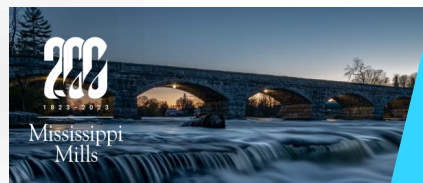


Mississippi Mills
Water & Wastewater Infrastructure
Master Plan
Committee of the Whole Presentation
September 24, 2024



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Mississippi Mills Water & Wastewater Master Plan

The Municipal Class Environmental Assessment Master Plan Process

Master Plan Class EA Process

- Required by the *Ontario Environmental Assessment (EA) Act*, R.S.O., 1990 to **follow an approved process** set out in the Municipal Class EA document prepared by the Municipal Engineers Association (MEA).

Master Plan Process

- Tool to identify long term infrastructure maintenance, investment and future studies and plans
- The current Master Plan is intended to satisfy Phases 1 and 2 of the Municipal Class EA process (Approach 1).

Master Plan Approach 1

- Master Plan is being completed at a broad level of assessment and will require further detailed assessment at the project-specific level.



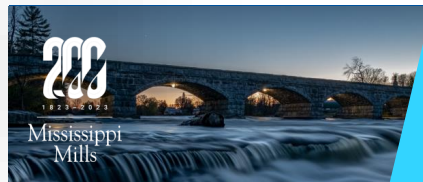
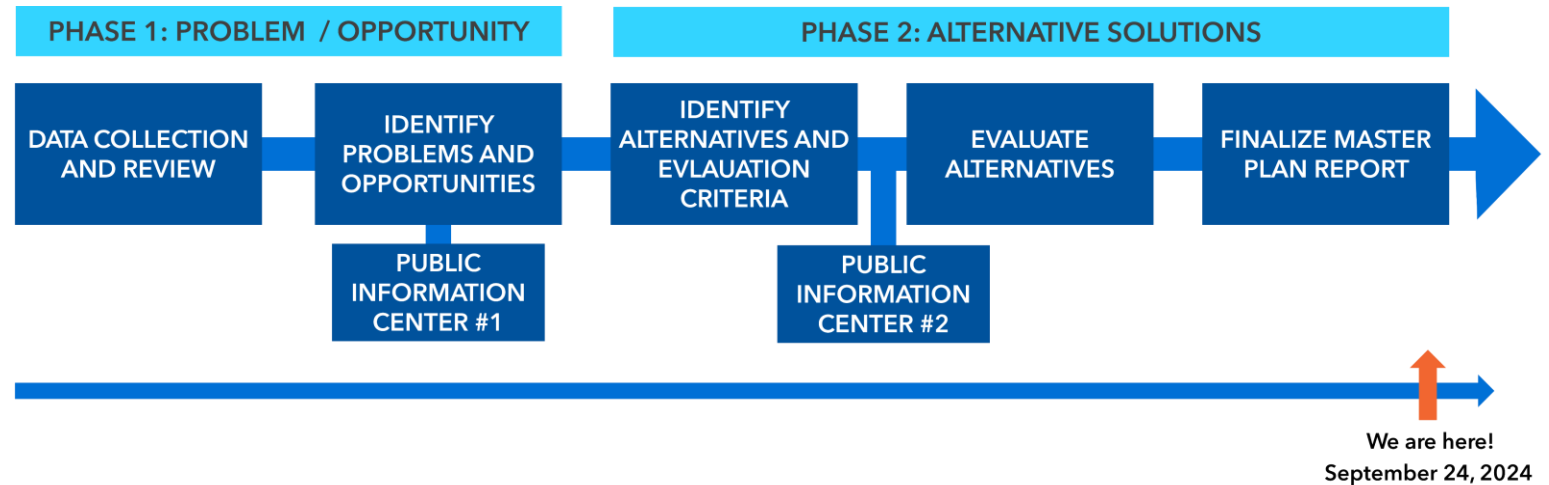
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Mississippi Mills Water & Wastewater Master Plan Process

