Township of
SEVERN

Public Information Centre #2 – May 29, 2024

Servicing Master Plan – Township of Severn

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Vaughan, Ontario, Canada L6A 4P5

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www.civi.ca

CIVICA
Water Management Solutions

Land Acknowledgement

"We would like to begin by acknowledging that the land on which we gather, and which the Township of Severn operates, is part of the traditional territory of the Anishinaabeg. For thousands of years, Indigenous peoples have been inhabiting and caring for this land. In particular, we acknowledge the territory of the Ojibway (or Chippewas) peoples. This territory is covered by Lake Simcoe Treaty 16 and the J. Collins land purchase.

We are grateful to have the opportunity to work on this land, and by doing so, give our respect to its first inhabitants."

Introduction

What is the Township of Severn Servicing Master Plan?

The Township of Severn is developing a Servicing Master Plan (SMP) to evaluate water, wastewater, and stormwater servicing strategies to accommodate growth to 2051.

What is the focus?

- Focus on water, wastewater and stormwater infrastructure
- Support the Township's growth plan
- Emphasize on environmental sustainability and resiliency

The purpose of PIC#2 is to:

- Provide an overview of the plan and work completed to date
- Overview of the Servicing Master Plan solutions and evaluation criteria
- Present the preferred servicing recommendations
- Receive your feedback and answer questions

Problem and Opportunity Statement

The Problem and Opportunity Statement is defined as follows:

Following completion of the updated 2022 Official Plan, the Township has identified the intent to direct most forms of development to settlement areas where water, wastewater, and stormwater services are planned or available. The Township of Severn's total population is expected to grow from 14,576 in 2021 to approximately 23,961 by 2051.

This presents the opportunity to identify and select preferred alternative water supply and storage; wastewater collection and treatment; and stormwater management servicing strategies to accommodate growth for a planning horizon which minimizes impacts the natural and social environments and is technically feasible and economically sensible.

Identified Opportunity

How can the Township:

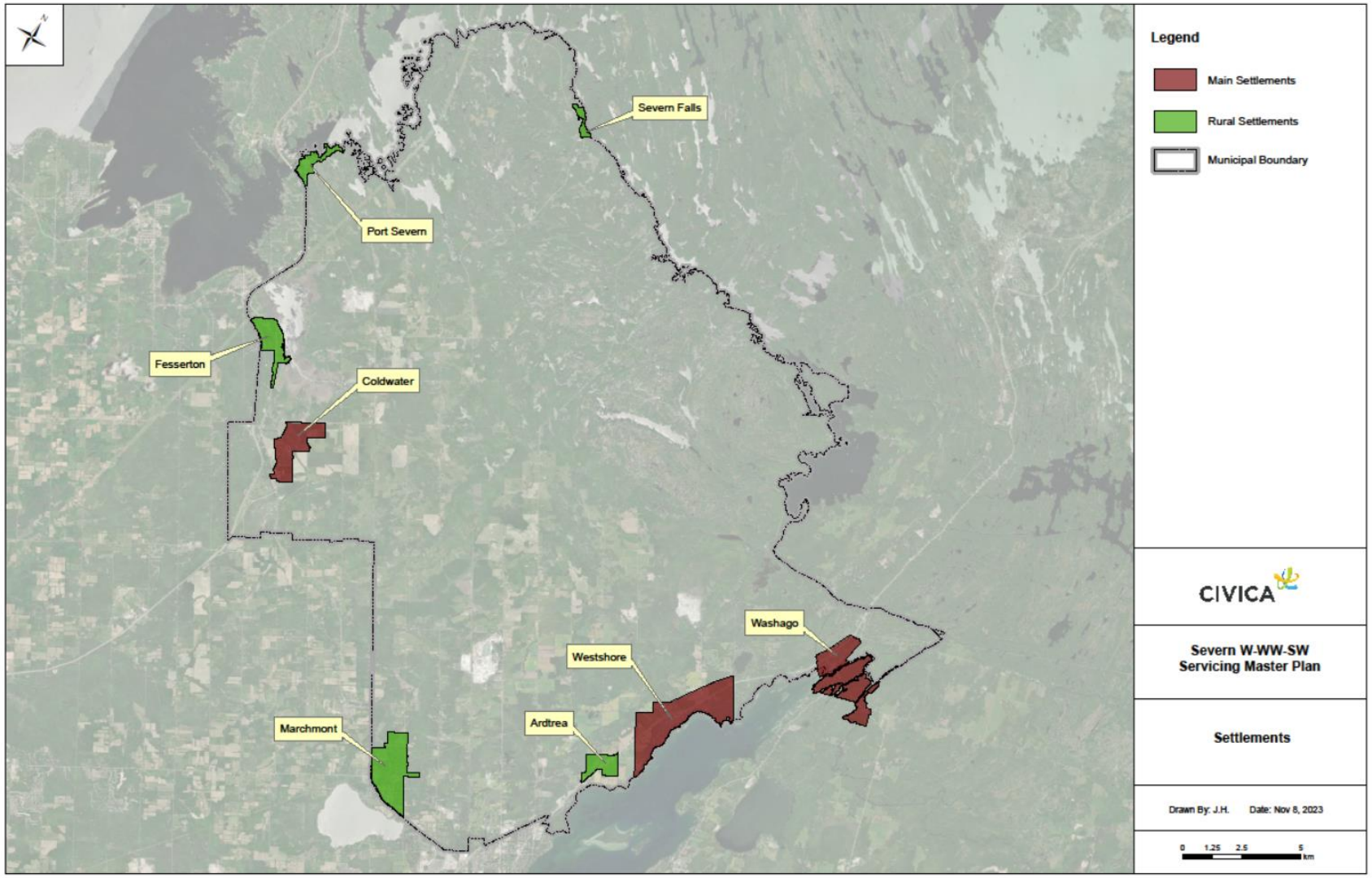
- Identify existing capacity constraints
- Evaluate different servicing alternatives
- Provide solutions to accommodate the planned growth across the Township

Servicing Master Plan Areas

The Township at a Glance:

- Three main settlement areas of Westshore, Coldwater, and Washago
- Five rural settlements areas of Ardtrea, Fesserton, Marchmont, Severn falls, and Port Severn
- Two municipal drinking water systems of Severn Estates and Sandcastle Estates

Settlement Areas

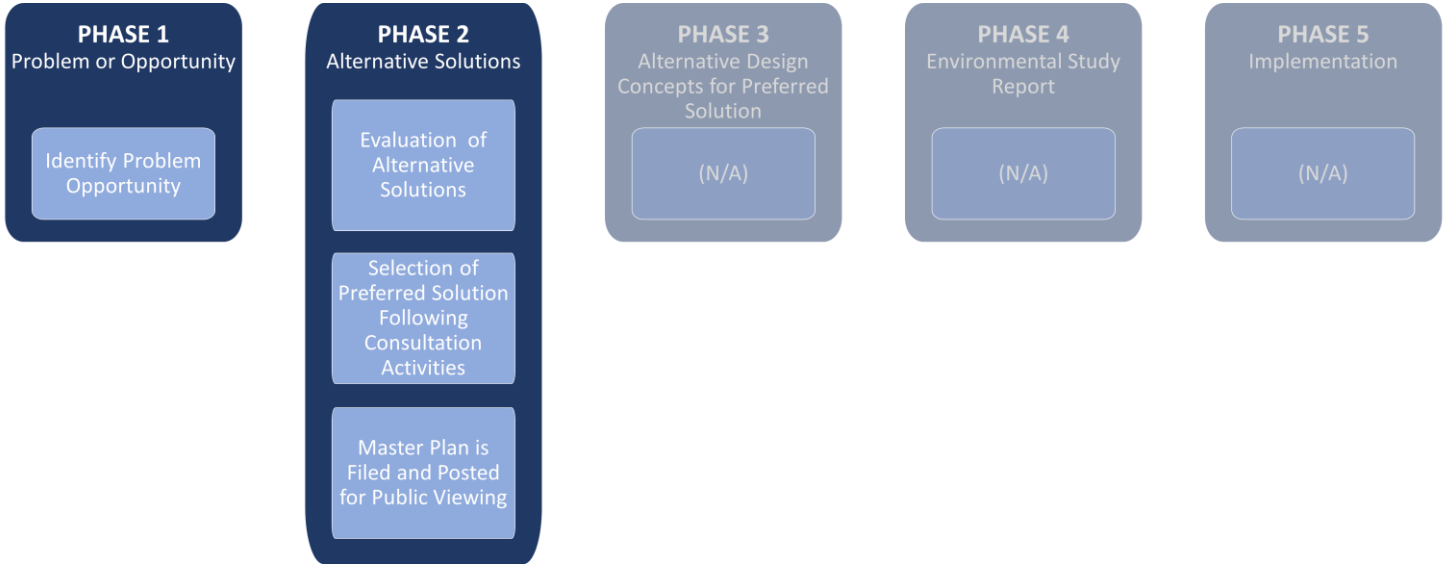


Environmental Assessment Process

Environmental Assessment (EA) Master Plan Process

The Municipal Class Environmental Assessment (MCEA) process was developed to provide municipalities with a risk-based approach to comply with the Environmental Assessment Act for both capital projects and infrastructure maintenance activities. The SMP study will be undertaken in conformance with the Municipal Class EA process. **The Master Plan will address Phase 1 and Phase 2 of the Municipal Class EA.**

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 or group of related projects in order to outline a framework for planning for subsequent projects and/or developments.



PIC Objectives and Project Schedule

- Introduce the SMP study to the public and obtain feedback from local residents, property owners, and community groups
- Present existing conditions and areas of concern
- Present alternatives and preferred solutions
- Seek feedback from the public on presented solutions

Project Schedule Timeline

Phase 1
Identify and Describe the Problem/Opportunity Statement

PIC #1
Public Consultation
December 5, 2023

Phase 2
Complete Study Area Inventory
Identify and Evaluate Alternative Solutions

