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Staff Report

Operations Department

Report To: Committee of the Whole
Meeting Date: January 12, 2021
Report Number: CSOPS.21.003
Subject: Peel Street Sewage Pumping Station Upgrades Update
Prepared by: Allison Kershaw, Manager of Water and Wastewater Services

A. Recommendations

THAT Council receive Staff Report CSOPS.21.003, entitled "Peel Street Sewage Pumping Station Upgrades Update" for their information;

B. Overview

This staff report provides an update on the design and budget for the Peel Street Sewage Pumping Station Upgrades.

C. Background

The Peel Street Sewage Pumping Station (PSPS) is located in front of The Town of Blue Mountains Water Treatment Plant on Bay Street. This pumping station was initially designed to handle the waste stream from the Water Treatment Plant. Over time this station was utilized to handle residential wastewater from the area along Bay Street from the Little Beaver River to Elma Street and as far south as Huron Street, as well as the Royal Harbour Resort, and more recently, the development on Timber Lane. Eventually the PSPS will be required to handle the sanitary flow from Cameron Street when it is serviced with sanitary sewers.

The PSPS is currently equipped with two five (5) horsepower pumps (duty and stand-by), with an individual capacity of approximately 15L/s and a combined capacity of 18L/s. The pumping station is provided with main-line power through the Water Treatment Plant and has back-up power from the plant's generator. The existing design flow to this station is 19.6L/s and at full build-out, the design flow is 37.6L/s.

Previously, on three separate occasions, the PSPS was not able to keep up with the incoming flows, resulting in flooding of a basement of residence on Bay Street. Staff programmed an interlock on the pump at the Water Treatment Plant which prevents the Water Treatment Plant from discharging wastewater if the wet well of the PSPS is on high level. This interlock has been very useful in curving the peak flow scenarios. The PSPS has been receiving higher than anticipated sewage flows, often exceeding the station's rated capacity. CCTV inspections indicates that an unusual number of residential sanitary connections constantly flow, indicating

that household foundation drains may be connected to the sanitary system. This has become more significant as the level of Georgian Bay rises.

The Town retained the services of MTE Consultants late in 2017 to undertake an assessment of the existing pumping station and undertake the preliminary design of the upgrade to accommodate full build out of the sanitary collection area. In March 2018, MTE Consultants provided the Town with their conclusions of their assessment. Based on their review, they concluded the following:

- The wet well is in good structural condition - only visualized from the ground surface;
- Piping and equipment located with the wet well is in good condition;
- The installation of back-up level pressure transducers, as planned by the Town, will increase the reliability of the level measurements and flexibility in operations; and,
- The existing standby generator shared by the water treatment plant is undersized for the loads that require standby power.

MTE Consultants report recommended that the upgrades to the station included flow monitoring, proper wet well ventilation, improvements to the wet well hatch, replacement of pumps, and installation of the variable frequency drives. The recommendations also included replacement of the power supply and the addition of a natural gas standby generator, as the current standby generator at the Water Treatment Plant was initially considered to be undersized and not able to provide emergency power to the pumping station. In addition to the generator, this proposal also included all new conduit and new PLC panels.

MTE provided a 30% design (preliminary design) with an engineering estimate of $549,240 to include the final design, construction monitoring and the construction of the upgrades required for the PSPS. Staff used this value plus the estimated costs the Town would carry for the project, to develop a project budget of $621,300 for the 2019 budget.

Early in 2019, staff undertook a request for proposal seeking a consultant to: complete the final design work; submission of an application for an Environmental Compliance Approval to the Ministry of Environment Conservation and Parks for the upgrades to the station; and, undertake construction monitoring for the upgrades. Tatham Engineering were the successful bidder for this proposal.

At 60% design, Tatham prepared an engineering estimate for the works, including all costs to complete the project. At that stage, the estimate was $1,215,160 which included$1,057,000 for construction, $104,660 for engineering plus $10,000 contingency and $43,500 for Town costs. The Town costs for this project include staff time to manage the project, designated substance report for Water Treatment Plant, Operations Commissioning support, wet well cleaning for engineering inspection, and SCADA and/or communications upgrades not included in the scope of work. This revised estimate is a 55% increase ($665,920) to the existing project budget. When Staff received this estimate the consultant was directed to stop work on the project so that staff could assess the rationale for the projected budget increase and evaluate options.

D. Analysis

After receiving the significantly over-budget engineering estimate, Staff met with the consultant to understand the differences in the preliminary estimate provided by MTE and Tatham's estimate and to discuss options to reduce costs. Staff undertook a full review to fully understand the cost overrides and look for opportunities to bring the cost back in-line with the approved project budget.

The most significant differences between MTE's and Tatham's estimates related to electrical and instrumentation needs ($262,250 versus $465,000), site works, including temporary by-pass and day lighting ($63,350 versus $202,000), a more refined pricing of pumps and required appurtenances ($116,000 versus $194,000). The estimate from MTE did not include any provisions for locating the motor control panel outside in the elements.