Project Timeline

- 1 April 2023: Public Information Center No. 1
- 2 September 2023: Finalize Population Projections
- 3 November 2023: Phase 1 Report
- 4 December 2023: Assessment of Alternatives
- 5 January 2024: Public Information Center No. 2
- 6 September 2024: Finalize Phase 2 Report
- 7 September 17, 2024: 30 Day Review Period



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Mississippi Mills Water & Wastewater Master Plan Process

Phase 1 - Problem/Opportunity

- Collect and review background documents.
- Confirm future growth and planning projections.
- Establish a design basis and future water and wastewater demands.
- Review water supply capacity.
- Review wastewater treatment capacity with a focus on Gemmill's Bay Pumping Station.
- Update existing water and wastewater computer simulations
- Summarize findings and update stakeholders

Phase 2 - Alternative Solutions

- Review alternative water and wastewater servicing options and selecting preferred alternatives.
- Prepare a draft Master Plan Report for review.
- Hold a Public Information Center to present the proposed alternatives and preferred solutions to the public.
- Re-evaluate servicing concepts based on comments received
- File the Master Plan with the Ontario Ministry of the Environment conservation, and Parks for 30-day review period.
- Issue Notice of Completion and finalizing report



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Mississippi Mills (Almonte) Future Growth Projections

MM2048 Population Projections for Almonte (2023)

Projection Period	Population Estimate Almonte	Population Estimate Mississippi Mills
Existing (2021 Census)	6,098	14,740
Short-Term (1-5 Years; 2023-2028)	8,238	17,455
Mid-Term (5-15 Years; 2028-2038)	11,718	21,309
Long-Term (15-25 Years; 2038-2048)	12,952	25,173



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Potable Water Supply and Well Pumping Capacity

Problem/Opportunity

- The current operating capacity of Almonte's wells is less than what is required to support future population growth.
- The Nepean Sandstone aquifer located on the west side of Almonte is expected to be a viable source to increase supply.
- Upgrades to the existing pumps at Wells 7 and 8 will increase pumping capacity but not enough to support future growth.

Alternative Solutions

Short Term (2023-2028)

- Increase the pumping capacity of Wells 7 & 8 to their full demonstrated yield

Mid Term (2028-2038)

- Preferred: New well(s)
- Not preferred: New water treatment plant



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Potable Water Supply and Well Pumping Capacity

System Parameter (L/s)	Period	Max Day Demand (L/s)	Deficit (Existing Supply) (L/s)	Deficit from Full Yield (L/s)	Deficit from Full Yield at Only Wells 7 & 8 (L/s)
Existing Supply 70.1 Full Yield 106.8 Full Yield at Wells 7 & 8 ⁽¹⁾ 101.1	Existing	53.5	None	None	None
	Short-Term (2023-2028)	96.0	25.9	None	None
	Mid-Term (2028-2038)	140.6	70.5	33.8	39.5
	Long-Term (2038-2048)	159.0	88.9	52.2	57.9

(1) This total is equal to the current operating limits of Wells 3, 5, and 6 (7.1 + 6.4 + 11.9 = 25.4 L/s) plus an upgraded operating limit of 75.7 L/s for Wells 7 and 8.



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Potable Water Supply and Well Pumping Capacity

Criteria	Option 1: Do Nothing	Option 2: New Well(s)	Option 3: New Water Treatment Plant
Overall Evaluation	Not preferred	Preferred	Not preferred



Next Steps

**Short Term
(0-5 years)**

- Increase the pumping capacity of Wells 7 & 8 to their full demonstrated yield.
- Determine suitable well site for the construction of new well.
- **Cost: \$2.5M**

**Mid Term
(5-15 years)**

- Drill and bring online a new well(s).
- **Cost: \$7.5M**

**Long Term
(15-25 years)**

- Expand the capacity of the new well(s) to accommodate growth.
- **Cost: \$1M**



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Potable Water Storage: Towers and Tanks

Problem/Opportunity

- Within the mid-term (2028 to 2038) the existing water tower and ground level water storage tank will not have enough storage capacity to meet the water system demands.



