# PWI19-6

March 7, 2019

To: Members
Public Works and Infrastructure Committee

Re: Wastewater Capacity Upgrades – South Trunk Project Issue Request for Proposals and Award Engineering Services Contract

## RECOMMENDATION

1. That the Executive Director of Citizen Services, or designate, be authorized to initiate a public procurement process to engage consulting and professional engineering services for the Wastewater Capacity Upgrades - South Trunk Project.
2. That the Executive Director of Citizen Services, or designate, be authorized to negotiate, award, and enter into a contract with the highest-ranked proponent from the public procurement process.
3. That the City Clerk be authorized to execute a contract with the highest-ranked proponent upon approval of the Executive Director of Citizen Services or designate.
4. That this report be forwarded to the March 25, 2019 meeting of City Council for approval.

## CONCLUSION

The Administration is planning to issue and award a Request for Proposals (RFP) for engineering services to upgrade the wastewater collection system to comply with commitments made to the Water Security Agency (WSA). City Council's authority is required as the consultant's fees are expected to exceed $750,000. This project requires professional engineering and consulting services to complete the work.

## BACKGROUND

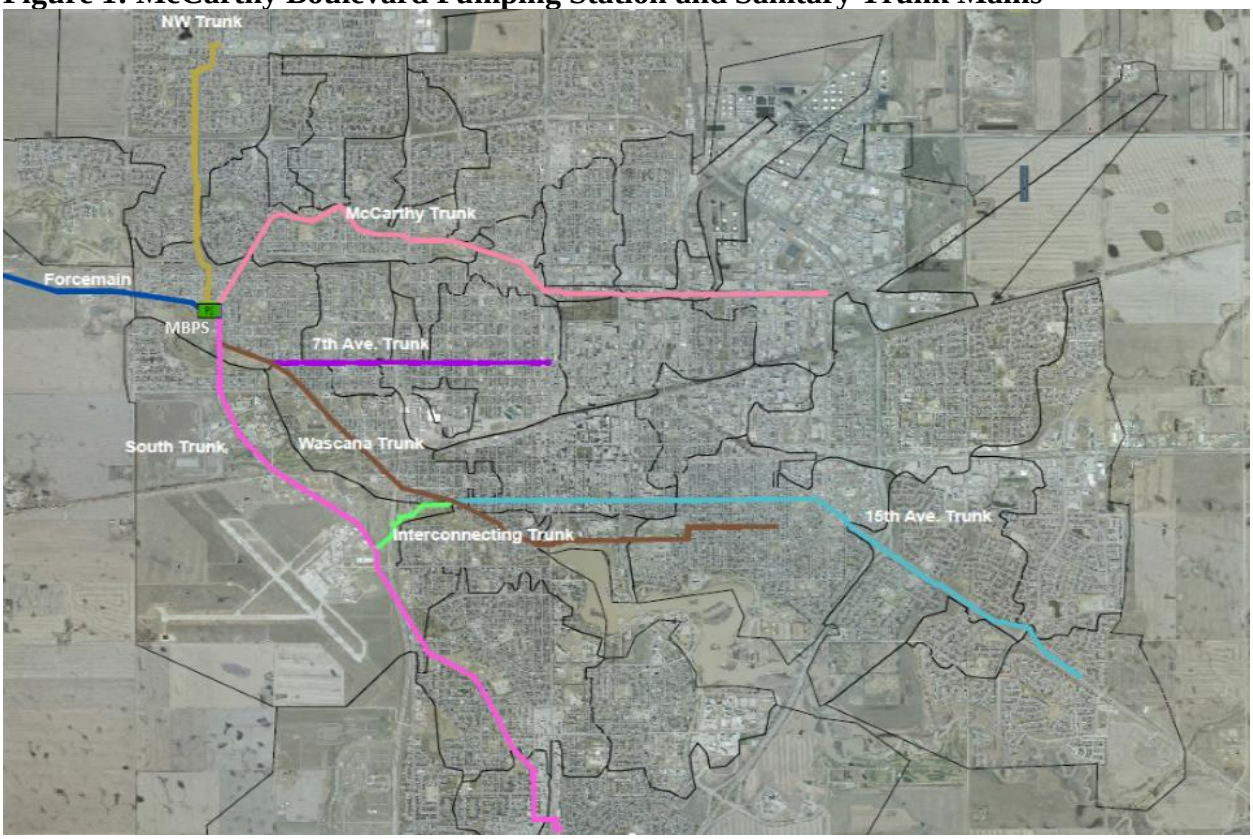
The wastewater system is intended to collect and move wastewater to the Wastewater Treatment Plant (WWTP). In Regina, the majority of wastewater is sent to the McCarthy Boulevard Pumping Station (MBPS) for screening and then pumped to the WWTP. Ideally, the wastewater flowing through the MBPS would solely be from household, commercial, industrial and institutional use, which would result in relatively consistent volumes throughout the year. However, as in most cities, the City of Regina (City) must manage substantial additional flows from inflow and infiltration (I&I).