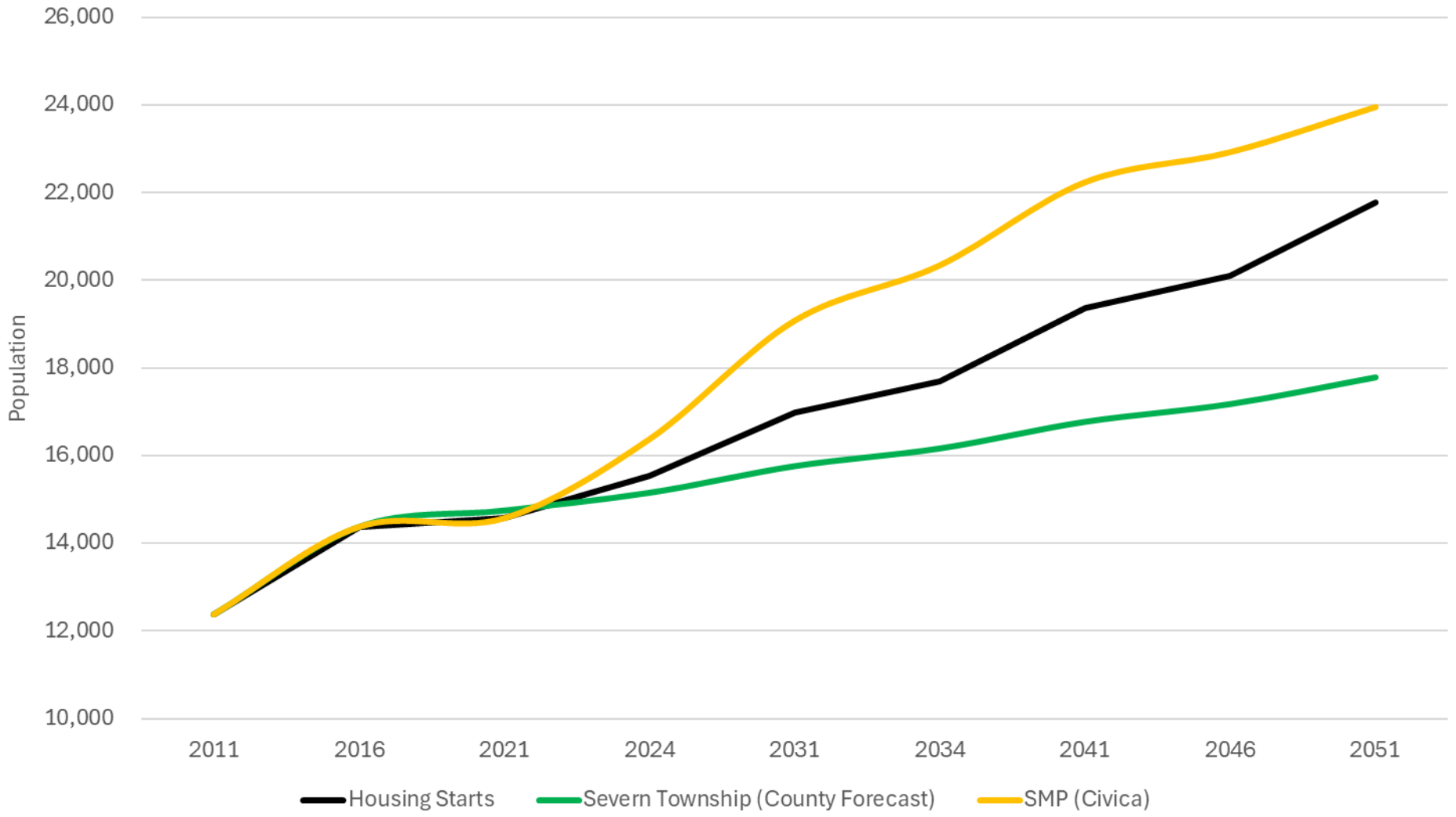
PIC #2
Public Consultation
May 29, 2024

We Are Here

Final Report
Documentation of Recommended Alternative Solutions for Servicing

Council Presentation
TBD
Notice of Completion
TBD

Growth Trends

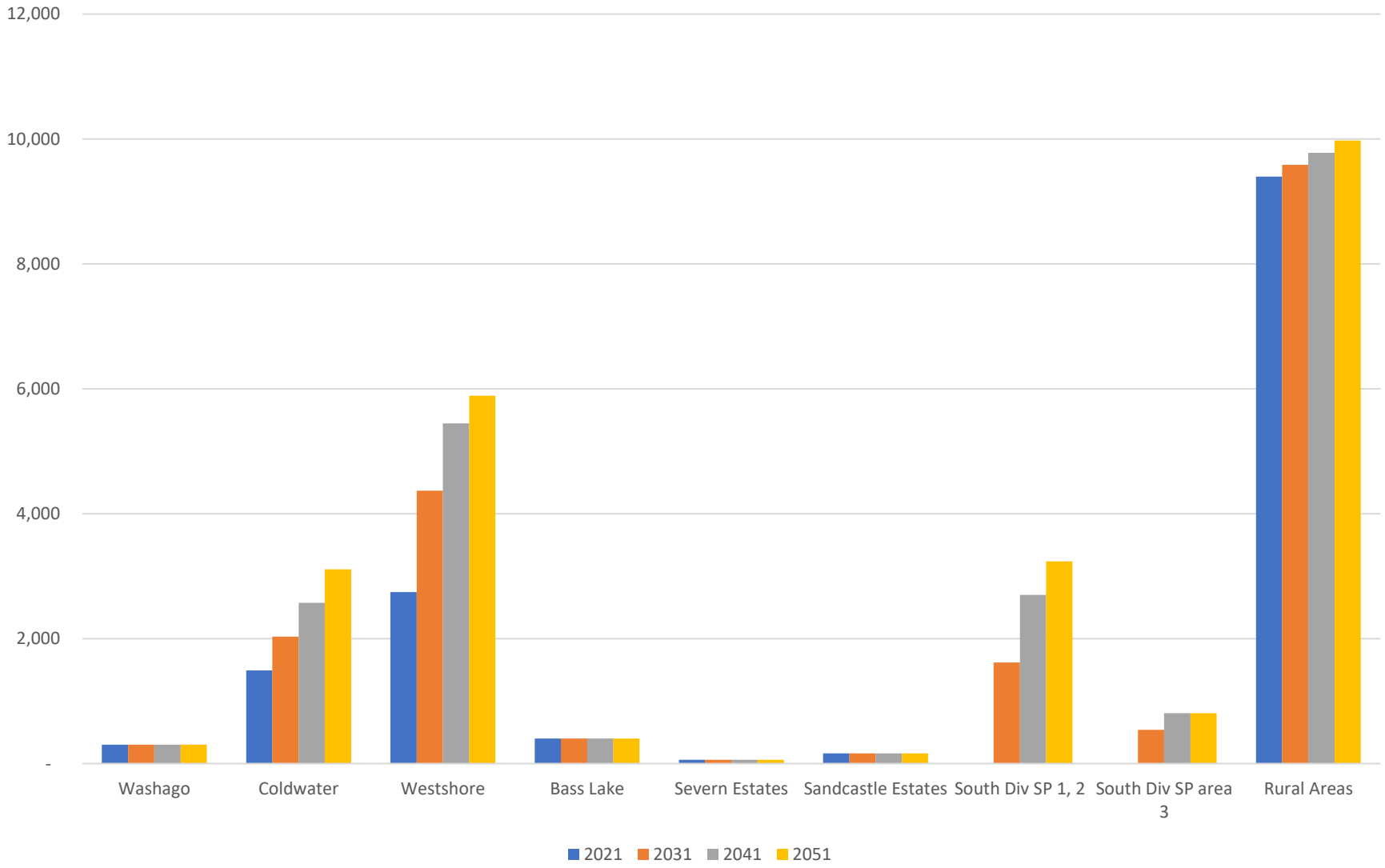


Housing Units and Population

	Housing Equivalent Residential Units				Population (Equivalent)			
	2021	**2031**	**2041**	**2051**	**2021**	**2031**	**2041**	**2051**
Severn Township (County Forecast)					14,750	15,763	16,776	17,790
Washago	121	121	121	121	304	304	304	304
Coldwater	553	753	953	1,153	1,493	2,033	2,573	3,113
Westshore	1,018	1,618	2,018	2,181	2,749	4,369	5,449	5,889
Bass Lake	161	161	161	161	404	404	404	404
Severn Estates	25	25	25	25	63	63	63	63
Sandcastle Estates	65	65	65	65	163	163	163	163
South Div SP 1, 2*		600	1,000	1,200	-	1,620	2,700	3,240
South Div SP area 3*		200	300	300	-	540	810	810
Rural Areas	5,222	5,327	5,433	5,542	9,400	9,588	9,780	9,975
Total	**7,165**	**8,870**	**10,076**	**10,748**	**14,576**	**19,084**	**22,246**	**23,961**
Growth Rate per Planning Period		1,704	1,207	672		4,508	3,162	1,716
Avg. Annual Absorption Rate (Units per year)		170	121	67				

* Part of existing Secondary Plan- Population and Servicing Solutions provided by proponent and following separate process

Population Growth Comparison



Alternative Solutions

Proposed Alternatives

a. Do Nothing
b. Demand Management (Limit Growth)
c. Capacity Optimization (I&I reduction, leak detection in water)
d. Asset Expansions/Additions

Evaluation Criteria: What Key Issues Will be Addressed?

- Potential impacts to existing natural environment
- Protecting wildlife and species at risk
- Able to meet existing and future demands
- Aligns with existing and planned infrastructure
- Ease of construction and integration with existing system
- Capital planning and life cycle costing
- Stakeholder input

Optimization Alternatives

Wastewater Alternatives

HIGH EFFICIENCY FIXTURES

INFLOW AND INFILTRATION REDUCTION

CROSS CONNECTION ELIMINATION

CONSERVATION

PUBLIC EDUCATION

Water Alternatives

EFFICIENCY

REDUCE WASTE

SYSTEM LEAK REDUCTION

OPTIMIZE SYSTEM PRESSURE

OUTDOOR WATER USE MANAGEMENT

PUBLIC EDUCATION

Stormwater Alternatives

COLLECTION AND REUSE

RAINFALL HARVESTING

RECHARGE SYSTEMS

CHEMICAL USE AWARENESS

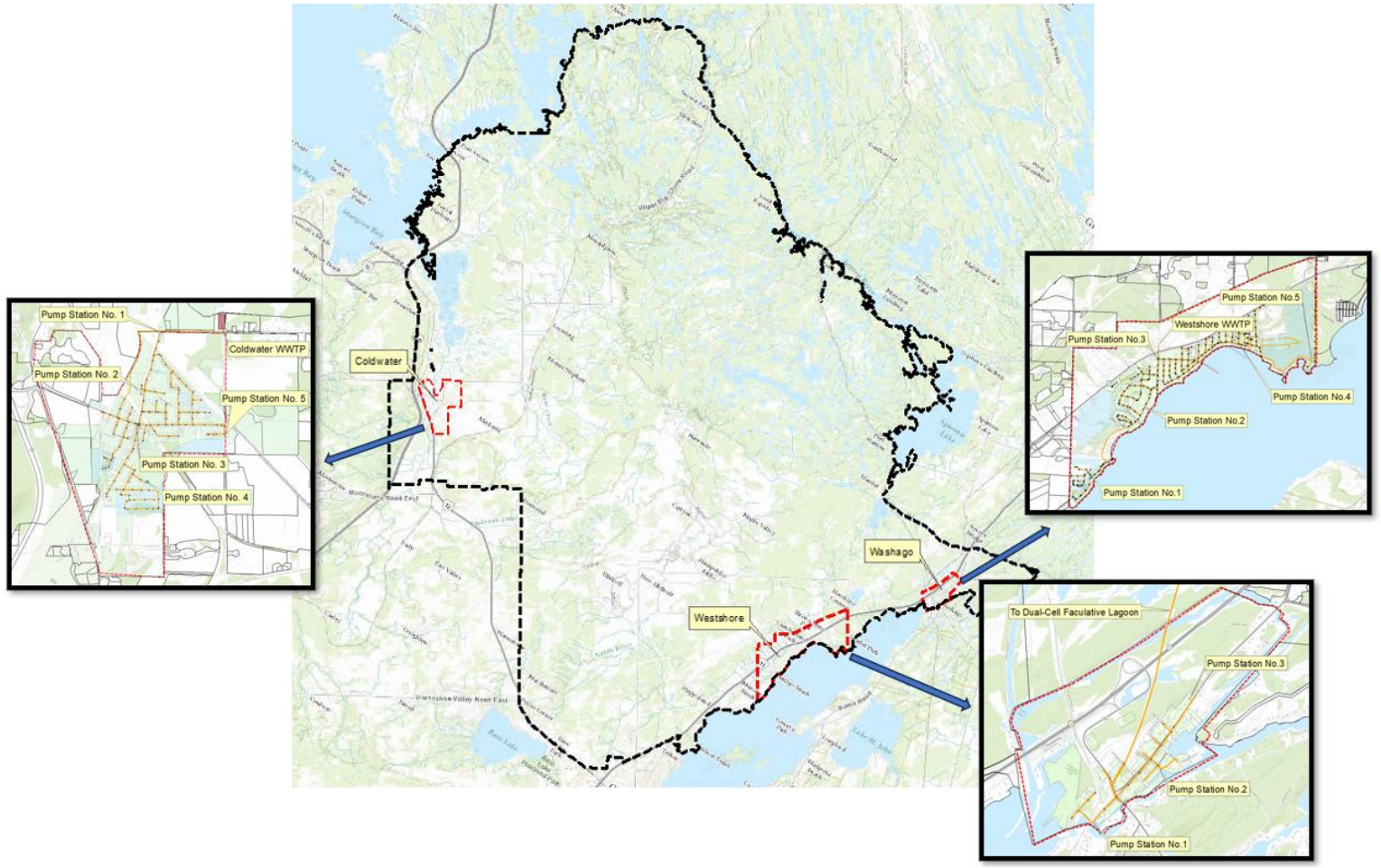
DISCHARGE QUANTITY AND QUALITY CONTROL

Study Area – Wastewater System

Current Levels of Wastewater Service in Severn:

Wastewater Service
Fully serviced settlement areas
- Coldwater
- Washago
- Westshore

Private Systems (No Service)
Wells and Septic Systems or Other
- Ardtrea
- Fesserton
- Port Severn
- Severn Falls
- Marchmont



Study Area – Water System

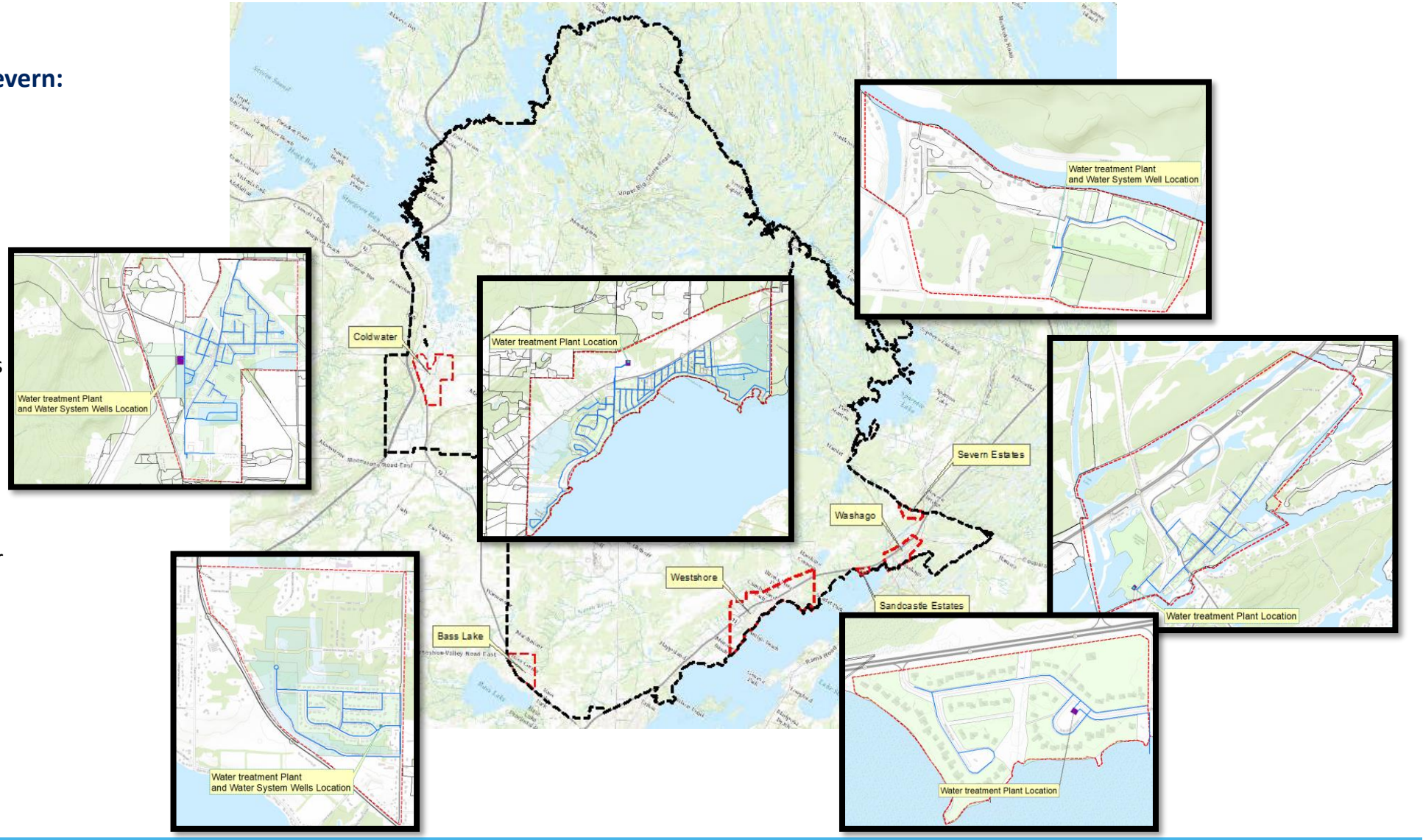
Current Levels of Water Service in Severn:

Water Service
Fully serviced settlement areas
- Coldwater
- Washago
- Westshore

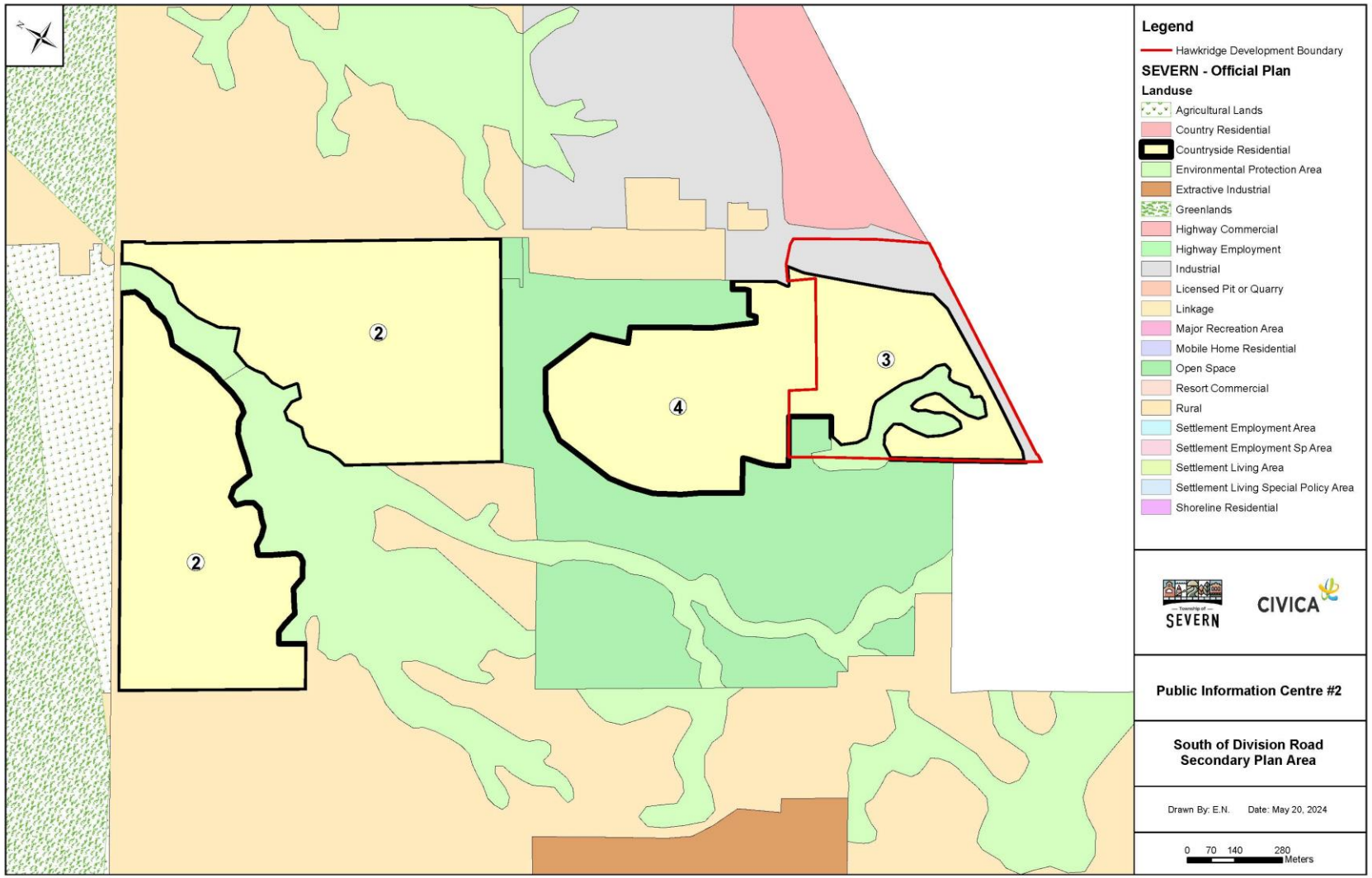
Water Supply Service Only
Municipal Drinking Water Systems
- Bass Lake Woodlands*
- Sandcastle Estates
- Severn Estates

Private Systems (No Service)
Wells and Septic Systems or Other
- Ardtrea
- Fesserton
- Port Severn
- Severn Falls
- Marchmont