Alternative Solutions

Mid Term (2028-2038)

- **Preferred:** New Water Tower (elevated tank)
- **Not preferred:** Expansion of booster pumping station and reservoir
- **Not carried forward:** New booster pumping station and reservoir
- **Not carried forward:** Second water tower



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Potable Water Storage: Towers and Tanks

Period	Equivalent Population ⁽¹⁾	Volume (m ³)					
		Existing Storage	'A'	'B'	'C'	Required Storage	Deficit
Existing	6,650	5330	1718	1334	763	3814	None
Short-Term (2023-2028)	10,304	5330	2100	2073	1043	5216	None
Mid-Term (2028-2038)	15,330	5330	2557	3037	1399	6993	1663
Long-Term (2038-2048)	17,524	5330	3675	3433	1777	8885	3555

(1) Equivalent population determined using a demand of 35,000 m³/ha for light industrial lands, 28,000 m³/ha for commercial lands, and 350 L/d per capita.

(2) Existing storage is inclusive of both the elevated tank (2,830 m³) and at-grade storage reservoir (2,500 m³).



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Potable Water Storage: Towers and Tanks

Next Steps

Criteria	Option 1: Do Nothing	Option 2: Expand Water Storage & Booster Pumps	Option 3: New Elevated Tank
Overall Evaluation	Not preferred	Not preferred	Preferred



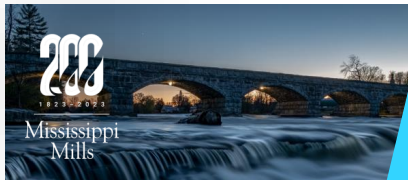
**Mid Term
(5-15 years)**

- Undertake a Schedule B Class EA to support the construction of a new Elevated Water Storage Tank.
- Construct the tank.
- **Cost: \$15M**



**Long Term
(15-25 years)**

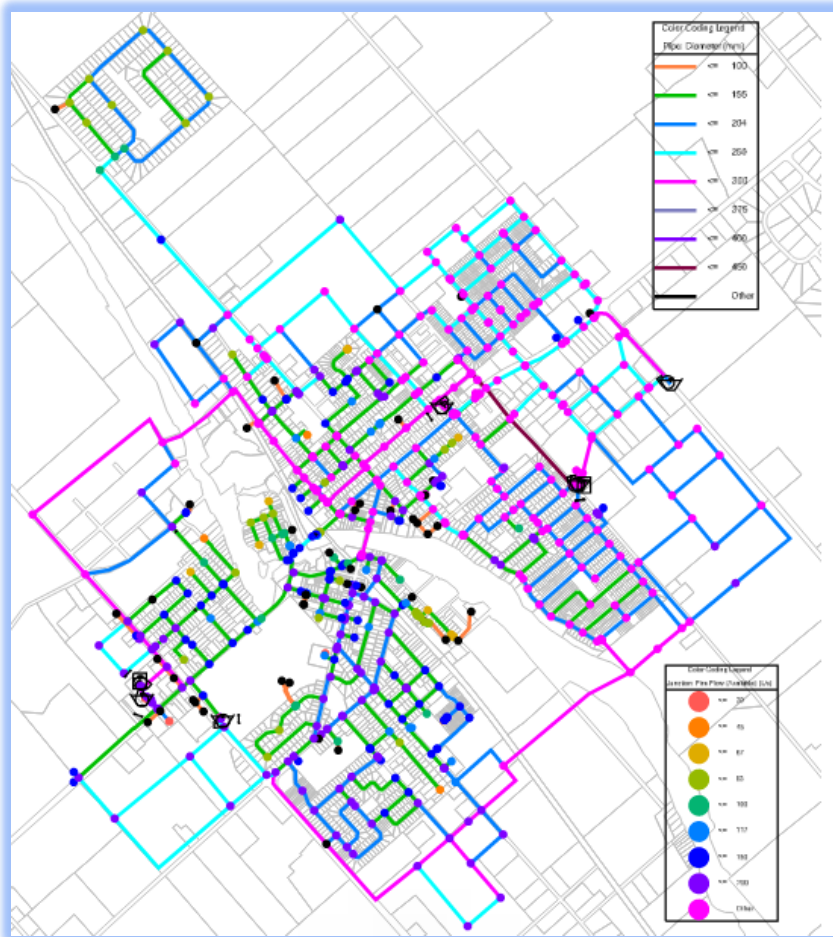
- Expand the capacity of the new tank to accommodate growth.



