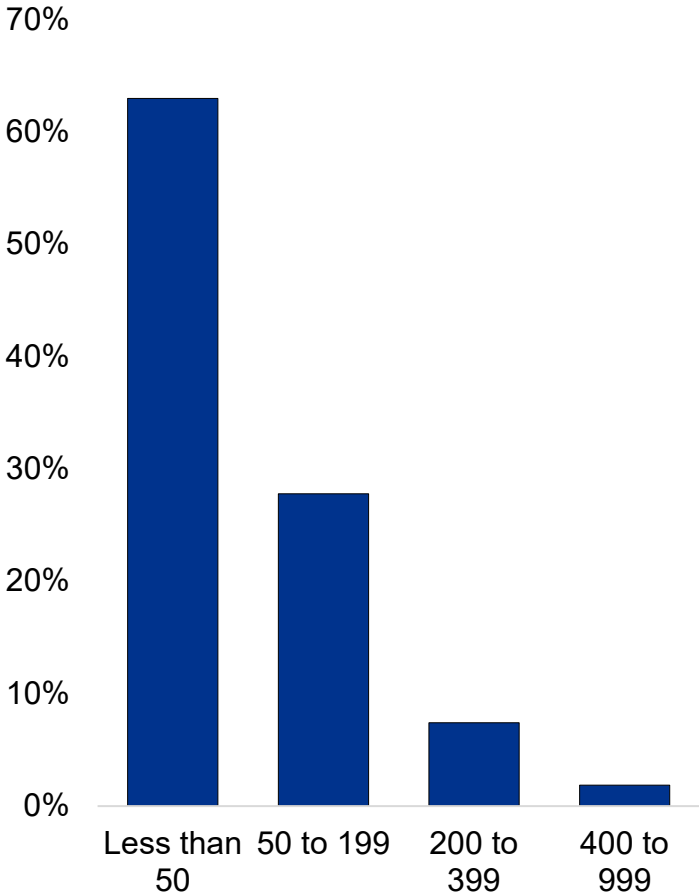
Based on the estimated capacity of the Town’s road network and the projected growth, it is not anticipated that the Town will require additional lanes to accommodate the anticipated growth in traffic volumes.

In addition to requiring a general description of the road network, O.Reg. 588/17 also outlines the qualitative descriptions and technical metrics to be use for describing the current service levels relating to the Town’s road network and includes:

- The number of lane kilometers of each category of road (arterial, collector, local) as a proportion of square kilometers of land area of the Town;
- For paved roads, the average PCI value (condition assessment); and
- For unpaved roads, the average surface condition (e.g. excellent, good, fair, poor).

As summary of these service level indicators are provided on the following page.

Road Network by Average Daily Traffic Volume



Asset Management Planning for Roads

C. Current service levels (continued)

	Arterial	Collector	Local	Total
Number of lane kilometers	0.4	3.7	23.5	27.6
Town geographic area (in square kilometers)	199.73	199.73	199.73	199.73
Lane kilometers of roads per square kilometer	0.002	0.019	0.117	0.138

	Gravel and Other	Asphalt	Total
E Average PCI value		50 (out of 100)	
Average condition rating	Fair	Fair	Fair

D. Required lifecycle activities

As defined in O.Reg.588/17, lifecycle activities include “*activities undertaken with respect to a municipal infrastructure asset over its service life, including constructing, maintaining, renewing, operating and decommissioning, and all engineering and design work associated with those activities*”. For the purposes of the asset management plan, the estimated cost of lifecycle activities includes:

- The replacement/rehabilitation/reconstruction of roads at the end of their useful lives; and
- The cost of annual maintenance activities required on a periodic basis to maintain the Town’s roads at the current state.

The estimated cost of required lifecycle activities is estimated to be in the order of \$12.2 million over the next ten years.

Town of Smooth Rock Falls

Asset
Management
Planning for
Environmental
Services



Asset Management Planning for Environmental Services

A. Overview of the Town's environmental services assets

The Town's environmental services includes the maintenance of infrastructure supporting the delivery of water, sanitary sewer and storm water management in compliance with various Provincial legislation and regulations.

The historical cost of the Town's environmental services assets was reported to be \$7.4 million, with an estimated replacement value of \$146.7 million.

