Township of SEVERN

COLDWATER WASTEWATER TREATMENT PLANT EXPANSION CLASS ENVIRONMENTAL ASSESSMENT

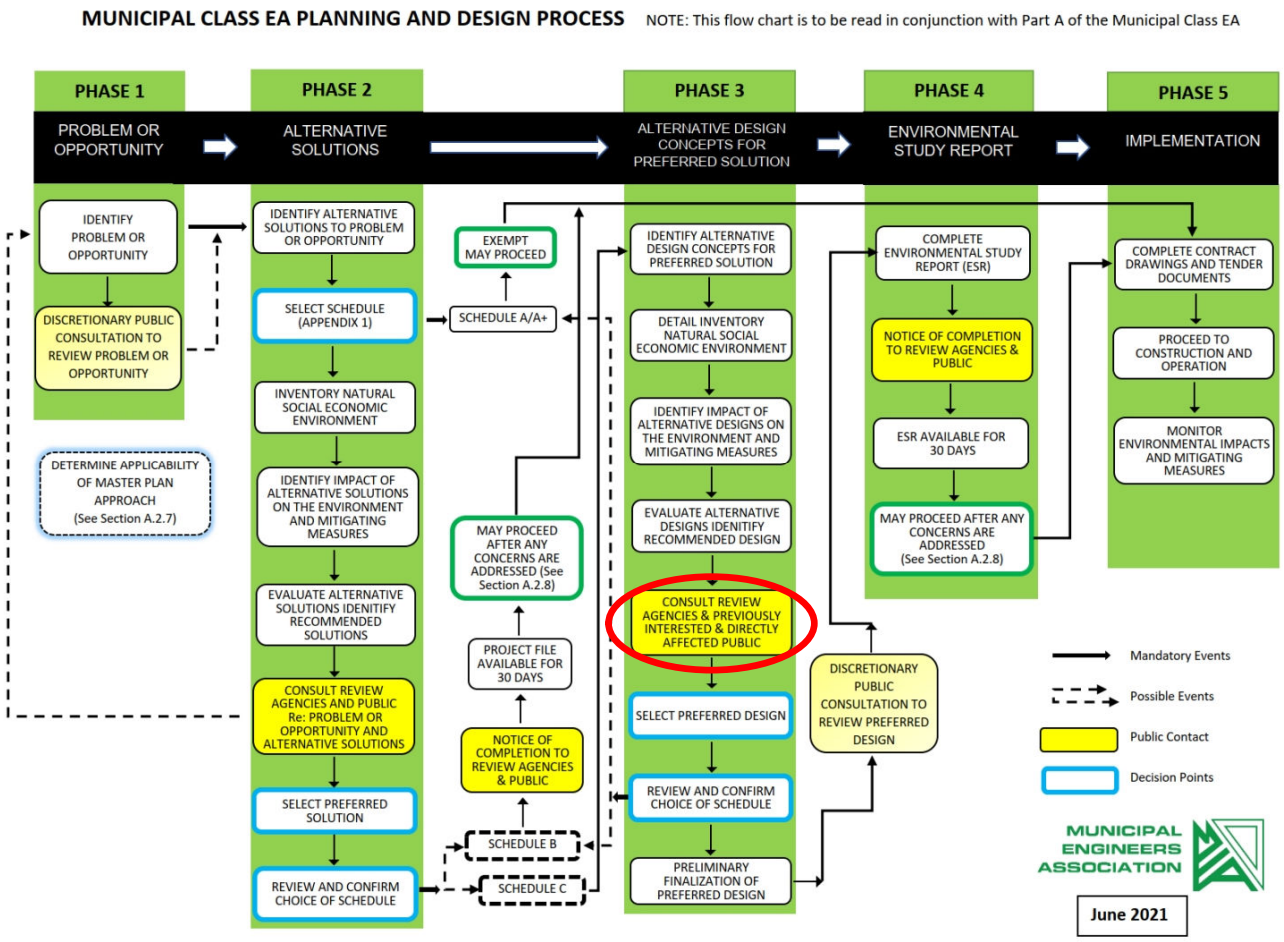
PUBLIC INFORMATION CENTRE NO. 2

May 29, 2025

TATHAM ENGINEERING

PROBLEM STATEMENT

The community of Coldwater is expected to grow significantly over the next 20 years. The Coldwater wastewater treatment plant (WWTP) does not have capacity to treat the wastewater associated with the anticipated population growth in Coldwater, nor does the Main SPS have capacity to convey the projected wastewater flows to the WWTP.