*partial servicing in sections



Future Areas SP1 SP2 and SP3 as Noted by the Planning Department



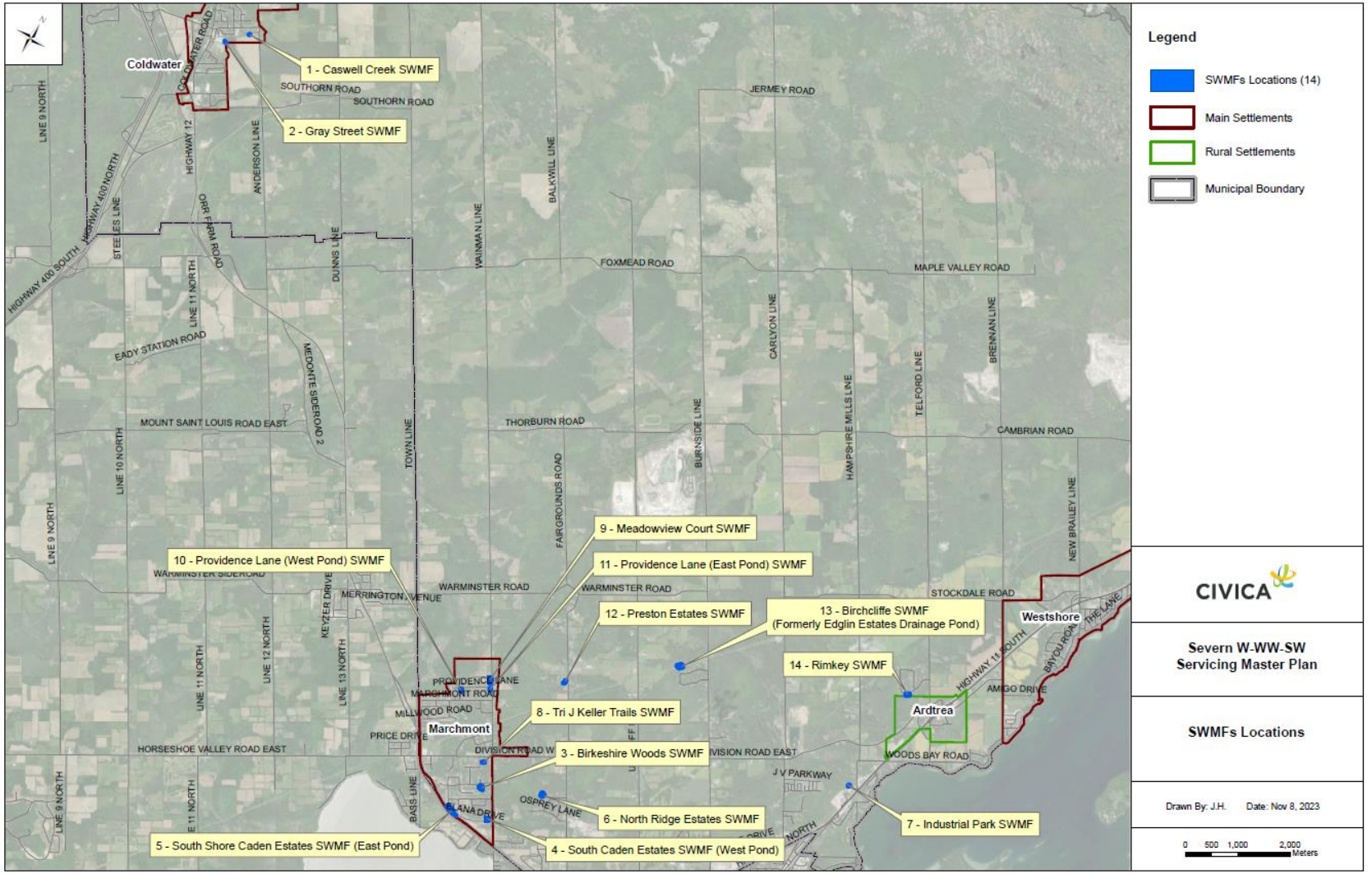
Study Area – Stormwater System

Current Levels of Stormwater Service in Severn:

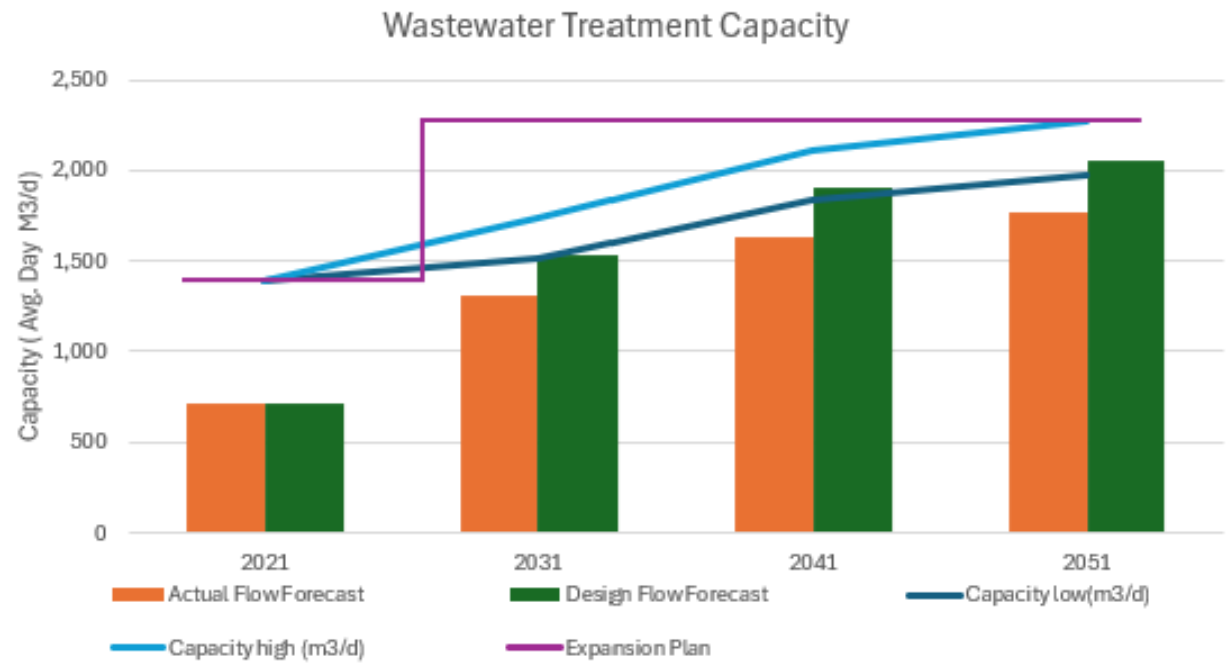
400 km of Open Ditches, Catch Basins, and Manholes