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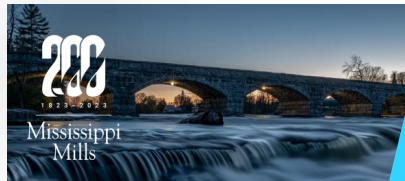


Potable Water Distribution System



Problem/Opportunity

- The existing water distribution system needs to be expanded to supply new development areas.
- The expanded water distribution system cannot supply adequate fire flow and pressure to all areas of Almonte under increased growth without upgrades to the existing distribution system.

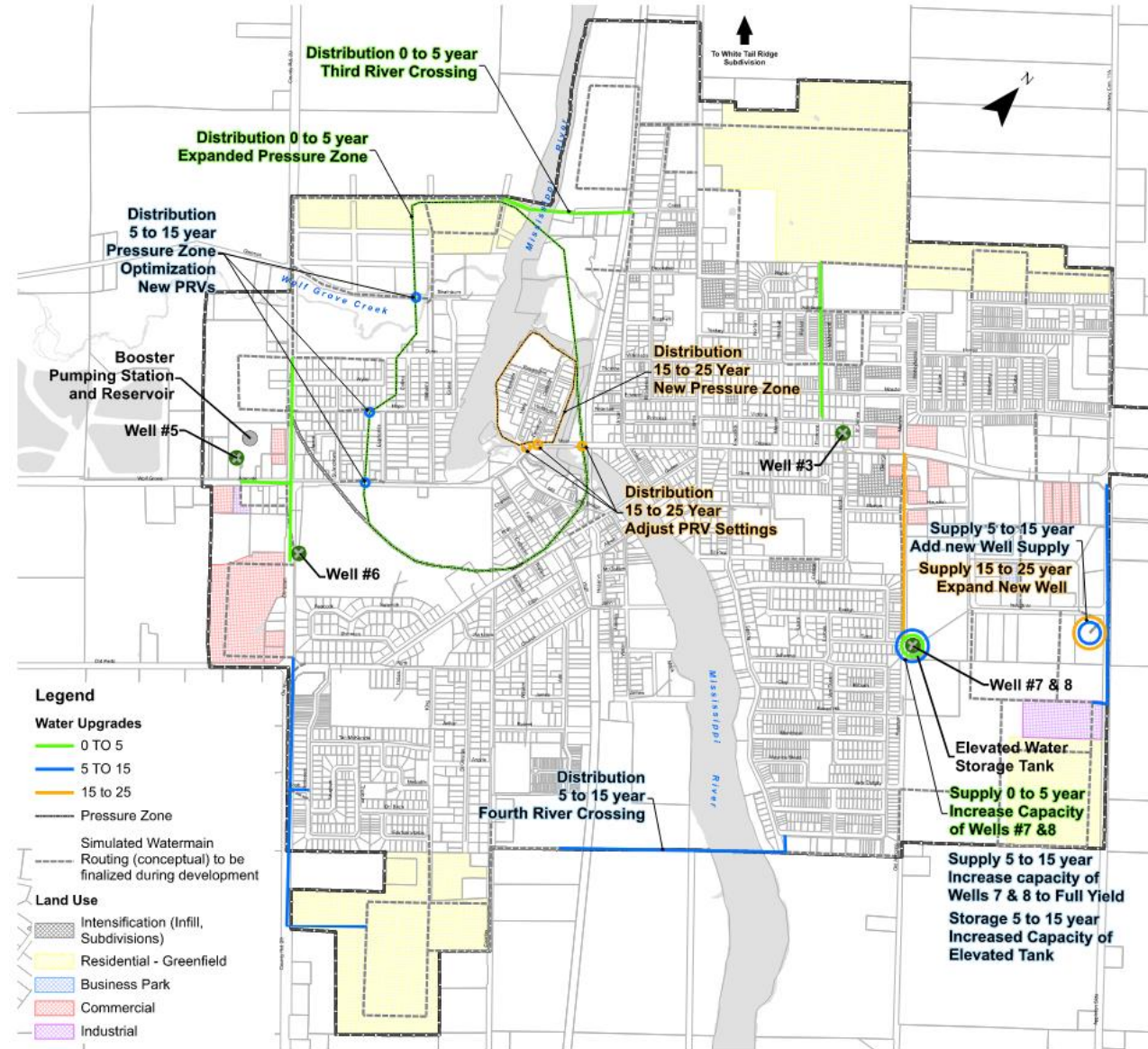


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Mississippi Mills Water & Wastewater Infrastructure Master Plan

Potable Water Infrastructure Upgrades



Mississippi Mills Water & Wastewater Infrastructure Master Plan

Potable Water Infrastructure Upgrades - Next Steps

Short Term (0-5 years)

- Extend watermain along northern County Road 29.
- Install new Pressure Reducing Valves.
- Install a watermain that crosses the Mississippi River at the northern end of Almonte.
- Upgrade the watermain along Florence Street.
- Pressure Zone Optimization and Watermain Condition Upgrades
- **Cost: \$34.7M**

Mid Term (5-15 years)

- Install a watermain that crosses the Mississippi River at the southern end of Almonte.
- Install watermain along southern Country Road 29.
- Watermain condition upgrades
- **Cost: \$26.8M**

Long Term (15-25 years)

- Install 450 mm watermain from Ottawa to Patterson St to the elevated water tower.