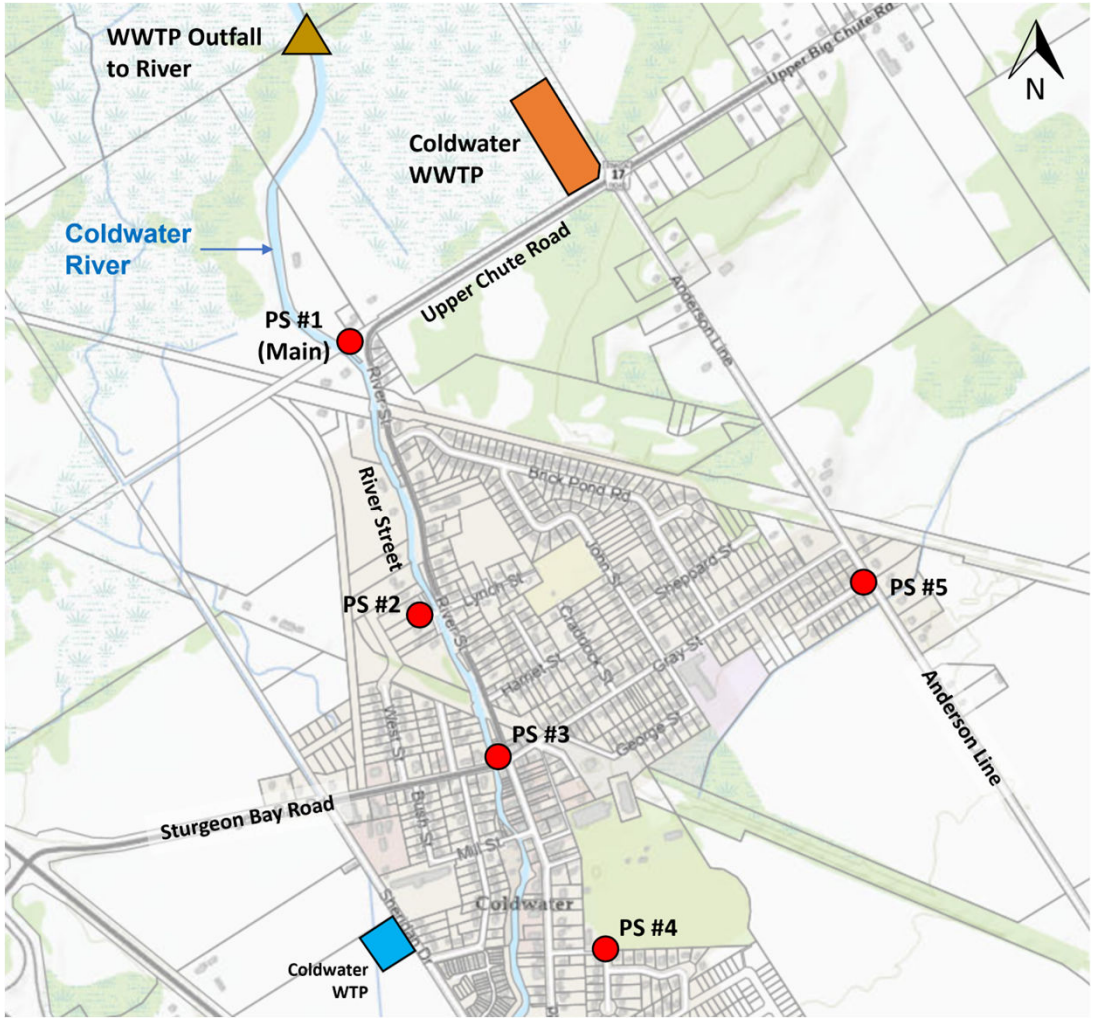


CLASS EA PROCESS

We are at Class EA Phase 3 to determine the preferred design concepts for the preferred solution

Preferred solution is to:

- Expand Coldwater WWTP and Main SPS on existing sites
- Implement inflow and infiltration control program to reduce peak wastewater flows



EXISTING WASTEWATER INFRASTRUCTURE

This Class EA addresses:

- PS #1 (Main sewage pumping station)
- Coldwater WWTP with treated effluent outfall to Coldwater River

