Meeting Date:	Monday, April 26, 2021
To:	Mayor Mills and Members of Council
From:	**Stephen Burnett, Municipal Engineer**
Report:	SBA 2021-02
Subject:	**Water & Sewage Projects Update**

Recommendation

Be it Resolved that Council of the Town of Shelburne;

1. Receives the report SBA 2021-02 Water & Sewage Projects Update dated April 26, 2021; and that,
2. That up to $2M be approved to be funded from the wastewater reserve for the design portion of the WPCP upgrades; and that,
3. The design work be commenced by the Municipal Engineer upon completion of the WPCP EA Study.

Background

Council recently requested an update on the status of the current water and sewage environmental assessments and related projects based on the sewage capacity report DO 2021-02 which was presented to Council on March 22, 2021. The allocation report confirmed that there is not sufficient sewage allocation for all development and that it will not be possible to service all requested development without proceeding with the upgrades to the Water Pollution Control Plant (WPCP) at estimated costs of $26 Million to $34 Million.

Analysis

The attached presentation summarizes the numerous water and sewage projects that have been initiated and are ongoing within the Town of Shelburne to support necessary improvements to the Town's water

and sewage systems to alleviate issues based on existing conditions, as well as to support future growth.

Currently there are three (3) MEA Class Environmental Assessments that are being completed by the Town along with other associated and non-associated water and sewage projects. The three (3) current EA's are:

- Water Supply Schedule 'B' Class EA;
- Increased Capacity of the WPCP Schedule 'C' Class EA;
- Water & Wastewater Schedule 'B' Master Servicing Plan Class EA.

For the year 2022, the Town has also budgeted to undertake a Stormwater Schedule 'B' Master Servicing Class EA.

Water Supply Schedule 'B' Class EA

While recent discussions have been focused on sewage treatment capacity there have been servicing and capacity issues with the Towns water supply system. Both PW 1 and PW3 have been offline for the past year, which has significantly limited the Town's current water supply, and at present, there is not sufficient water supply to meet the current maximum day demand.

PW1 was taken offline due to extremely low production. Rehabilitation of this well was very promising and increased flows from almost non-existent back to a sustainable pumping rate of approximately 14 L/s. However, upon testing it was determined that air entrainment, which is small bubbles that appear as turbidity in the water, is occurring in the supply. Turbidity equipment modifications and air release valves are being installed with the goal of having this resolved by mid-summer 2021. However, if these measures are not successful, then the well at PW1 will need to be replaced.

PW3 was originally minimized in use to limit the naturally occurring arsenic levels, which are above the newly reduced drinking water limits of 10 ug/L, while a new filtration system was being designed. However, during rehabilitation efforts to improve well capacity, this well showed signs of surface water influence (GUDI) and was taken offline while studies were completed. PW3 was concluded to be GUDI with adequate filtration which means that at a minimum, UV Disinfection had to be added to the Well 3 WTP upgrade project resulting in expansion to the building addition footprint and additional equipment. The expanded WTP design was recently approved by the MECP and will be tendered late spring / early summer to deal with both the naturally occurring arsenic and the GUDI status at PW3.

PW7 / PW8 permit currently only allows one (1) of the wells to pump at a time and this water supply must be blended with the supply at PW5/6 to bring the elevated arsenic supply at PW5/6 under the updated regulation of 10 ug/L. Under this scenario, PW5/6 can only pump at approximately 75% of its rated

capacity due to the arsenic levels. Any pumping beyond that rate would result in PW5/6 exceeding arsenic blending levels.

To alleviate this condition and to increase water supply, modeling showed that PW7 and PW8 could be run concurrently, which would potentially double the supply from PW7 and PW8 and allow PW5/6 to run at its full Permit to Take Water (PTTW) rates. To confirm this modelling, the MECP requires a confirmatory 7-day pumping test which required the replacement of the existing pumps, and pump controllers and VFDs with larger ones. This replacement work was recently completed, and the testing is scheduled for next month.

These changes will also require an update to the Source Water Protection Plan working with GRCA and NVCA and an update to the PTTW for PW7/8 will also trigger an Intra-basin transfer notification by MNRF, similar to the one triggered when PW7 and PW8 were initially developed. Although most of this information and testing results will be submitted in late spring / early summer it is not anticipated that the approval will be issued until late spring / early summer 2022 for the implementation of these improvements.