- Create new Island Pressure Zone
- Watermain condition upgrades
- **Cost: \$4M**



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Capital Costs: Water Supply, Distribution, Storage

Project Type	Project	Short-Term (0-5 Years)	Mid-Term (5-15 Years)	Long-Term (15-25 Years)
Water Distribution	Third River Crossing	\$6.5M	-	-
	County Road 29 Extension North	\$2.3M	-	-
	Connection between Third River Crossing and County Road 29	\$2.5M	-	-
	Upgrade watermain along Florence Street	\$680,000	-	-
	Optimize Pressure Zones and Install New PRVs	\$100,000	\$300,000	\$300,000
	Fourth River Crossing	-	\$17M	-
	Country Road 29 Extension South	-	\$2.2M	-
	Connect Existing Reservoir to County Road 29	\$325,000		



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Capital Costs: Water Supply, Distribution, Storage

Project Type	Project	Short-Term (0-5 Years)	Mid-Term (5-15 Years)	Long-Term (15-25 Years)
Water Supply	Increase Capacity of Wells 7 & 8 (New Well)	\$2M	\$500,000	-
	Well site selection and well testing	\$500,000	-	-
	New Well(s) installation and expansion	-	\$7M	\$1M
Water Storage	Increase Capacity of Elevated Tank	-	\$15M	
Water Distribution	Paterson St WM Upgrade	-	-	\$580,000
	Watermain Condition Upgrades	\$22.3M ⁽¹⁾	\$7.3M	\$3.1M

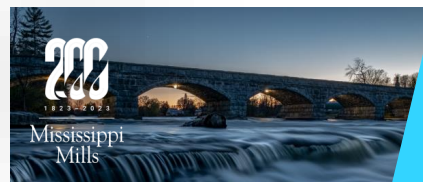


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Capital Costs: Water Supply, Distribution, Storage