For TCA reporting purposes, the Town has established useful lives of 50 to 60 years for its environmental services assets. As noted below, the average remaining useful lives of environmental services assets is relatively low.

Asset Type	Useful Life (Years)	Inventory	Age (Years)				Historical Cost	Replacement Cost
			Minimum	Maximum	Average	Average Remaining Useful Life		
Sanitary Sewer	60	12,198 m	6	116	58	4.3%	\$2.8 million	\$21.2 million
Storm Sewer	60	7,747 m	13	62	45	25.0%	\$2.0 million	\$11.3 million
Water Mains	50	12,373 m	6	102	54	–	\$2.6 million	\$13.3 million
Total							\$7.4 million	\$45.8 million

The Town's water system also supports fire suppression capabilities through adequate pressures for peak fire flows, as well as a network of hydrants throughout the community.

Asset Management Planning for Environmental Services

B. Condition assessment

The condition of the Town's environmental services assets has been assessed based on the remaining percentage of their estimated useful lives, reflecting both the fact that these assets are typically held until the end of their useful lives and the difficulties inherent in assessing the condition of underground infrastructure. As summarized below, most of the Town's environmental services assets are rated as being in poor condition, reflecting their age and the approaching end of useful life.

Condition Rating	Remaining Useful Life	Sanitary Sewer	Storm Sewer	Water
Good	More than 50%	11%	21%	6%
Fair	25% to 49%	21%	28%	31%
Poor	Less than 25%	32%	51%	63%

Asset Management Planning for Environmental Services

C. Current service levels

O.Reg. 588/17 outlines the qualitative descriptions and technical metrics to be use for describing the current service levels relating to the Town’s environmental services infrastructure and includes the following:

Water Infrastructure

Qualitative Descriptions	
<ul style="list-style-type: none"> A description of the user groups or areas of the municipality that are connected to the municipal water system. 	<ul style="list-style-type: none"> The Town currently manages water systems with approximately 770 residential and non-residential water customers.
<ul style="list-style-type: none"> A description of the user groups or areas of the municipality that have fire flow. 	<ul style="list-style-type: none"> The Town has 92 fire hydrants located throughout the urban areas of the community.
<ul style="list-style-type: none"> A description of boil water advisories and service interruptions. 	<ul style="list-style-type: none"> The Town has not declared boil water advisories in the past two years. Over the last two years, the Town has reported an average of five water main breaks annually.
Technical Levels of Service	
<ul style="list-style-type: none"> The percentage of properties connected to the municipal water system. 	<ul style="list-style-type: none"> The Town currently provides water services to approximately 770 residential and non-residential customers, with water service provided to more than 90% of households in the community.
<ul style="list-style-type: none"> The percentage of properties where fire flow is available. 	<ul style="list-style-type: none"> The Town is currently in the process of determining the percentage of properties with fire flows.
<ul style="list-style-type: none"> The number of connection days per year where a boil water advisory notice is in place compared to the total number of properties connected to the municipal water system. 	<ul style="list-style-type: none"> The Town has not declared boil water advisories in the past two years.
<ul style="list-style-type: none"> The number of connection-days per year due to water main breaks compared to the total number of properties connected to the municipal water system. 	<ul style="list-style-type: none"> Over the last two years, the Town has experienced an average of five watermain breaks per year, representing as many as 3,850 connection-days per year. This represents approximately 1.5% of the total connection-days per year in the Town.