With these interrelated water projects wrapping up in late spring / early summer, this will allow the Water Supply EA to be completed and submission of the Notice of completion this fall / winter. Pending successful testing as described above, the implementation of improvements at PW1, PW3 and PW7/8 will provide sufficient water supply for approximately 15 years; however, a new well supply will be required to meet the 20-year growth scenario. If any of the above testing or improvements are not successful, then additional supply from a new well will be necessary sooner.

Increased Capacity of the WPCP Schedule 'C' Class EA

As previously presented to Council, the WPCP needs significant upgrades and expansion to satisfy the needs of the current development applications and the projected 20-year growth. The previously presented capital improvements for the WPCP are estimated at between $26 Million to $34 Million.

Recently the Town approved pilot testing at the WPCP for one of the recommended MBR technologies to confirm its suitability for meeting effluent water quality criteria as stipulated in the Assimilative Capacity Study which was approved by MECP in April 2020.

Staff and SBA are also working with the NVCA on an adaptive monitoring and stewardship program for the Boyne River to satisfy the remaining environmental mitigation measures.

The WPCP EA will be finalized pending the confirmatory results of the pilot study, which will be completed over the next two (2) months.

As presented in DO 2021-02 Sewage Capacity Allocation, there is not sufficient sewage capacity to service the current development applications and there is an urgent need to advance the sewage upgrades and expansion project.

Given the near completed status of the WPCP EA, it is recommended that Council allocate sufficient funds from reserves to initiate the design phase of the WPCP Upgrades and Expansion project. As previously presented to Council, the design work is estimated to require a minimum of one (1) year pending approvals and construction would be a minimum of two (2) years following completion of design and permitting agency approvals. Given the urgency of some development applications, it is prudent to start the design process immediately so that this work is undertaken concurrently with development application reviews.

Water & Wastewater Schedule 'B' Master Servicing Plan Class EA

A water and wastewater Master Servicing Plan EA was initiated in January 2021. The purpose of the Master Servicing plan is to determine the most appropriate method of providing water supply, treatment, and distribution, as well as the most appropriate method of collecting, treating, and disposing of sewage from the different areas of the Town. Since water supply and sewage treatment have been determined through separate Class EA's, the main purpose of this EA is to determine any bottlenecks in the current water distribution system and sewage collection system, as well as the most appropriate methods of servicing each area of Town.

The last Master Servicing Plan was completed in 2003 and is severely outdated, in particular, as it did not fully account for the currently proposed expansion of the proposed west side urban expansion area.

The Master Servicing Plan EA will determine the existing bottlenecks and improvements that need to be completed to service all areas of Town, determine any barriers to servicing requirements, will determine the most appropriate method of providing water supply, storage and distribution to unserviced areas of Town, will determine the most appropriate method of providing sewage collection and pumping from unserviced areas and will determine the associated infrastructure and estimated costs to implement these services.

It is anticipated that this Master Servicing Plan will be completed near the end of summer 2021.

Financial Impact

At year end 2020, the balance in the Sewer Reserve was $3,452,604.92 with a 2021 estimated and budgeted transfer of $723,265.00 being added to the reserve through rates collected. The 2021 budget also identified $157,440.00

being transferred from this reserve to cover ongoing SCADA upgrades. At year end 2021, the estimated balance in the Sewer Reserve was budgeted to be $4,018,429.92.

This report has recommended that sufficient capital reserves be used to fund the design portion for the WPCP upgrades currently estimated to be $2M, to be commenced immediately upon completion of the WPCP EA Study.

Policies & Implications

N/A

Consultation and Communications

N/A

Council Strategic Priorities

Council's Strategic Priorities has three (3) Goals - Sustainable, Engaged and Livable. There are a total of 12 targets with the three (3) Goals.

This report algins with the following Sustainability and Engaged Goals:

Target T2: Municipal services review and evaluation;

Target T3: Invest and fund critical infrastructure for future;

Target T4: Promote Balance Growth;

Target T6: Promote more open communication.