EXISTING MAIN SPS AND COLDWATER WWTP

- The Main SPS is an 18.8 L/s (1,624 m^3/day) below-ground station that pumps to the WWTP
- The Coldwater WWTP:
  - has an average day rated capacity of 921 m^3/day and a peak flow capacity of 3,240 m^3/day
  - in 2024, it operated at 74% of its rated capacity; the maximum influent flow reached 63% of its peak flow capacity
  - consistently meets its effluent objectives and compliance criteria
  - has two package treatment plants:
    - 546 m^3/day extended aeration (EA) plant
    - 375 m^3/day sequencing batch reactor (SBR) plant
  - treatment includes screening, phosphorus removal and UV disinfection
  - discharges treated effluent to the Coldwater River
  - biosolids are digested and stored before disposal by land application

PROPOSED WWTP AND SPS EXPANSION

- Current Coldwater population: approx. 1,500 persons
- Servicing Master Plan projection: 3,113 persons by 2051
- Full buildout: approx. 8,000 persons

- **Phase 1 expansion to 1,500 m^3/day will be designed**
- Consideration for 2 further expansions as population grows

Expansion Phases	Average Capacity (m^3/day)	Peak Capacity (m^3/day)	Population	Equivalent Units	Years of Growth (@ 30 units/yr)
Existing WWTP	921	3,240	2,300	851	
Phase 1 Expansion	1,500	6,000	3,750	1,388	18
Phase 2 Expansion	2,000	8,000	5,000	1,851	33
Phase 3 Expansion	3,000	12,000	7,500	2,778	64

REQUIRED WWTP EFFLUENT QUALITY

- Receiving Water Assessment determined WWTP effluent quality that will maintain Coldwater River's good water quality
- Township and MECP agreed to more stringent effluent quality objectives and compliance criteria for Phase 1 expansion

Parameter	Effluent Quality Limits (mg/L)		Annual Loading (kg/yr)	
	Existing 921 m^3/day	Expansion 1 1,500 m^3/day	Existing 921 m^3/day	Expansion 1 1,500 m^3/day
$CBOD_5$ (mg/L)	15	10		
Suspended Solids (mg/L)	15	10		
Total Phosphorus (mg/L)	0.5	0.18	110	66
Ammonia Summer (mg/L)	n/a	2		
Ammonia Winter (mg/L)	n/a	6		
E. Coli	n/a	200/100 mL		
pH	n/a	6.5 – 8.5		

WWTP PHASE 1 EXPANSION COMPONENTS

- New common headworks facility for pre-treatment
- New secondary treatment unit
- Existing extended aeration (EA) secondary treatment unit
- New secondary effluent pumping station
- New tertiary filtration facility
- Expanded UV disinfection facility
- Existing chemical feed facility
- Existing sludge management facility

WWTP AND SPS DESIGN CONCEPT OPTIONS

Design concept options considered for WWTP main treatment components and for Main SPS expansion

Screening

Existing: Manual bar screens
Options:
1: In-channel conveyor screen
2: Manual bar screen
3: Rotary drum screen

Secondary Treatment

Existing: Extended Aeration (EA) and SBR
Options:
1: Extended aeration (EA)
2: Sequencing batch reactor (SBR)
3: Moving bed biofilm reactor (MBBR)

Tertiary Filtration

Existing: None
Options:
1: Disk filtration
2: Granular media filtration
3: Membrane filtration

Main SPS

Existing: Small below-ground wet well and pumps
Options:
1: Expand and upgrade SPS
2: Replace SPS

ASSESSMENT OF WWTP SCREENING OPTIONS

In-channel conveyor screen with bypass manual screen

- Fine screening, conveying and dewatering
- Mechanically and automatically cleaned
- Must be protected from frost
- Low manual labour and efficient
- Estimated installed cost: $450,000

Preliminary Preferred Solution

- Reduces O&M labour as flows increase
- Better screening
- Installed within new headworks building

Manual bar screens only

- Coarse screening (12 mm)
- Manually cleaned by operators
- Can be installed outdoor
- Operation is labour intensive
- Estimated installed cost: $150,000

Rotary drum screen

- Fine screening and dewatering
- Mechanically and automatically cleaned
- High-capacity and larger system more suitable for larger WWTPs
- Not considered further

ASSESSMENT OF SECONDARY TREATMENT OPTIONS

Extended Aeration (EA)