Asset Management Planning for Environmental Services

C. Current service levels (continued)

Sanitary Sewer Infrastructure

Qualitative Descriptions	
<p>Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal wastewater system.</p>	<ul style="list-style-type: none"> The Town currently manages wastewater systems with approximately 750 residential and non-residential wastewater customers.
<ul style="list-style-type: none"> Description of how combined sewers in the municipal wastewater system are designed with overflow structures in place which allow overflow during storm events to prevent backups into homes. Description of the frequency and volume of overflows in combined sewers in the municipal wastewater system that occur in habitable areas or beaches. Description of how stormwater can get into sanitary sewers in the municipal wastewater system, causing sewage to overflow into streets or backup into homes. Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to avoid events described in paragraph 3. Description of the effluent that is discharged from sewage treatment plants in the municipal wastewater system. 	<ul style="list-style-type: none"> The Town does not have combined sewers. Storm water enters into sanitary sewers through catchbasins, approved and unapproved sump pump connections, misdirected storm water runoff and cracks in sewer laterals. The Town of Smooth Rock Falls uses a sewage lagoon system. Treated effluent samples are collected weekly for mandatory testing (e.g. E. coli)
Technical Levels of Service	
<ul style="list-style-type: none"> The percentage of properties connected to the municipal wastewater system. 	<ul style="list-style-type: none"> The Town currently provides wastewater services to approximately 750 residential and non-residential customers, representing more than 90% of total households within the Town.
<ul style="list-style-type: none"> The number of events per year where combined sewer flow in the municipal wastewater system exceeds system capacity compared to the total number of properties connected to the municipal wastewater system. 	<ul style="list-style-type: none"> During the preceding two calendar years, the Town experienced one wastewater main backups per year, representing 0.1% of the total number of properties connected to the municipal wastewater system.
<ul style="list-style-type: none"> The number of connection-days per year due to wastewater backups compared to the total number of properties connected to the municipal wastewater system. 	<ul style="list-style-type: none"> The Town has experienced minimal number of connection days of wastewater backups.
<ul style="list-style-type: none"> The number of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system. 	<ul style="list-style-type: none"> The Town has reported a total discharge of 22 megalitres of untreated wastewater in the past two years.

Asset Management Planning for Environmental Services

C. Current service levels (continued)

Stormwater Management Infrastructure

Qualitative Descriptions	
Description, which may include maps, of the user groups or areas of the municipality that are protected from flooding, including the extent of the protection provided by the municipal stormwater management system.	The Town's stormwater management system provides protection for the majority of the urban area of the municipality.
Technical Levels of Service	
<ul style="list-style-type: none"> Percentage of properties in municipality resilient to a 100-year storm. 	The Town estimates that more than 50% of its urban area and households are resilient to a 100-year flood.
<ul style="list-style-type: none"> Percentage of the municipal stormwater management system resilient to a 5-year storm. 	The Town's stormwater management system is fully resilient to a 5-year storm.

Asset Management Planning for Environmental Services

D. Required lifecycle activities

As defined in O.Reg.588/17, lifecycle activities include “*activities undertaken with respect to a municipal infrastructure asset over its service life, including constructing, maintaining, renewing, operating and decommissioning, and all engineering and design work associated with those activities*”.

Typically, asset management strategies for water mains will depend on the nature of the mains (ductile iron, PVC, concrete) but will generally commence within 20 years of the installation of the main and continue at recommended intervals until complete replacement of the main is required.

Year	Activity	Estimated Cost per KM
20	Valve exercise and swabbing	\$60,500
40	Appurtenance replacement and swabbing	\$157,300
Total cost of lifecycle asset activities (excluding replacement)		\$217,800
Average cost per year		\$5,650
Number of kilometers of water mains (rounded)		34.8
Estimated annual cost of lifecycle activities (excluding end-of-life replacement requirements)		\$196,620

Asset Management Planning for Environmental Services

D. Required lifecycle activities (continued)

Similarly, asset management strategies for sanitary and storm sewer mains will generally commence within 20 years of the installation of the main and continue at recommended intervals until complete replacement of the main is required.

Year	Activity	Estimated Cost per KM
20	Camera inspection, cleaning, flushing and structure inspection	\$94,600
50	Replacement of 60% of structure	\$192,500
Total cost of lifecycle asset activities (excluding replacement)		\$287,100
Average cost per year		\$7,950
Number of kilometers of sanitary and storm mains (rounded)		76.9
Estimated annual cost of lifecycle activities (excluding end-of-life replacement requirements)		\$611,355

Criteria typically used to determine replacement of water, sanitary and storm sewer mains include, but are not limited to, surrounding soil conditions, pressure related issues, and hydrant spacing. In addition to these criteria other factors, such as the intent of future road rehabilitation, will modify the priority of the replacement schedule accordingly.

Available historical data, which includes but is not limited to pipe failures and pipe break history, is used to aid in the replacement criteria. When a continued increase in maintenance costs reaches an uneconomical value, the replacement is justified. Due to unaccounted circumstances and unpredictable events, it is possible that some pipe materials will require replacement earlier than expected. In contrast, pipe materials may have the service life extended, with timely maintenance and rehabilitation.