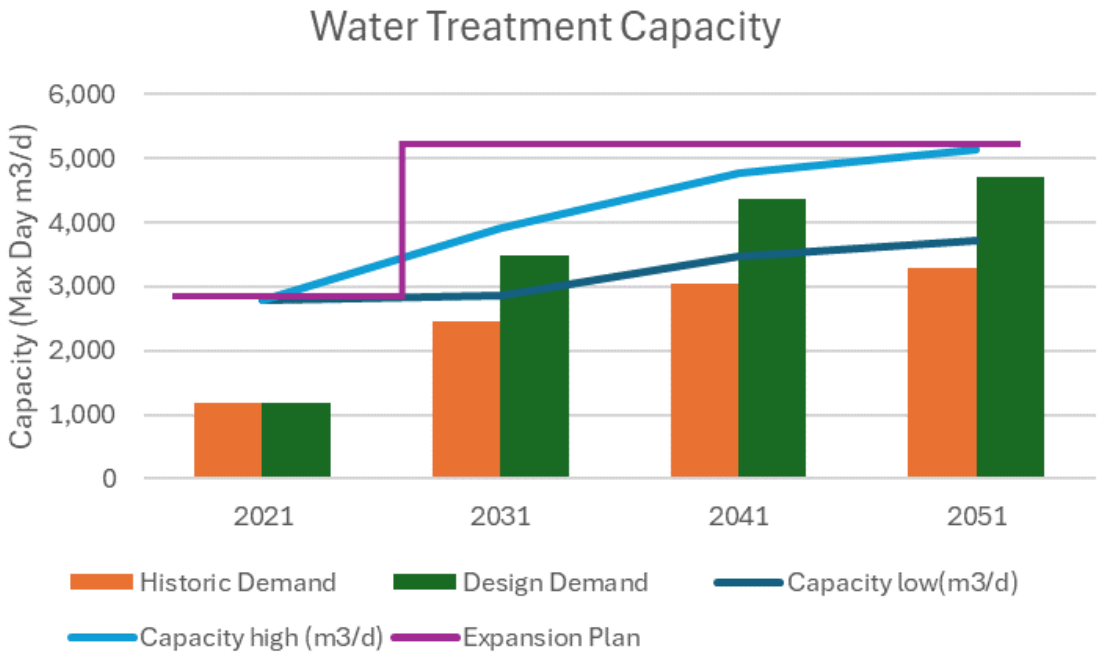
7.9 km of Collection Storm Sewers

13 Stormwater Management Facilities



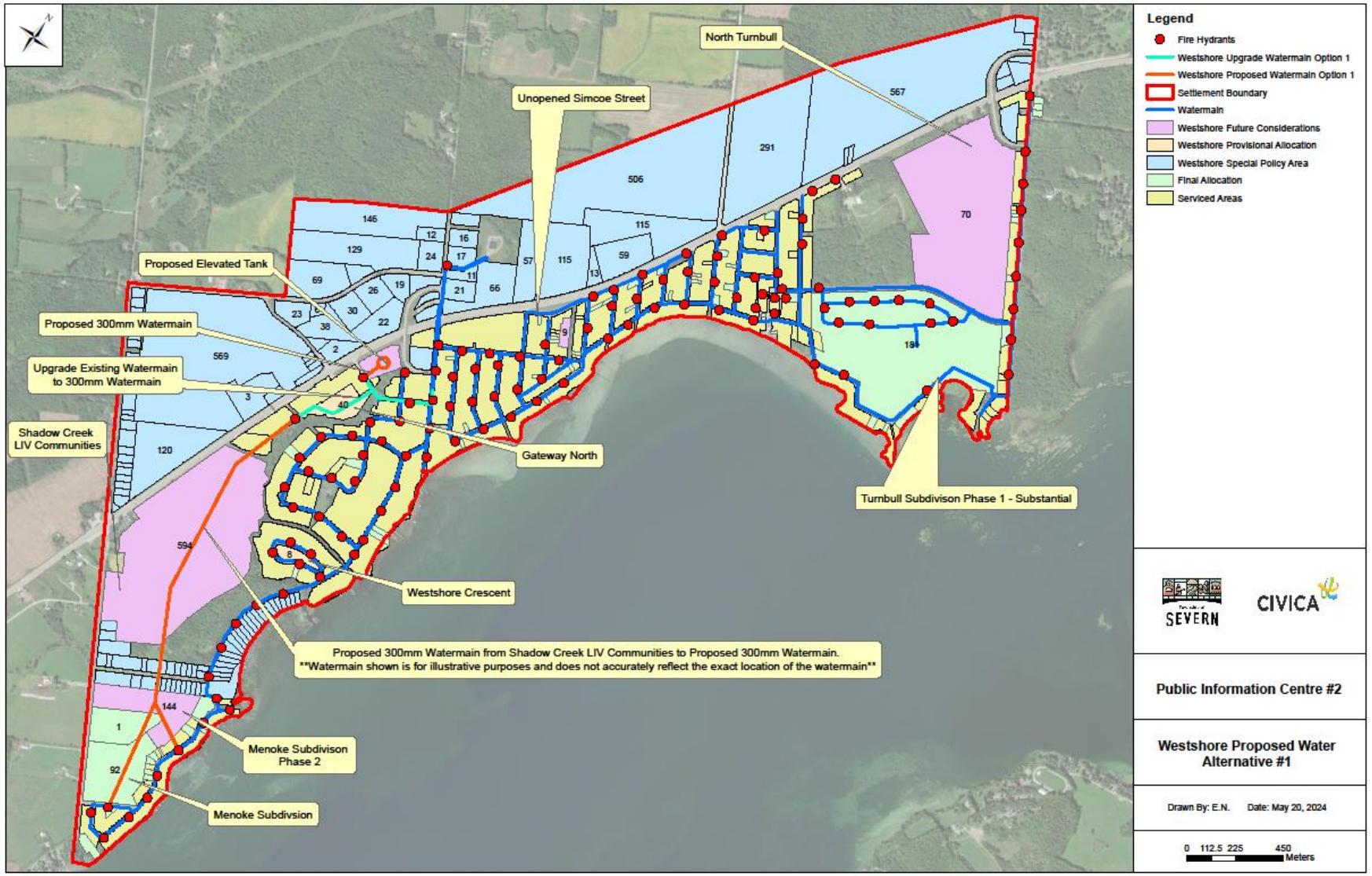
Westshore Treatment Capacity



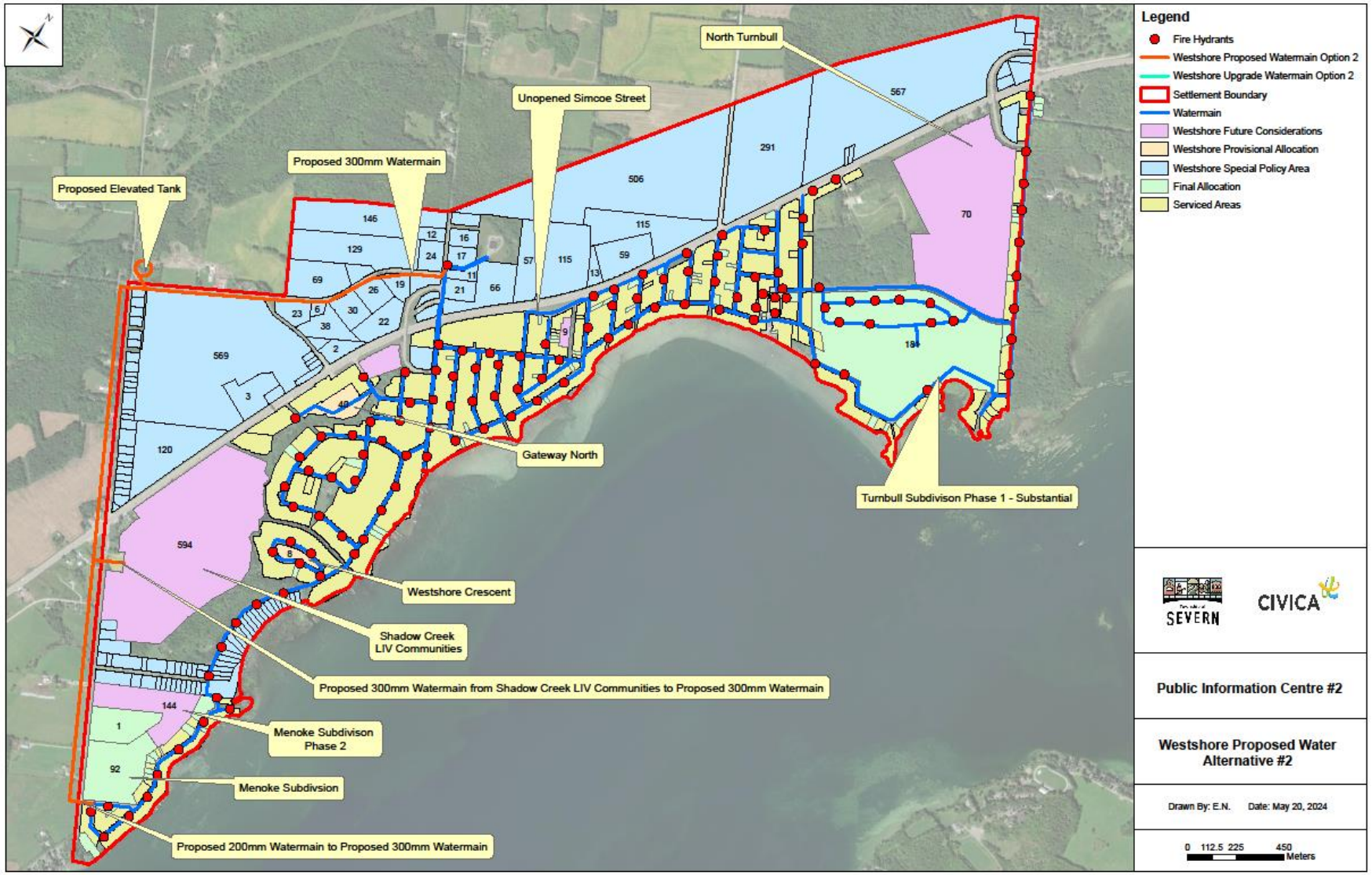


- Treatment plant built in 2006
- Water and wastewater system expansion required to meet growth
- Wastewater process improvements required and assessment is underway to meet current performance capacity
- Funding identified in Development Charge Forecast for water and wastewater expansions
- Recommendation to proceed with expansion studies by 2026 to meet growth targets by 2031

Westshore Water System Alt 1



Westshore Water System Alt 2

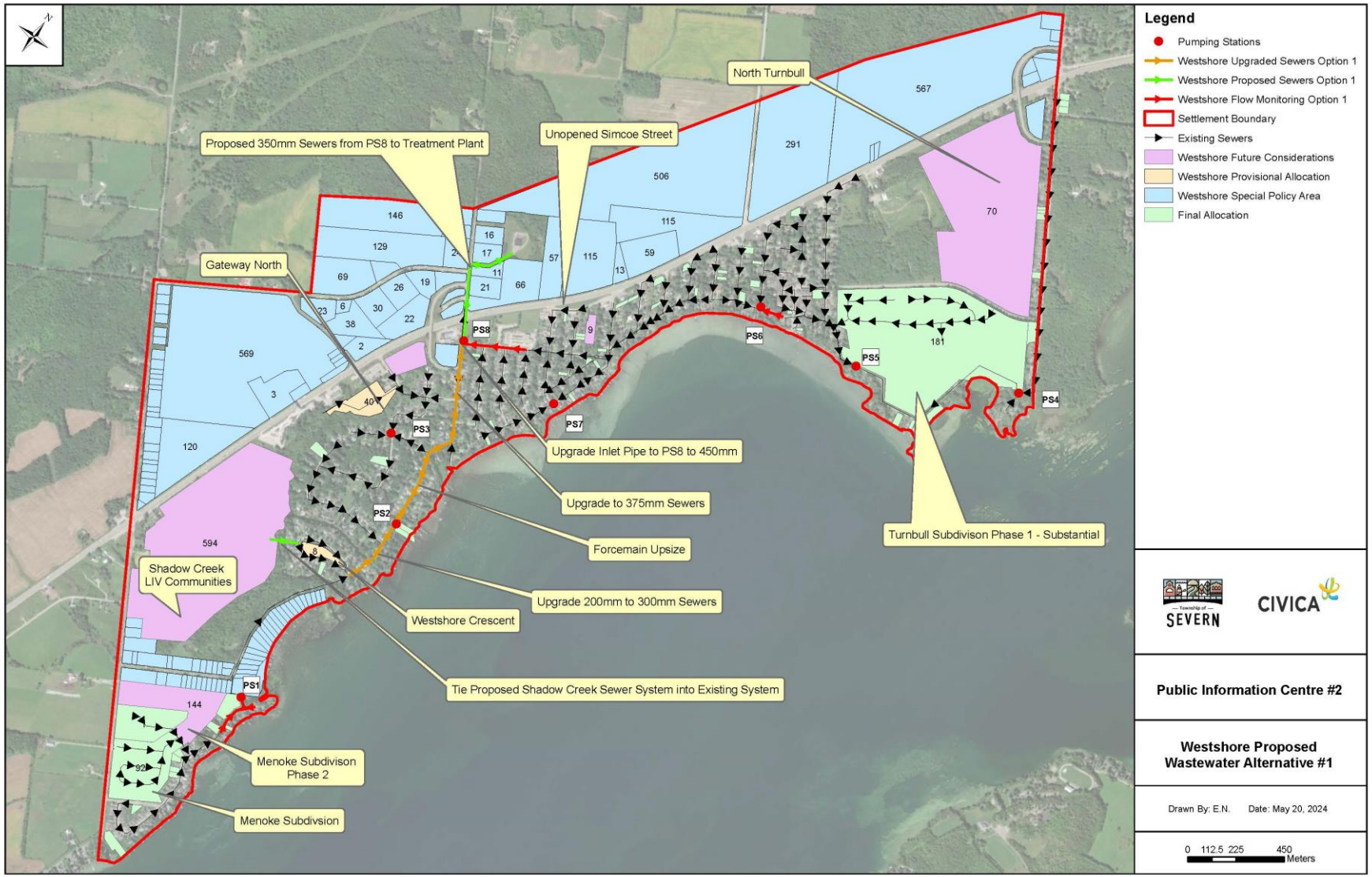


Westshore Water Alternatives

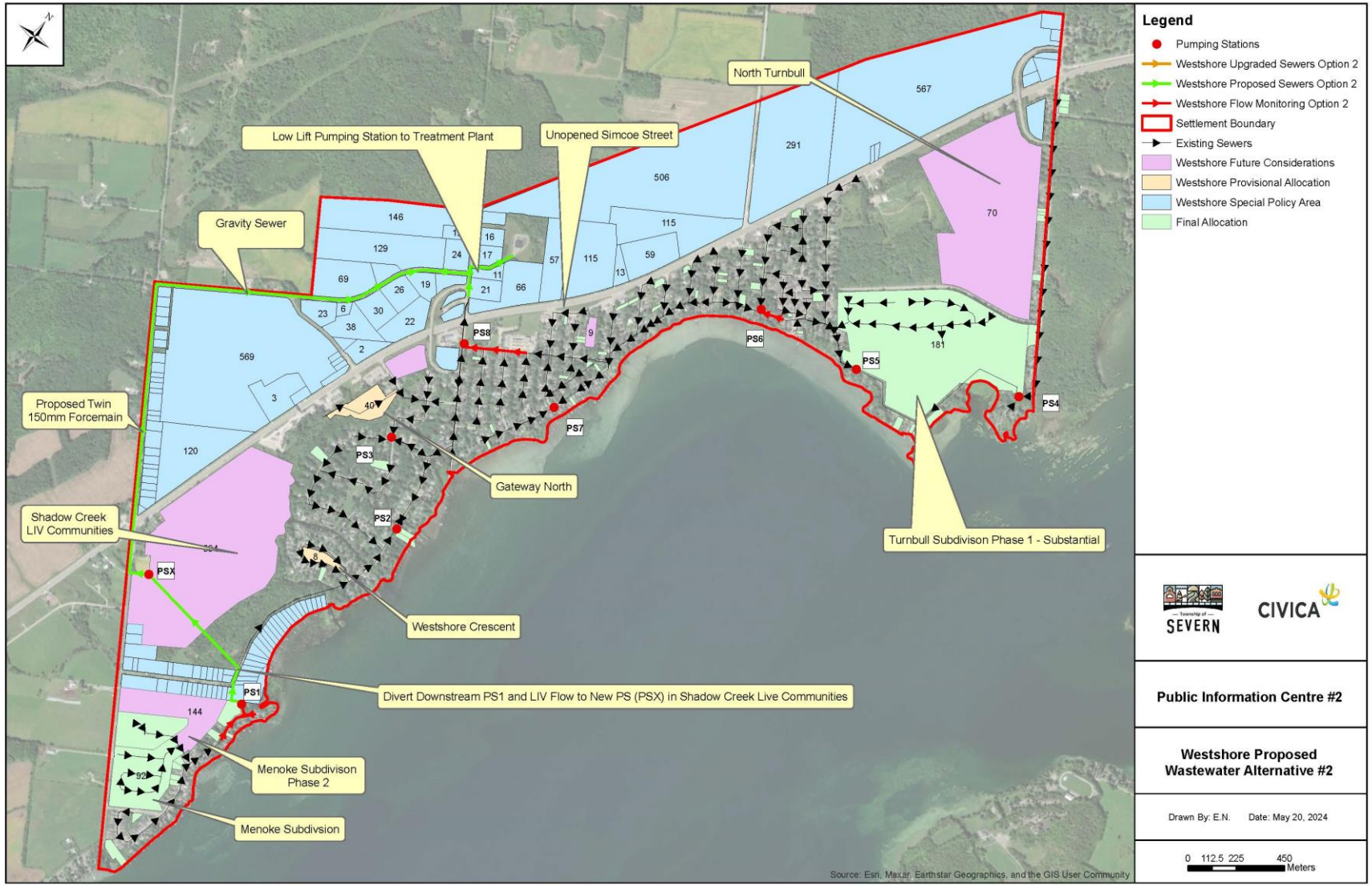
Alternative 1				Cost Estimate					
	Description	**Rationale**	**Infrastructure**	**Unit**	**Unit Cost**	**Quantity**	**Base**	**Contingencies (10%)**	**Budget Estimate**
Water System	300mm Ring loop from Bayou and Grand Tamarack Cres	As part of LIV development neet to provide 300mm or greater capacity to connect from Bayou at Tamarack Cres to Wood Ave (or equivalent)	Upsize Grand Tamarack Cres from 200 to 300	m	$1,200	300	$360,000	$36,000	$396,000
			Upsize from Grand Tamarack at take off to Webers to reach LIV development	m	$1,200	500	$600,000	$60,000	$660,000
			New Elevated Tank	m3	$14,000	200	$2,800,000	$280,000	$3,080,000
	Future Ring Loop for Goldstein Rd (identified as internal to development and not shown on figure)	To increase supply for fire protection on Goldstein via future development north of Turnbull Dr.	To be included with future development servicing						
Total									$4,136,000