Staff purchased a power meter to assist with assessing energy needs in order to validate the consultants' recommendation to upsize our existing generator. The meter will also be utilized for a number of other water and wastewater projects to fully understand the power needs, and how the power utilization can be optimized and look for opportunities to reduce energy usage, such as the wastewater treatment plant blowers and installation of variable frequency drives. With the assistance of the project consultants, staff tracked the power demands of both the Water Treatment Plant and PSPS, both on main power and back-up power to determine the current needs of the generator. In discussions with the mechanical/electrical engineer, it was determined that the current generator could be used to continue to provide emergency power to the pumping station, even with the pump upgrades. Although this isn't an ideal solution, the current generator at the Water Treatment Plant is undersized to fully run the plant on standby power, however there was enough extra capacity to operate the pumping station. It was decided to continue utilizing the existing generator, and when the Water Treatment Plant requires an upgrade, upgrade the generator then. In addition to being able to remove a generator from the scope of work, the automatic transfer switch and work to separate main line power supply for the pumping station from the water plant was also removed. In consideration of these adjustments to the scope of work, Tatham provided an updated engineering estimate of $765,660 which is a reduction of $449,500.

This project was initially proposed to have the general contractor purchase and provide all the necessary equipment for the upgrades. To provide this service, the general contractor would take a mark-up on all of the components they provided.

Staff have been exploring options to purchase the significant equipment directly and free issue them to the general contractor and save the general contractor's mark-up.

Another cost-effective strategy is to sole source the Lift Station Controls to the current Wastewater System Integrator. ARO Technologies is the current Wastewater System Integrator and has completed both hardware and software upgrades to 9 of the current 11 pumping stations. These upgrades have standardized both the control hardware and software for these locations. The standardization of control hardware at the various pumping stations will allow

the Town to minimize inventory of replacement parts in the event of equipment failure and assist in easier operations and maintenance activities at the stations.

Standardization of control software will reduce the level of engineering required since software requirements for the PSPS can be completed by modifying existing engineering that was completed by ARO on previous projects. Approximately 90% of the software engineering required can be used from other pumping stations. An added benefit will be the limited training required by Operations since the SCADA upgrades will be the same as other pumping stations that were completed by ARO.

The Consultant, at the direction of Staff have arrived at an engineering estimate for the completion of the project at $731,160. These efforts have realized an additional $34,500 in savings.

In June 2020, an application for an Environmental Compliance Approval was submitted to the Ministry of Environment, Conservation and Parks (MECP) for the PSPS upgrades. MECP contacted the Town in July and expressed concern about storage capacity in the existing wet well. The concerns focused on the Town's ability to respond if all pumps failed to prevent a sewer back-up in a resident's basement. MECP requested that the Town include additional storage at the PSPS. To install addition storage at this location would involve the construction of a second wet well and would add significant costs including additional delays to the project.

Over the course of several months, Staff and the consultant worked with MECP to consider all the available safe measures that staff believed were already being considered in the design of the PSPS. In consideration that the PSPS design has 100% pumping redundancy, back-up power, the interlock from the Water Treatment Plant, a high estimated flow per unit and not at full build-out of the collection area, MECP agreed to proceed with the issuance of the approval, with the condition that when Cameron Street is serviced with sanitary sewers, additional wet well capacity will be constructed at that time. On November 23, 2020, MECP issued the Environmental Compliance Approval for the upgrades to PSPS, with the condition of the additional wet well when Cameron Street is serviced. The anticipated timeline to service Cameron Street with sanitary sewers is approximately 10 years out.

E. Strategic Priorities

1. Communications and Engagement
We will enhance communications and engagement between Town Staff, Town residents and stakeholders.

2. Organizational Excellence
We will continually seek out ways to improve the internal organization of Town Staff and the management of Town assets.

3. Community
We will protect and enhance the community feel and the character of the Town, while ensuring the responsible use of resources and restoration of nature.

4. Quality of Life
We will foster a high quality of life for full-time and part-time residents of all ages and stages, while welcoming visitors.

F. Environmental Impacts

The PDSP is considered critical wastewater infrastructure. This station requires upgrades in order to protect the health and safety of the public and protection the natural environment. Failure to upgrade this facility in a timely manner could result in sewage backing up in resident's homes or a spill to the natural environment.

G. Financial Impact

The original 2019 capital budget for the PSPS upgrades was $621,300, funded completely from the Wastewater Asset Replacement Reserve Fund. This budget included $74,600 for Engineering, $497,000 for Construction and $49,700 Contingency. To date, the Town has spent or committed $140,335 on the project on both external and internal costs; this leaves a construction budget of $480,965. The remaining budget is roughly $250,000 below the last engineer's estimate of $731,160 which includes staff's current value engineering work and cost reduction strategies.

At this time staff are not requesting a change to the budget until the Town has gone through the tender process and received final costs.

H. In Consultation With

Sam Dinsmore, Deputy Treasurer and Manager of Accounting and Budgets

Shawn Carey, Director of Operations

Maurice Dempster, Wastewater Supervisor

Brent Rolufs, Senior Capital Project Coordinator

I. Public Engagement

The topic of this Staff Report has not been subject to a Public Meeting and/or a Public Information Centre as neither a Public Meeting nor a Public Information Centre are required. Comments regarding this report should be submitted to Allison Kershaw, managerwww@thebluemountains.ca

J. Attached

None

Respectfully submitted,

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Allison Kershaw
Manager of Water and Wastewater Services

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Shawn Carey
Director of Operations

For more information, please contact:
Allison Kershaw
managerwww@thebluemountains.ca
519-599-3131 extension 226