Project Type	Project	Short-Term (0-5 Years)	Mid-Term (5-15 Years)	Long-Term (15-25 Years)
Studies	Schedule 'B' Class EA to increase the water supply at Wells 7 & 8	\$250,000	-	-
	Schedule 'B' Class EA to establish a new well location	-	\$300,000	-
	Schedule 'B' Class EA for a new elevated water storage tank	\$200,000	-	-
	Geotechnical feasibility study for the Third Crossing	\$200,000	-	-
	Schedule 'B' Class EA for the Fourth Crossing	-	\$300,000	-
TOTAL		\$37.85M	\$49.9M	\$5M



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Wastewater Treatment System Plant

	AVG DAY (m ³ /day)	Max Daily Flow (m ³ /day)	Exceeds Peak Flow Capacity
Rated Capacity	4,700	14,000	28,000
Existing	3,780	19,700	No
Short –Term (2023-2028)	5,817	25,812	No
Mid-Term (2028- 2038)	8,495	33,846	Yes
Long-Term (2038-2048)	9,589	37,128	Yes

Problem/Opportunity

- Short term maximum daily flows exceed the peak flow capacity of the existing Wastewater Treatment Plant

Alternative Solutions

- Preferred: Expansion of the existing Wastewater Treatment Plant



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Wastewater Treatment System Plant

Criteria	Option 1: Do Nothing	Option 2: New Wastewater Treatment Plant
Overall Evaluation:	Not preferred	Preferred



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Wastewater Treatment System Plant - Next Steps

Short Term
(0-5 years)

- Conduct a Schedule C Class EA to support the construction of a Wastewater Treatment Plant Expansion (WWTP)
- WWTP Expansion
- **Cost: \$ 75M**

Mid Term
(5-15 years)

- Plant Expansion in Short Term to accommodate growth in the Mid Term.

Long Term
(15-25 years)

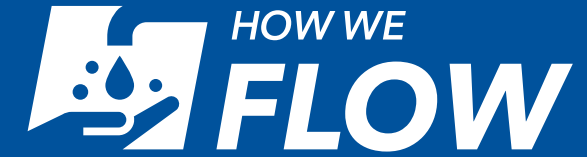
- Plant Expansion in Short Term to accommodate growth in Long Term.





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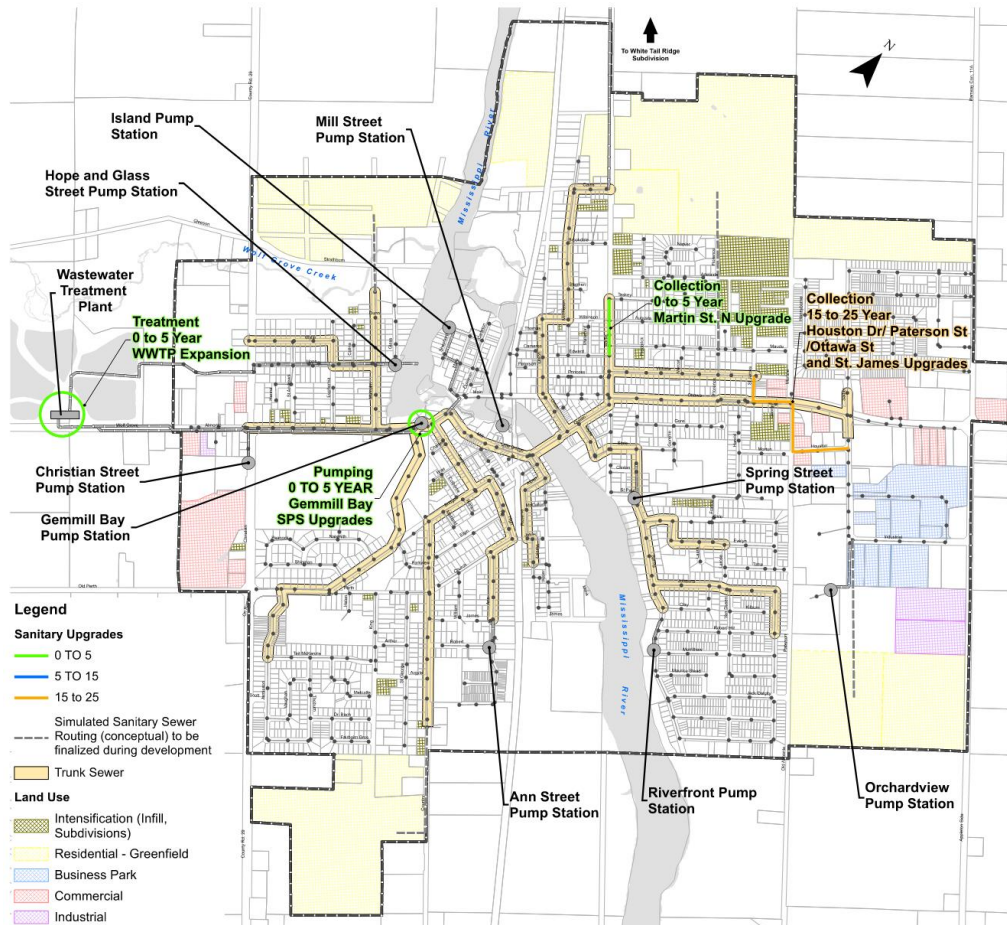
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Mississippi Mills Water & Wastewater Infrastructure Master Plan