The required lifecycle activities associated with the replacement of environmental services assets reaching end of useful life over the next ten years, which is based on the existing useful lives adopted for TCA reporting purposes, is \$29.7 million.

Town of Smooth Rock Falls

Next Steps



Next Steps

As required by the Act, the Town will undertake the following ongoing activities related to asset management planning:

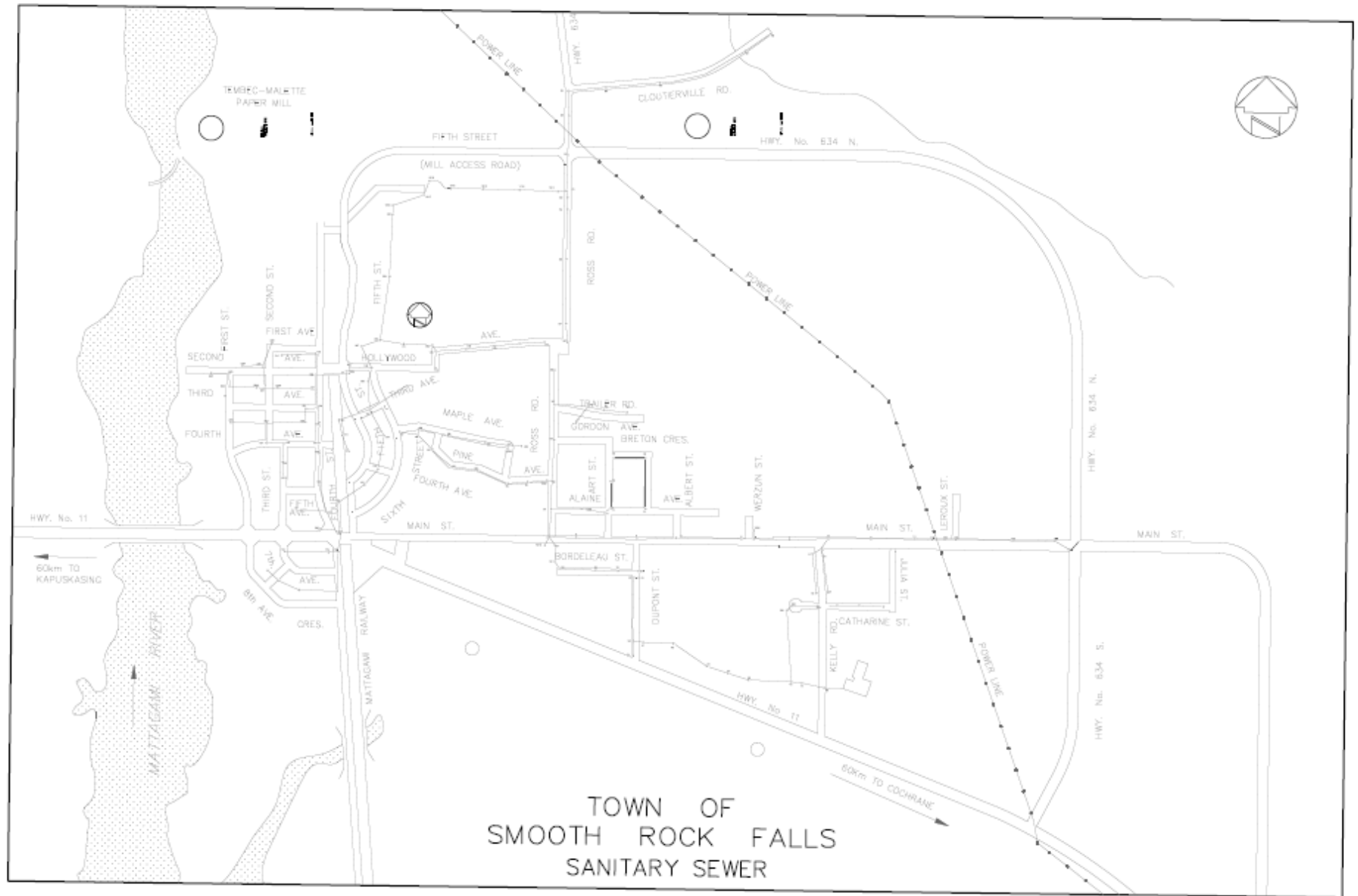
- Updating the strategic asset management policy every five years, with the next update expected in 2024;
- Updating the asset management plan for core infrastructure every five years, with the next update expected in 2026;
- Completing a similar asset management plan for other assets on or before July 1, 2024;
- Updating the asset management plan for proposed levels of service (which may differ from current levels of service) on or before July 1, 2025; and
- Providing Council with an annual update as to the Town's progress against the asset management plan.