- Required level of treatment
- Small footprint
- Operator familiarity
- Easy to operate and maintain
- Low energy requirements
- Handles well flow fluctuations
- Lowest O&M costs
- Estimated installed cost: $5.8M

Preliminary Preferred Solution

- Flexible and resilient
- Operator preference

Sequencing Batch Reactor (SBR)

- Required level of treatment
- Small footprint
- Operator familiarity
- More complex O&M
- Higher energy requirements
- Does not handle flow fluctuations well
- Higher O&M costs
- Estimated installed cost: $4.5M

Moving Bed Biofilm Reactor (MBBR)

- Required level of treatment
- Small footprint
- Similar O&M to extended aeration
- Highest energy requirements
- Resilient to flow and quality fluctuations
- Not common at municipal WWTPs
- Highest O&M costs
- Estimated installed cost: $8.2M

ASSESSMENT OF TERTIARY FILTRATION OPTIONS

Disk Filter

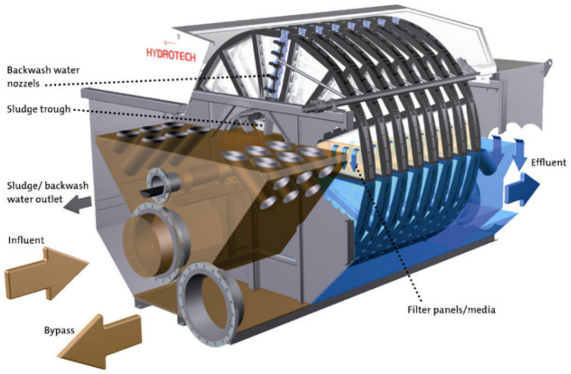
- Provides required level of treatment
- Continuous filtration process
- Does not need backwash water tank
- Compact and modular system
- Low O&M requirements
- Estimated installed cost: $1.5M

Preliminary Preferred Solution

- Compact
- Uninterrupted filtration
- Easy to operate and maintain

Granular Media Filter

- Provides required level of treatment
- Has separate backwash cycle
- Requires backwash water tank
- Larger footprint
- More O&M requirements
- Higher capital costs



Membrane Filter

- Higher level of treatment than required
- Complex system
- High maintenance to prevent membrane fouling
- High energy requirements
- Highest capital costs

ASSESSMENT OF SPS EXPANSION OPTIONS

Build New SPS

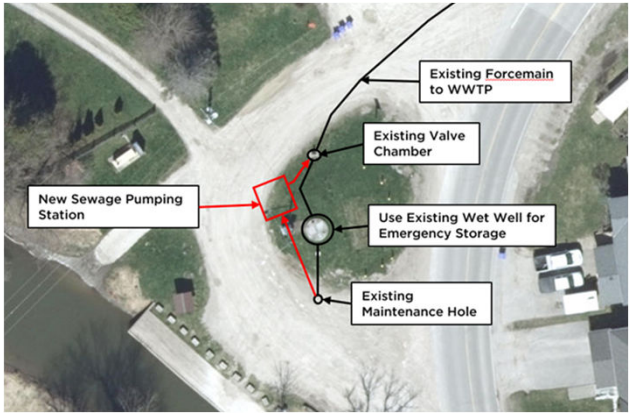
- Build new, larger below-ground station
- Maintain existing structure for emergency overflow
- Estimated installed cost: $2.8M

Expand & Upgrade Existing SPS

- Keep the existing structure
- Upsize the pumps and piping
- Add a below-ground wet well
- Estimated installed cost: $3.3M

Preliminary Preferred Solution

- Provides opportunity to improve station design
- Facilitates construction
- Lower construction cost



PROPOSED WWTP PHASE 1EXPANSION

PROPOSED WWTP PHASE 2EXPANSION

CLASS EA NEXT STEPS AND SCHEDULE

- Obtain and review comments from public, agencies and stakeholders
- Incorporate comments into assessment and select preferred design concepts
- Proceed to Phase 4 of the Class EA process:
  - Prepare Draft Environmental Study Report
  - Prepare conceptual design and cost estimate
  - Notice of Study Completion (September 2025)
- 30-day public and agency review

Please fill in a comment sheet and submit to us by June 13, 2025

THANK YOU FOR YOUR INPUT

TATHAM ENGINEERING

Township of SEVERN