Supporting Documentation

Appendix 1 – SBA Environmental Assessment Council Update Presentation

Respectfully Submitted:

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Stephen Burnett, Municipal Engineer

Reviewed by:

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Denyse Morrissey, CAO

S. BURNETT & ASSOCIATES LIMITED
ENGINEERING & ENVIRONMENTAL

Town of Shelburne Council Meeting

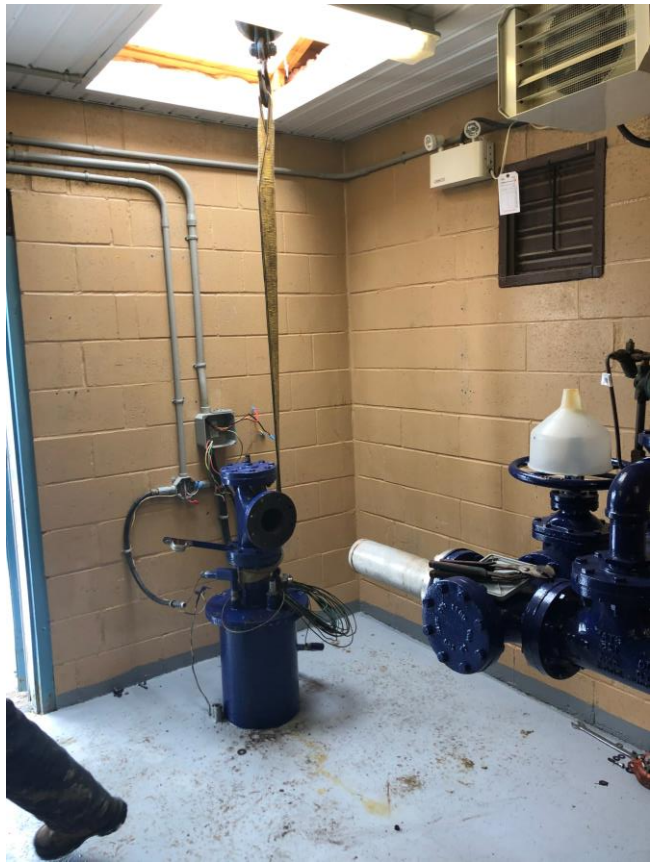
Environment Assessments Council Update

April 26, 2021

S. BURNETT & ASSOCIATES LIMITED
ENGINEERING & ENVIRONMENTAL

Current / Planned Projects

- Water Supply Schedule ‘B’ Class EA
  - PW1
  - PW3
  - PW7/8
- Elevated Water Tower
- Increased Capacity of the Water Pollution Control Plant (WPCP) Schedule ‘C’ Class EA
- Water and Wastewater Master Servicing Plan Schedule ‘B’ Class EA
- Stormwater Master Servicing Class EA



Water Supply EA

PW1

- PW1 was taken offline in 2020 due to low production. The well was rehabilitated and new pumps installed in 2020, which increased the sustainable rate of 14 L/s, compared to less than 5 L/s. This is based on a 2-hour pumping test, post rehabilitation.
- However, air entrainment issues were encountered which has kept this well offline.
- Work was recently authorized to change out turbidity equipment and to install up to two (2) air release valves to try to eliminate the air entrainment.
- A 72-hour pumping test is required after new equipment is installed to confirm the sustainable pumping rate of 14 L/s.
- The current plan is to have the well back on-line by mid-summer 2021 as long as the air entrainment issue can be resolved.
- Alternatively, a new well be required at PW1.

Water Supply EA

PW3

- During rehabilitation work at PW3 in May 2020, bubbling was observed in Walter's Creek, which led to the well being considered potentially GUDI.
- To meet new GUDI requirements, a 72-hour pumping test and water quality sampling was completed.
- The resulting GUDI report was submitted to MECP on March 3.
- The GUDI report concluded that PW3 should be reclassified from a groundwater well to GUDI with adequate in situ filtration, requiring 4-log inactivation of virus per the current guidelines.
- MECP confirmed on April 8 that they agreed with the recommendations of the GUDI report and issued a draft drinking water works permit for SBA's review.

Water Supply EA

PW3 (continued)

- During the GUDI assessment, the PW3 arsenic design was put on hold.
- Following the initial GUDI work, the PW3 WTP was modified to increase the expansion footprint to accommodate UV disinfection to meet the 4-log removal.
- The expanded WTP design was recently approved by MECP and will be tendered in the next two (2) months (late spring / early summer.)
- The improvements are expected to increase the PW3 pumping rate from max rate of 10.3 L/s (2017 pumping test) to 15 L/s, with a sustainable rate of 13 L/s.
- Total project costs for PW3 are now estimated at $3M. (Originally estimated at $1.77 M prior to GUDI status and previous ICIP Funding application request was for $2.7M following GUDI).