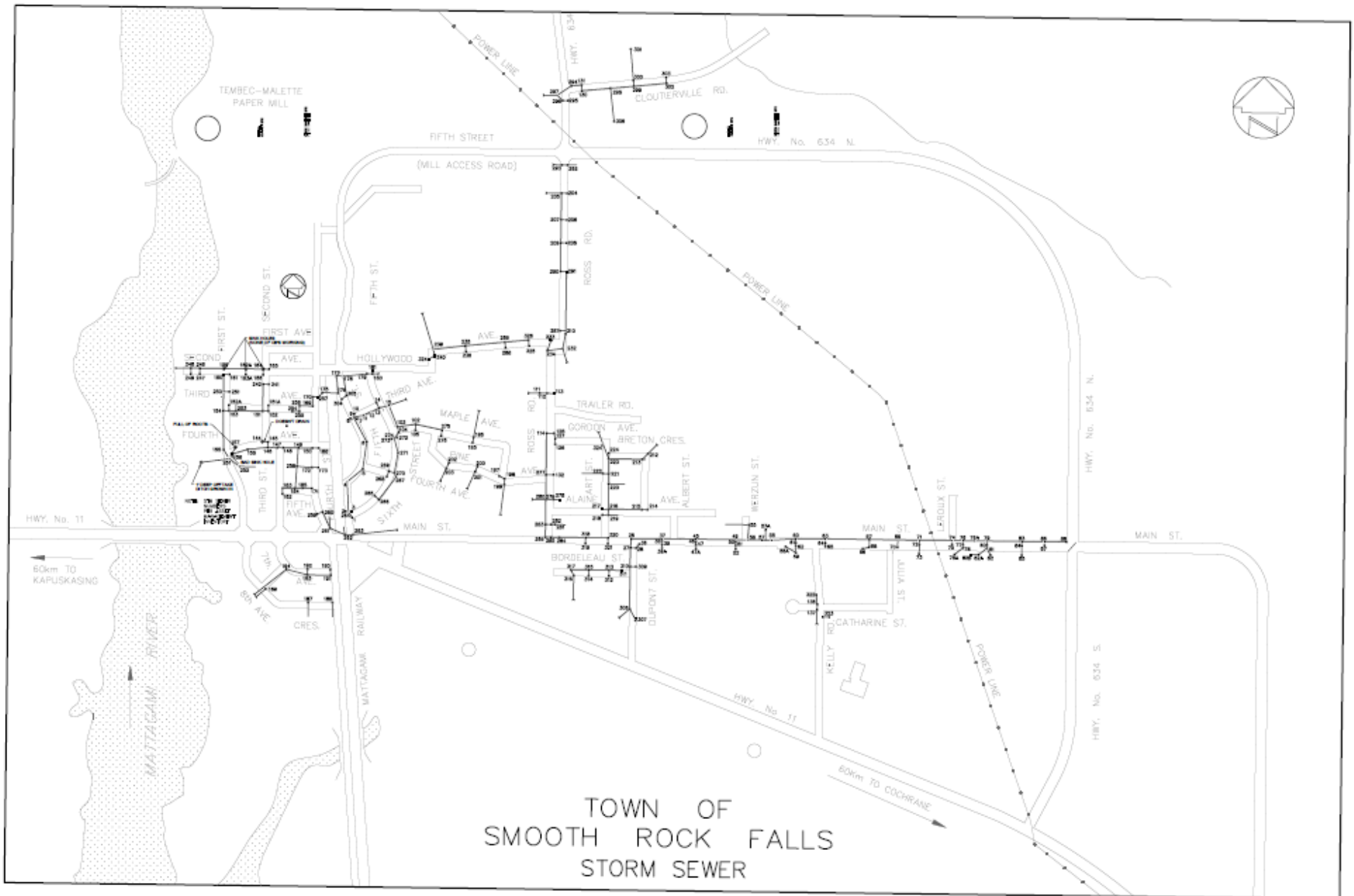
In addition to these requirements, the Town will be providing ongoing training for asset management planning to municipal personnel and will also be integrating asset management planning into its new information management system, providing a better linkage between asset management planning and the Town's financial reporting systems.