Alternative 2				Cost Estimate					
	Description	**Rationale**	**Infrastructure**	**Unit**	**Unit Cost**	**Quantity**	**Base**	**Contingencies (10%)**	**Budget Estimate**
Water System	300mm Ring loop along Menoke Beach Rd from Couchiching Ave to Stockdale Rd and to Plant.	Provide supply to lower area to meet future fire flow needs and provide redundancy of supply.	New 300 mm watermain	m	$1,200	4,000	$4,800,000	$480,000	$5,280,000
			New Elevated Tank	m3	$14,000	200	$2,800,000	$280,000	$3,080,000
	Future Ring Loop for Goldstein Rd	To increase supply for fire protection on Goldstein via future development north of Turnbull Dr.	To be included with future development servicing						
Total									$8,360,000

Westshore Wastewater System Alt 1



Westshore Wastewater System Alt 2



Westshore Wastewater Alternatives

Alternative 1

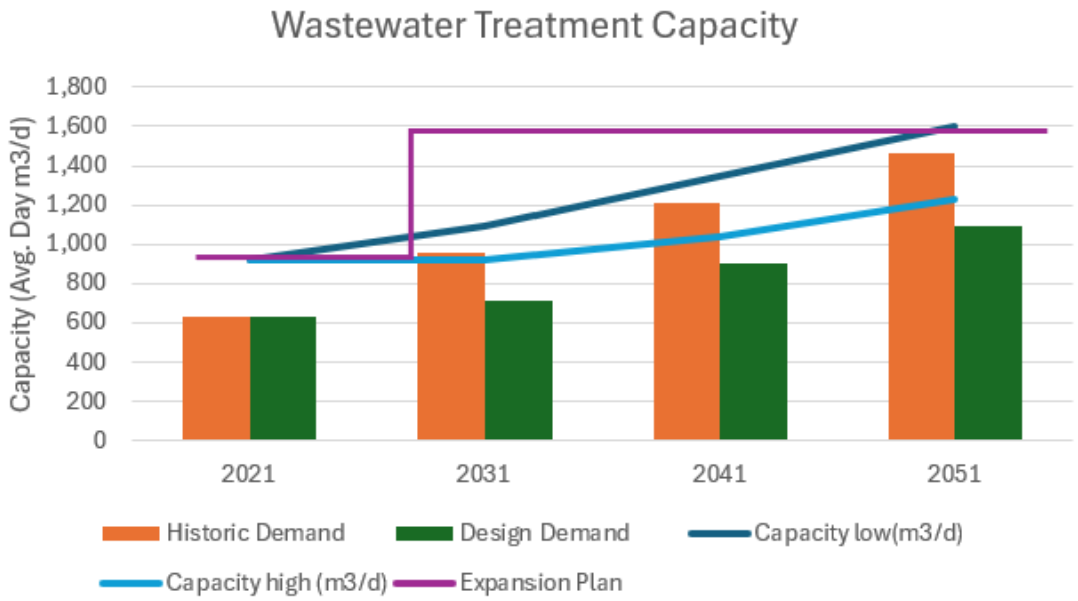
				Cost Estimate					
	Description	**Rationale**	**Infrastructure**	**Unit**	**Unit Cost**	**Quantity**	**Base**	**Contingencies (10%)**	**Budget Estimate**
Wastewater Systems	Service Shadow Creek internally	Levarage existing network were available and upsized sections as needed. Impact of significant upsizing evident in the alternative	PS2 Gravity sewer section upgrade from 250mm to 300 mm	m	$1,800	330	$594,000	$59,400	$653,400
			Upgrade PS 2 station from 17 l/s to 39 l/s	LS		1	$600,000	$60,000	$660,000
			Upgrade PS 2 forcemain from 150 mm to 250 mm	m	$1,800	500	$900,000	$90,000	$990,000
			Upgrade sewer along Bayou from 250 mm to 375 mm	m	$2,500	460	$1,150,000	$115,000	$1,265,000
			Upgrade PS 8 from 44 l/s to 82 l/s	LS		1	$800,000	$80,000	$880,000
			Upgrade PS 8 forcemain from 250 mm to 350 mm	m	$3,300	600	$1,980,000	$198,000	$2,178,000
Total									**$6,626,400**

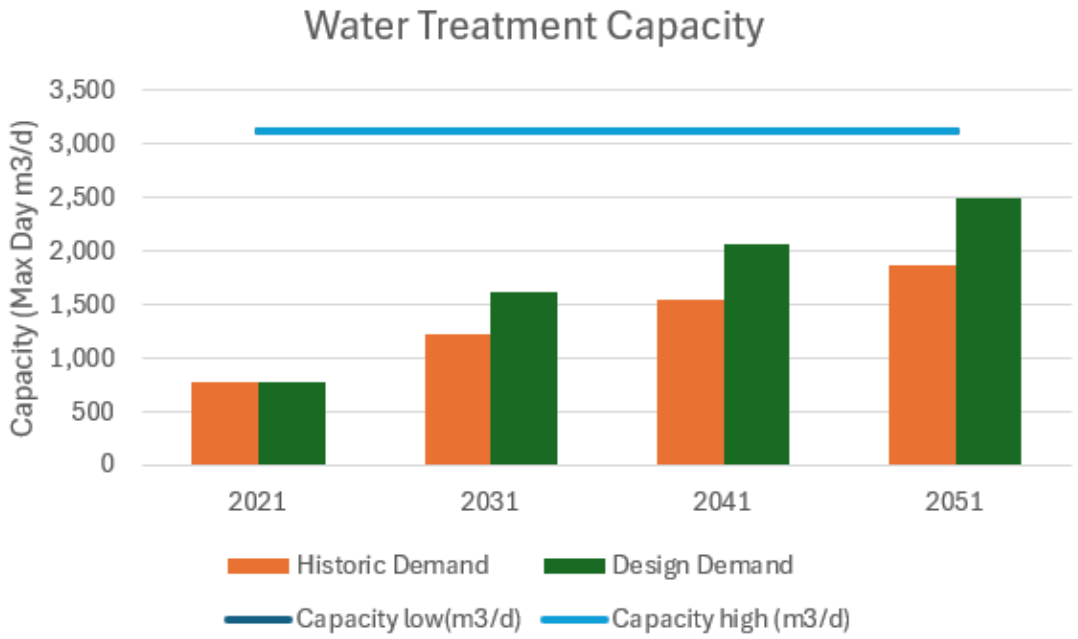
Alternative 2

				Cost Estimate					
	Description	**Rationale**	**Infrastructure**	**Unit**	**Unit Cost**	**Quantity**	**Base**	**Contingencies (10%)**	**Budget Estimate**
Wastewater Systems	Redirect PS 1 from discharge to PS2 to discharge to new LIV Shadow Creek PS	leverage alternate flow route to treatment plant to relieve future capacity constraints at Main pumping station (PS1 peak flow of 15 l/s, Shadow Creek peak flow of 32 l/s)	150 mm forcemain Twin from PS1	m	$1,400	600	$840,000	$84,000	$924,000
			New Shadow Creek PS 50 l/s	LS		1	$3,538,000	$353,800	$3,891,800
			New twin 250 mm forcemain with hwy crossing to Stockdale	m	$2,000	2,000	$4,000,000	$400,000	$4,400,000
			New Gravity Sewer to treatment plant 375mm	m	$1,200	1,800	$2,160,000	$216,000	$2,376,000
			Low lift station at treatment plant (50l/s)	LS		1	$2,500,000	$250,000	$2,750,000
Total									**$14,341,800**

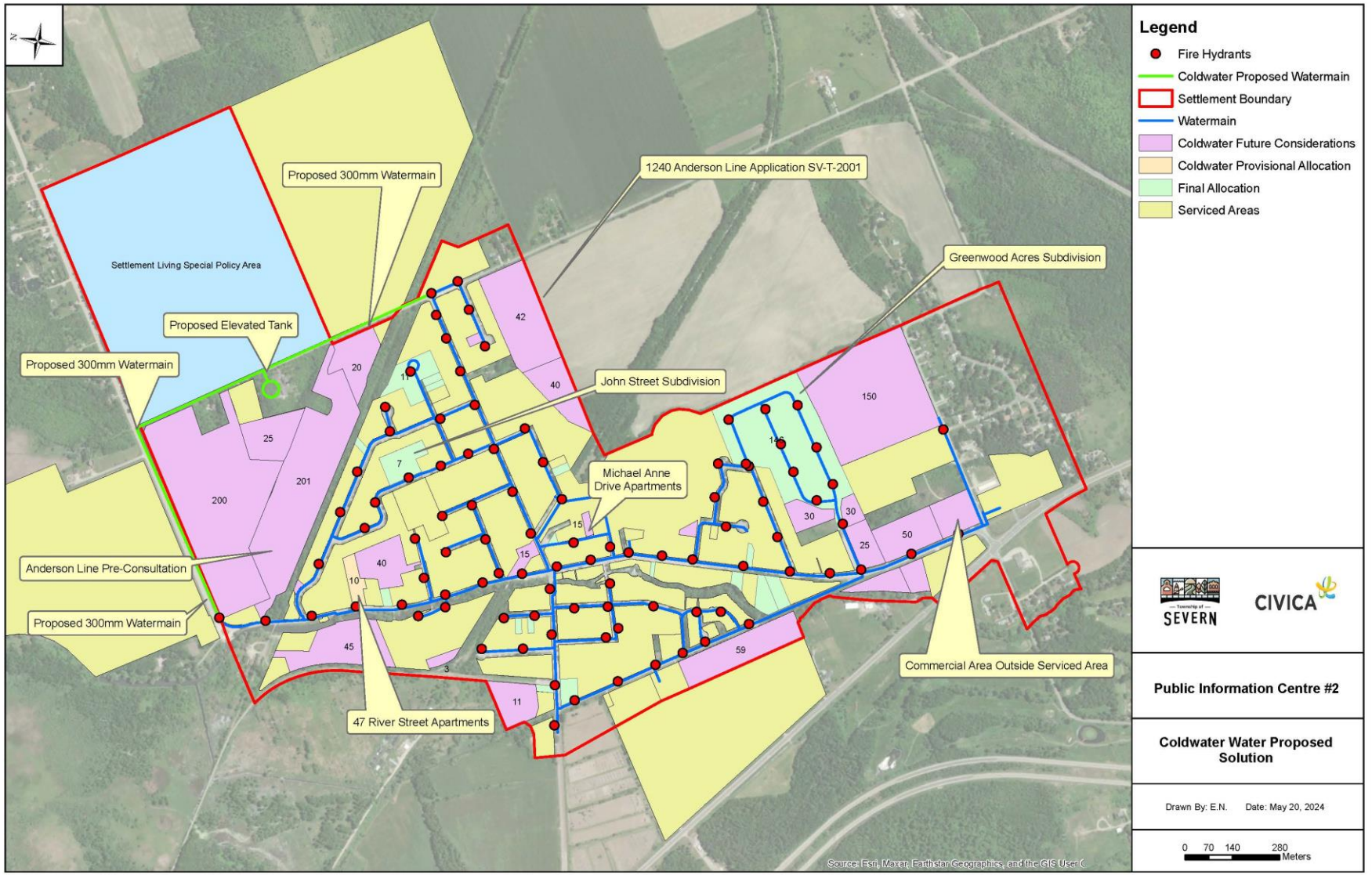
Monitor flow condition for inlet sewer for PS 1, 6, and 8 for both alternatives as development proceeds