Wastewater Infrastructure Upgrades

Next Steps



**Short Term
(0-5 years)**

- Expand the existing Gemmill's Bay SPS
- Martin Street North Sewer Upgrade
- Sewer Condition Upgrades
- **Cost: \$32.2M**

**Mid Term
(5-15 years)**

- Gemmill's Bay SPS expanded in Short Term to accommodate growth.
- Sewer Condition Upgrades
- **Cost: \$6.5M**

**Long Term
(15-25 years)**

- Houston Dr./ Paterson St. /Ottawa St. and St. James Street Sewer Upgrades
- **Cost \$10.1M**

Capital Costs: Sewage Treatment, Pumping, Collection

Project Type	Project	Short-Term (0-5 Years)	Mid-Term (5-15 Years)	Long-Term (15-25 Years)
Wastewater Pumping	Gemmill's Bay SPS Upgrade	\$15M	-	-
	Condition Assessments of minor SPSs	\$120,000	-	-
Wastewater Treatment	Wastewater Treatment Plant Expansion	\$75M	-	-
Wastewater Collection	Houston Dr., Paterson St., Ottawa St., and St. James Upgrades	-	-	\$1.5M
	Martin St. North Upgrade (Short Term)	\$100,000		
	Martin St. North Upgrade (Long Term)	-	-	\$230,000
	Sewer Condition Upgrades	\$17M	\$6.5M	\$8.6M



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Capital Costs: Sewage Treatment, Pumping, Collection

Project Type	Project	Short-Term (0-5 Years)	Mid-Term (5-15 Years)	Long-Term (15-25 Years)
Studies	Schedule 'C' Class EA for the WWTP Expansion	\$350,000	-	-
	Schedule 'B' Class EA for the Gemmill's Bay SPS Expansion	\$250,000	-	-
	Stormwater and Drainage Master Plan	\$200,000		
TOTAL		\$108M	\$6.5M	\$10.3M



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Mississippi Mills Water & Wastewater Master Plan

Next Steps

September 2024: Issue Notice of Completion and place Master Plan on public record for 30 days.



October 2024: Council accepts completed Water and Wastewater Master Plan.



Fall 2024/Early 2025: Municipality commences further financing studies and selected projects from Master Plan recommendations.



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Mississippi Mills Water & Wastewater Master Plan

Staff Recommendation

THAT Committee of the Whole receive the draft Water Wastewater Master Plan and direct staff to commence the mandatory 30-day comment period as required by the Municipal Class Environmental Assessment process and report back to Committee to provide an overview of any comments and any modifications to the draft Water Wastewater Master Plan.



Questions, Comments and Concerns?



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