Town of Smooth Rock Falls

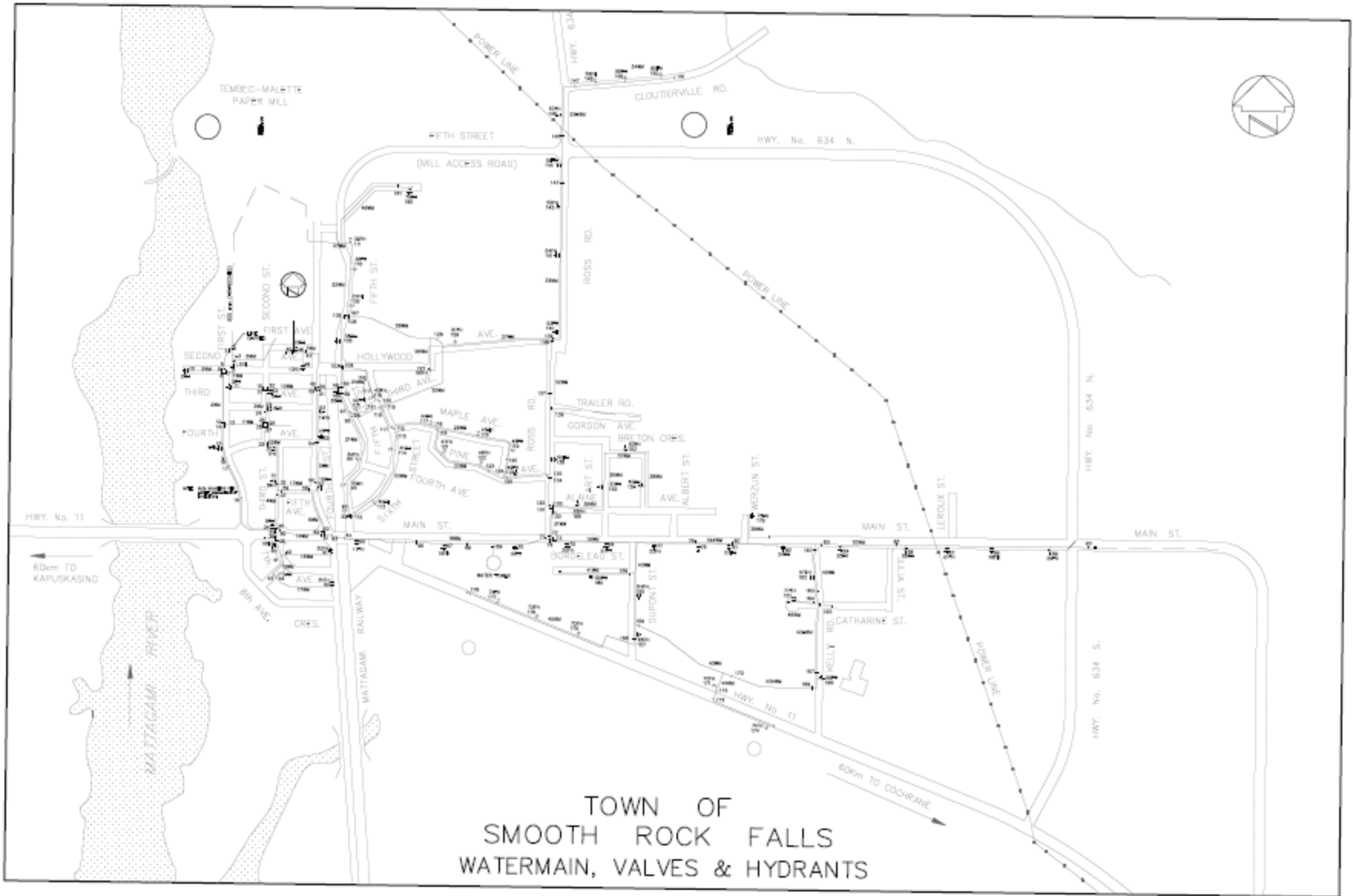
Appendix A Maps







Key Plan



TOWN OF
SMOOTH ROCK FALLS
WATERMAIN, VALVES & HYDRANTS



Key Plan