Water Supply EA

PW7 / PW8

- The current permit allows either well PW7 or PW8 to pump up to 18.9 L/s.
- Pumping tests were completed in 2018 with both wells pumped at 15 L/s. Observed drawdown suggested that concurrent pumping at 18.9 L/s was sustainable, but that new pumps would be required.
- In support of a 2021 pumping test at a combined 37.8 L/s, Lotowater completed borehole geophysics for the wells and Aardvark installed two (2) 1-inch multilevel wells at previously drilled 6-inch monitoring wells.
- New pumps with new VFD's were installed and a 7-day pumping test is scheduled for mid-May.
- The new pumping rate requires an update to the Source Water Protection Plan, and based on GRCA timelines, provision of water is planned for late spring / early summer 2021.

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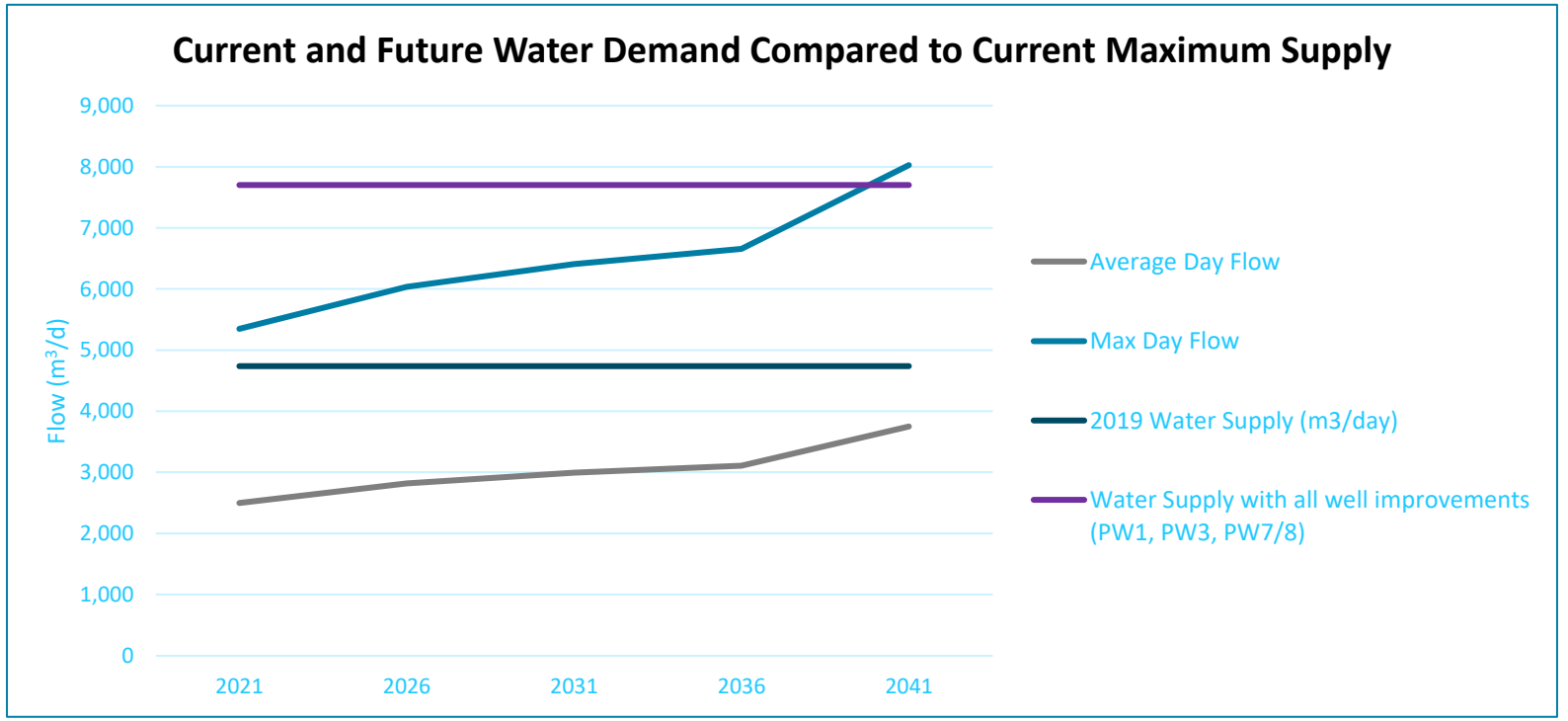
Water Supply EA