Coldwater Treatment Capacity

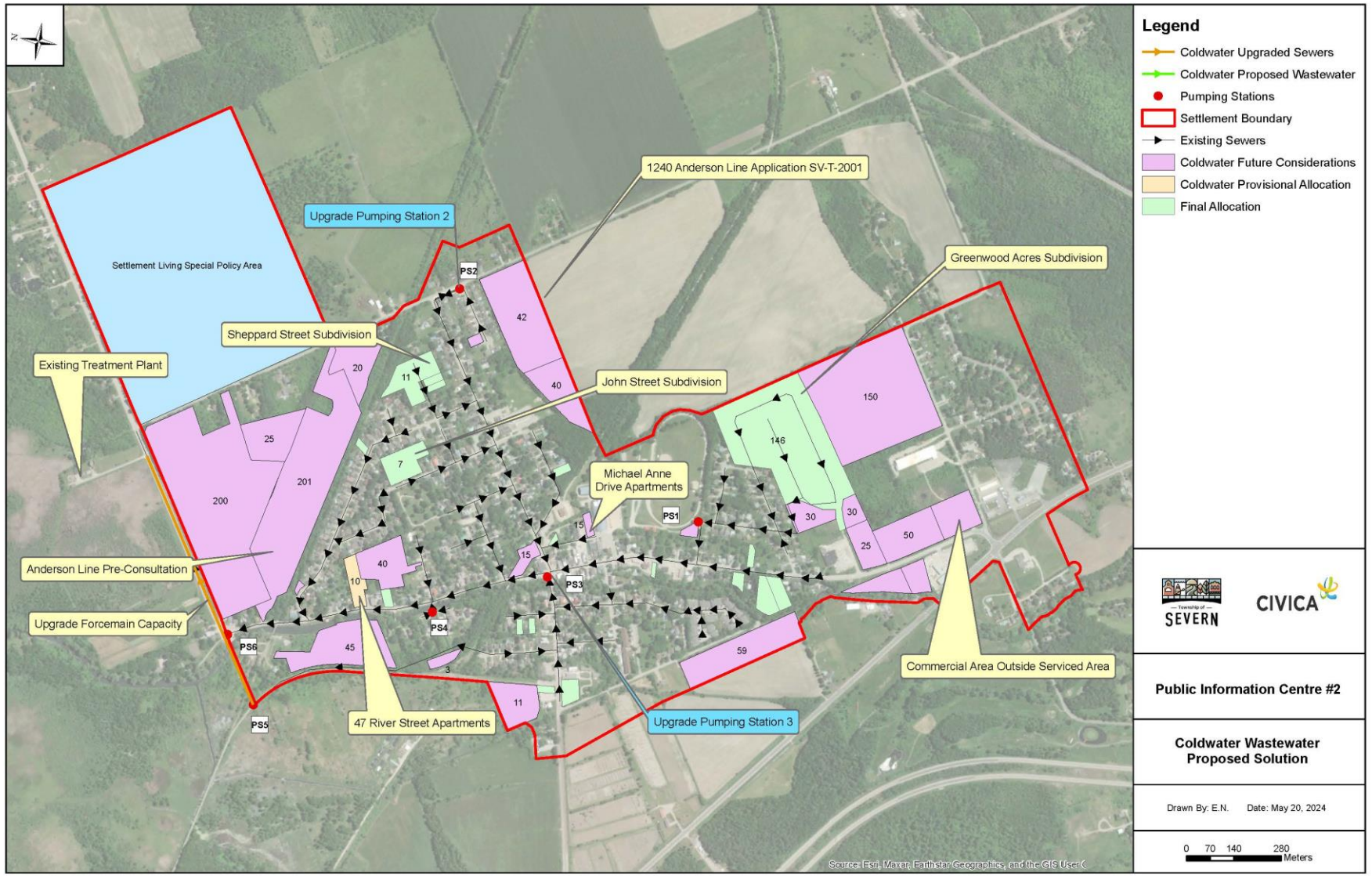




Coldwater Water System



Coldwater Wastewater System



Coldwater Preferred Alternative

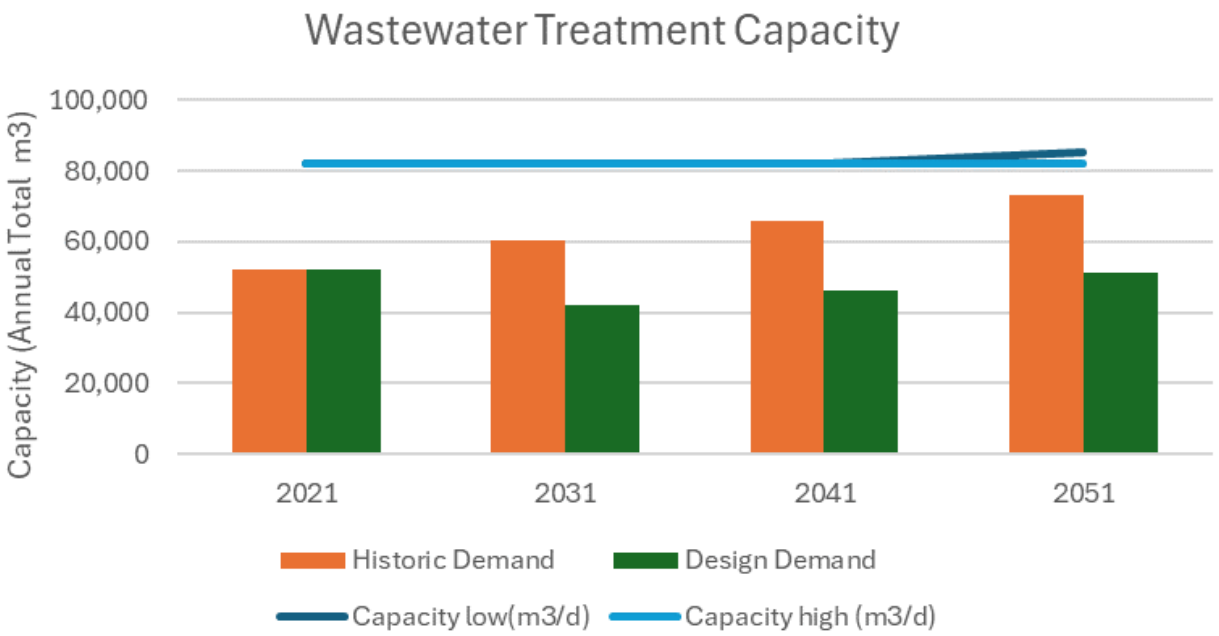
Alternative 1

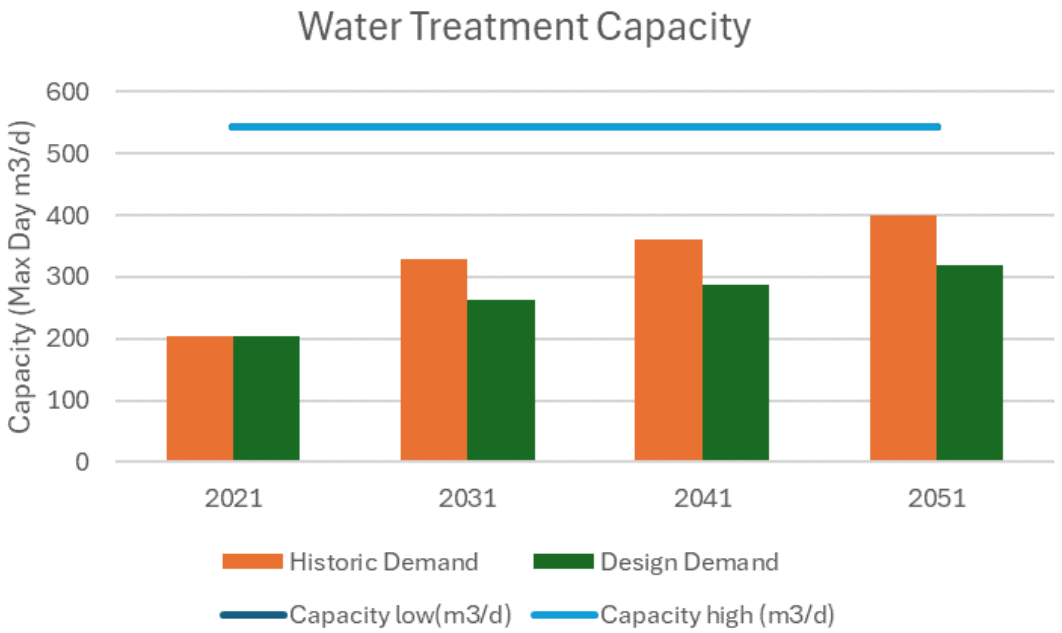
	Description	Rationale	Infrastructure	Cost Estimate					
				Unit	Unit Cost	Quantity	Base	Contingencies (10%)	Budget Estimate
Water System	300mm Ring loop from north point of River St along Upper Big Chute Rd, then Anderson Line to Gray St.	To provide new reservoir situated along ring main and to serve existing and future population with firm fire flow capacity storage and pressure.	New watermain	m	$1,200	1,600	$1,920,000	$192,000	$2,112,000
			New Elevated Tank	m3	$14,000	200	$2,800,000	$280,000	$3,080,000
Total									$5,192,000