Water Supply EA

Next Steps

- Complete PW7/PW8 pumping test.
- Install UV and Arsenic treatment at PW3.
- Install air entrainment mitigation equipment at PW1 and run 72-hour pumping test.
- Complete Hydrogeology Report.
- Update Source water protection model (EarthFX).
- GRCA updates Source Water Protection Plan (spring 2021).
- Hold a second Public Information Centre.
- Finalize EA and submit Notice of Completion (winter 2021).
- Prepare and submit Permit to Take Water Amendment, which will trigger Intra-basin transfer notification by MNRF.
- Provision of water (late spring / early summer 2021).
- New well to meet increased demand in 2035.

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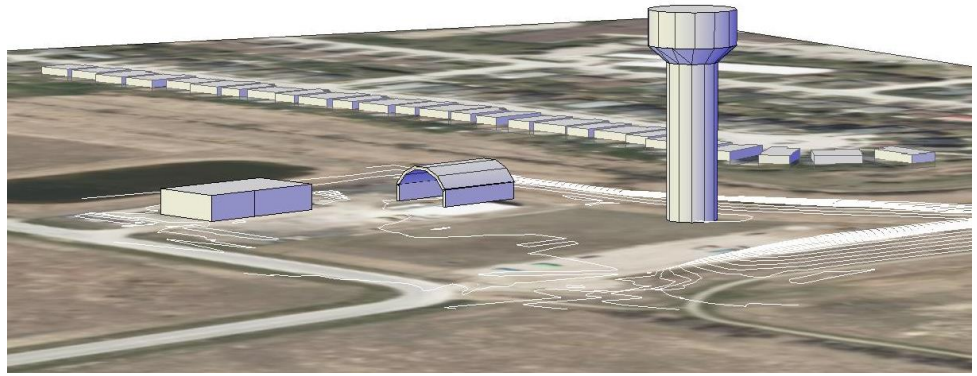
New Water Tower



- SBA submitted a Drinking Water Works Permit amendment application for the new elevated water storage tank in February 2021.
- MECP has approved the application.
- Since the EA for the Water Tower was completed in 2012, SBA prepared a public notice to ensure that nearby resident's understood the need for the tower, what the tower would look like, and who to contact if they had questions.
- RFP is planned for May 2021 for detailed design and tower construction.
- Tower construction anticipated for August / September 2021.
- Current estimated cost $3.5 million.

WPCP EA

- Second PIC completed in June 2020.
- Assimilative capacity study (ACS) completed and approved by MECP in April 2020.
- Three treatment technologies are being compared in the EA: MBR, SBR, extended aeration.
- Pilot testing currently underway at the WPCP for MBR technology to help confirm its suitability for meeting the required effluent water quality limits from the ACS.
- Phased construction is also being evaluated in the EA, which could defer some capital costs.
- Current Capital Costs Estimated at $26M to $34M. If a phased approach is used, costs for Phase 1 range from $19M to $28M. Low range includes maintaining Storm Ponds.
- Current work underway to develop a Boyne River Adaptive Monitoring and Stewardship Plan in partnership with NVCA. Next meeting scheduled for April 23.
- Urgency of advancing WPCP upgrades is clear based on recent allocation reporting.
- Recommend allocating engineering design budget to proceed with preliminary design – summer 2021. Approx. $2M (based on MBR alternative).

WPCP EA

Next Steps

- Complete pilot study
- Confirm recommended WPCP treatment technology
- Host a Public Information Centre
- Finalize the EA Report
- File the Notice of Completion for the EA

Master Servicing Plan EAs

- Notice of Commencement Issued in January 2021 for Water / Wastewater MSP EA.
- Work underway to update water distribution model and the wastewater system calculations to incorporate new proposed developments, including West Expansion Area.
- Several existing bottlenecks identified for sanitary and water.
- Water / Wastewater MSP EA completion anticipate end of summer 2021.
- Stormwater MSP EA scheduled to start in early 2022.