Alternative 1

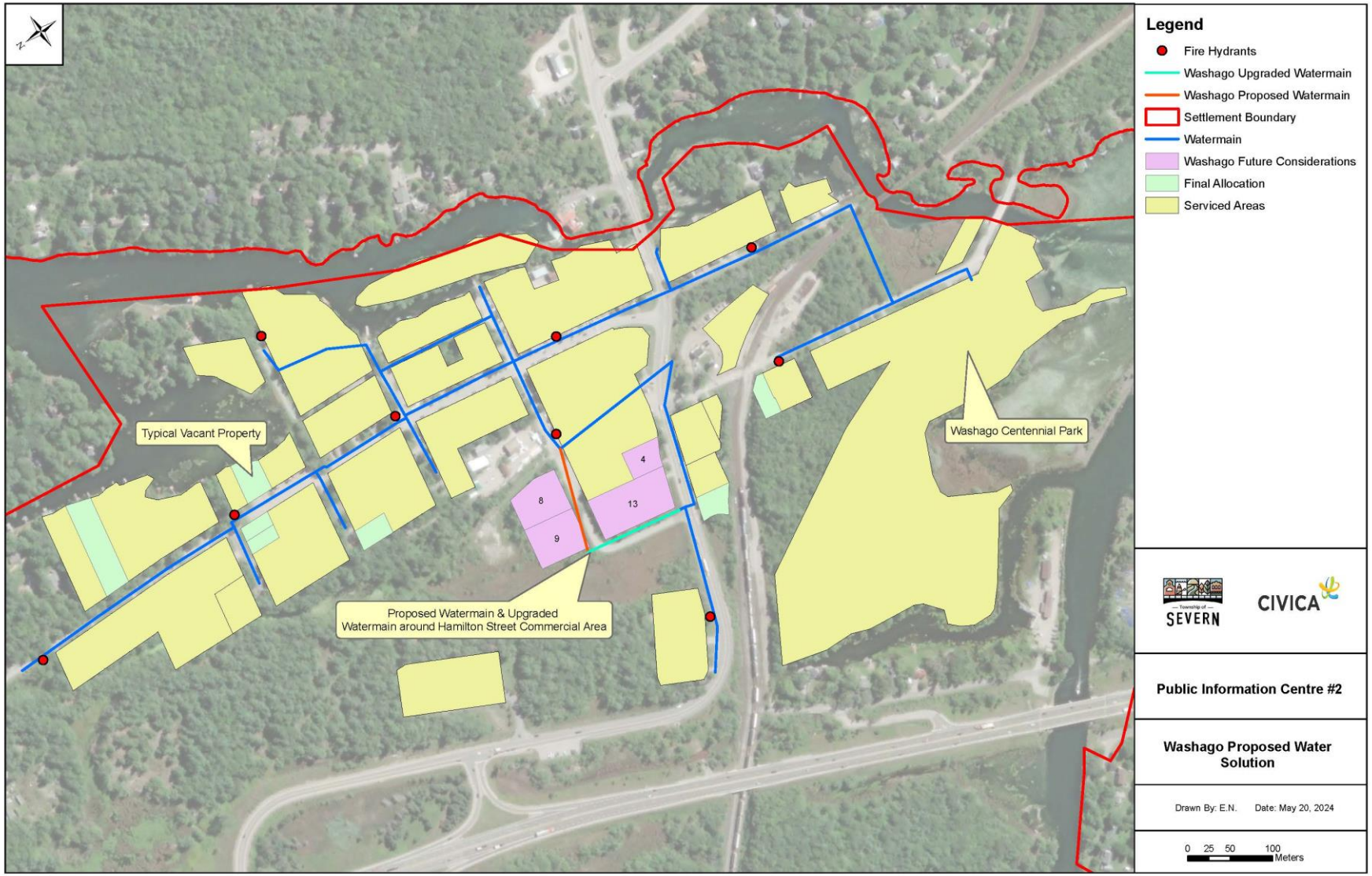
	Description	Rationale	Infrastructure	Cost Estimate					
				Unit	Unit Cost	Quantity	Base	Contingencies (10%)	Budget Estimate
Wastewater Systems	Increase forcemain capacity to WWTP	Future sewage flows will require increased capacity	Forcemain increase currently in design with WWTP upgrade (Estimate budget)	m	$1,800	780	$1,404,000	$140,400	$1,544,400
	PS 3 (Hardware pumping station) upgrade to accommodate new growth and improve existing system capacity	Existing station has capacity challenges and is in need of replacement. Assumed replacement cost to accommodate new growth expansion.	Upgrade PS 3 station from 17 l/s to 50 l/s with infrastructure replacements	LS		50 l/s	$3,500,000	$350,000	$3,850,000
	PS 2 (at Anderson Line) to be decommissioned and flow incorporated into 1240 Anderson Line Development	Existing PS 2 station serves a small population and there is benefit to redirect flow to future station required by new development	Decommission Station and redirect sewer	LS		1	$300,000	$30,000	$330,000
			New station with revised capacity to be provided through development						
Total									**$5,724,400**

Washago Treatment Capacity

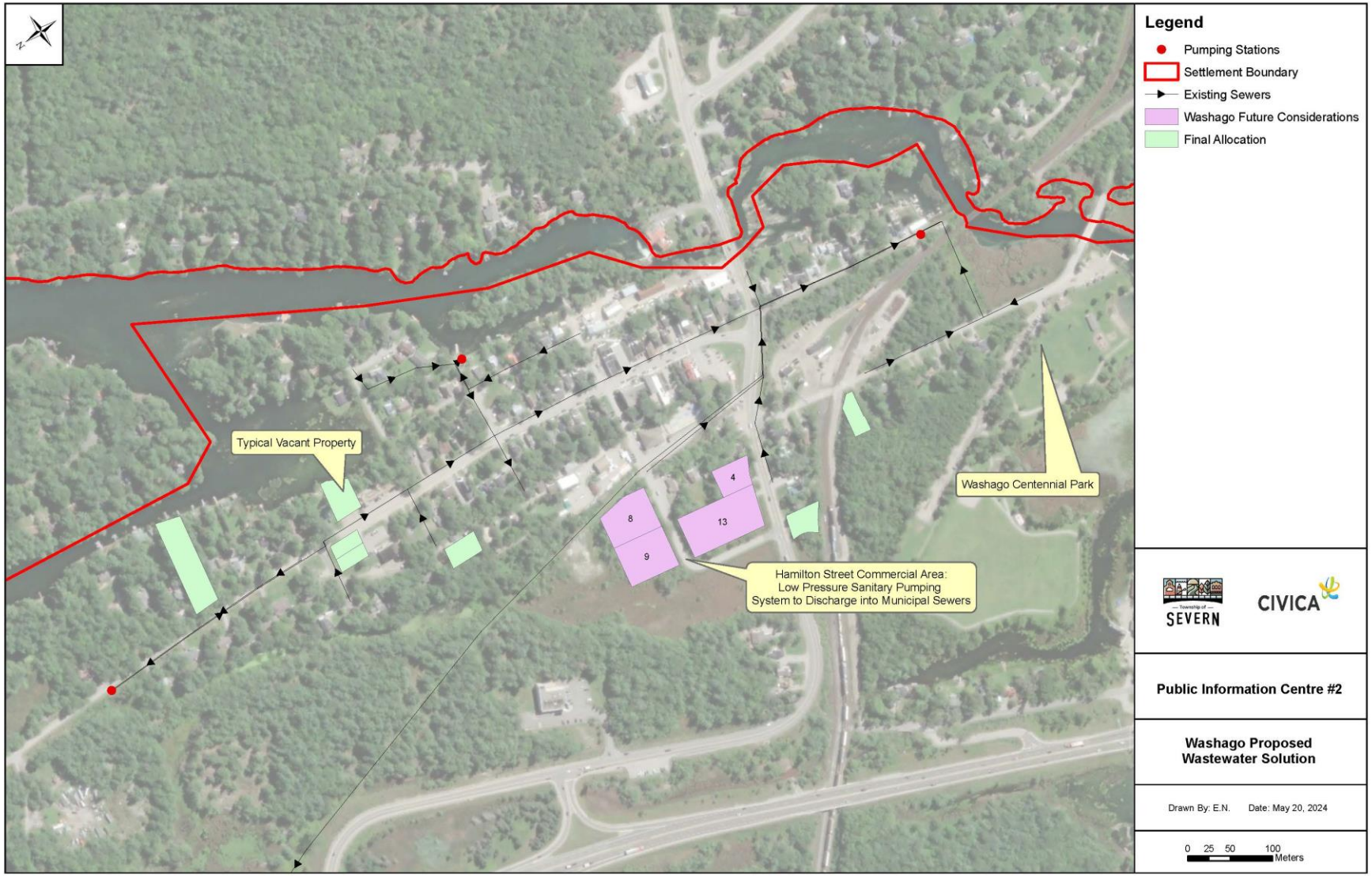




Washago Water System



Washago Wastewater System



Washago Preferred Alternative

Alternative 1

	Description	Rationale	Infrastructure	Cost Estimate					
				Unit	Unit Cost	Quantity	Base	Contingencies (10%)	Budget Estimate
Water System	Proposed 200 mm watermain to complete reliable supple if future	Servicing will be require where future demands are realized for fire flow and reliability of service	New watermain	m	$1,200	240	$288,000	$28,800	$316,800
Total									$316,800

Alternative 1

	Description	Rationale	Infrastructure	Cost Estimate					
				Unit	Unit Cost	Quantity	Base	Contingencies (10%)	Budget Estimate
Wastewater Systems	Hamilton Street Commercial area private low pressure sanitary pumping	Due to grades, future development will be required to provide low pressure sewage pumping to allow for discharge to existing gravity sewers.	By development						
Total									**$0**

System Improvement Recommendations

Water System Efficiency and Optimization Recommendations

Description	Rationale	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Prepare and update WRc Water Loss reporting for	Standard methodology to define and track water consumption by category	$15,000	$7,000	$7,000	$7,000	$7,000	$7,000	$7,000	$7,000	$7,000	$7,000
Outdoor water management and public education	Review and enhance water use awareness and summer outdoor use education to target overall water consumption reduction	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000
Total		**$20,000**	**$12,000**	**$12,000**	**$12,000**	**$12,000**	**$12,000**	**$12,000**	**$12,000**	**$12,000**	**$12,000**

Wastewater System Efficiency and Optimization Recommendations

Description	Rationale	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Inflow and Infiltration Reduction - Flow Monitoring	To determine amount of groundwater and rain water entering the system and where to focus targeted efforts for remediation. (assume rotation of 5 flow meters and rain guage site)	$75,000	$75,000	$75,000	$75,000	$75,000	$75,000	$75,000	$75,000	$75,000	$75,000
Inflow and Infiltration Reduction - Smoke and Dye testing	To assess potential for direct connections to extraneous sources	$25,000	$25,000	$25,000	$25,000	$25,000	$25,000	$25,000	$25,000	$25,000	$25,000
System modelling software selection and model development	Confirm preferred model software support method and develop spacial model for current and future assessments	$20,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000
Remediation of maintenance hole and line defects	Investment in physical remediation based on prioritized defect plan	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000
Total		**$150,000**	**$135,000**	**$135,000**	**$135,000**	**$135,000**	**$135,000**	**$135,000**	**$135,000**	**$135,000**	**$135,000**

System Improvement Recommendations

Stormwater System Efficiency and Optimization Recommendations

Description	Rationale	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Investigate separate stormwater foundation drain system for Coldwater due to high I/I levels	A significant portion of sanitary flow is derived from foundation and sump pump discharges. There is a benefit to consider alternative collection of these flows through a third pipe system		$30,000								
Prepare a study to confirm sediment accumulation and remediation requirements for	Pond cleanout based on sediment accumulation and pond performance is a requirement of the CLI-ECA apprrovals	$80,000									
Anticipated Stormpond cleanout costs	Assumed cleanout program is developed and implemented		$600,000		$600,000		$600,000		$600,000		$600,000
Additional support for other CLI-ECA requirements	These include additional stormwater system monitoring, reporting and remediation planning. Funding based on anticipated annual investment		$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000
Public Education and awareness	stormwater storage and reuse, discharge of banded products into storm sewer and private side stormwater and sump pump water management		$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000
Total		**$80,000**	**$645,000**	**$15,000**	**$615,000**	**$15,000**	**$615,000**	**$15,000**	**$615,000**	**$15,000**	**$615,000**

Next Steps

Following Public Information Centre #2, we will:

- Review public feedback to better understand the priorities of Township of Severn residents and stakeholders
- Develop alternative solutions to meet servicing system needs, issues, and opportunities, building on your input
- Develop recommended infrastructure projects and supporting policies and strategies
- Present recommended projects, strategies and other solutions in the Servicing Master Plan that will be presented to Council date TBD

Who's Listening?

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Share the SMP

Provide your feedback on the SMP objectives, your thoughts on sanitary and stormwater system issues, and your suggestions on where we can best focus infrastructure improvements in the Township of Severn.

Help shape the SMP study by visiting ***Severn.ca/servicingplan*** to:

- Submit questions or comments to the project team
- See the latest updates and future public consultation opportunities