I&I is the term used to describe stormwater and snow melt runoff entering the wastewater collection system. Inflow occurs through direct connections such as weeping tile, submerged manholes and other direct sources. Infiltration refers to stormwater/groundwater entering the wastewater system through cracked and broken pipes. The existing wastewater collection system has sufficient capacity to manage dry weather or average daily flows; however, during heavy

precipitation events, I&I flows can overfill the wastewater collection system and increase the risk of basement and surface flooding and emergency wastewater discharges to the environment.

In June 2014, a significant and prolonged rainfall event overwhelmed the stormwater and wastewater collection systems, causing widespread basement and surface flooding and emergency wastewater discharges to the environment. The City's Water Works Department commissioned Stantec Consulting Ltd. (Stantec) to perform a capacity assessment, looking at the City's overall wastewater collection system and focusing on the MBPS and the seven trunks, as shown on Figure 1.

**Figure 1: McCarthy Boulevard Pumping Station and Sanitary Trunk Mains**




The final report, *City of Regina Sanitary Sewage System Assessment* (Stantec 2014), concluded that the wastewater collection system has the capacity to manage flows generated by a 1:5 year storm event. Storm events are classified by how often they are expected to occur based on past rainfalls. A 1:5 year storm event has a 20 per cent chance of occurring in any given year. The report identified a number of improvements that would improve the system's handling of I&I.

The Administration accepted the results of the report and in 2015 created the Trunk Relief Initiative Project: a multi-year, multi-million dollar program to maximize the capacity of the system. This program requires upgrades to the MBPS and optimization of the available capacity of the trunk mains, with the ultimate goal of being better equipped to manage increased flow during significant rainfall events.

As a result of a heavy rainfall event in late June 2015, Regina again experienced basement flooding and wastewater discharges to Wascana Creek near the MBPS. The WSA became concerned with the volume and frequency of the wastewater discharges to Wascana Creek during heavy rainfall events and expressed those concerns to the City.

After a period of discussion and information sharing at the highest levels of both the City and provincial governments, the City committed to advancing planned improvements to improve the capacity of the MBPS and the collection system. These improvements will reduce the risk of wastewater bypasses to Wascana Creek and sewer backups once construction is completed. Specifically, the City committed to:

1. Upgrade the capacity of the MBPS to be able to pump the flows generated by a 1:10 year precipitation event without bypassing to Wascana Creek by December 31, 2017.
2. Upgrade the capacity of the MBPS to be able to pump the flows generated by a 1:25 year precipitation event without bypassing to Wascana Creek by December 31, 2020.
3. Create a plan to upgrade the capacity of the wastewater collection system to eliminate potential bypasses to the environment generated by a 1:25 year precipitation event by July 31, 2017.

DISCUSSION

The Trunk Relief Initiative was separated into three phases to ensure our commitments to the WSA could be met. The first phase identified the short-term and long-term design flows based on the 300,000 population growth plan included in *Design Regina: The Official Community Plan (OCP).* The second phase undertook preliminary design of measures to increase the capacity of the MBPS, while the third phase provided design and construction supervision for the most beneficial option. The first two phases revealed that the flow from a 1:10 year precipitation event could be managed by the existing MBPS with the installation of a third large-diameter force main. However, pump equipment upgrades at the MBPS are required to manage the long-term flows from a 1:25 year precipitation event by December 31, 2020. The City accepted the results of the phase one and two work and proceeded with the design and construction of the third sewage force main, which became operational in late 2017. The upgrades to the MBPS are currently in final design stage with construction expected to begin in fall 2019 with completion in late 2020. Completion of the MBPS upgrades will help to ensure the WSA commitments are met and the station remains reliable for the future.

Phase 1 of the Wastewater Master Plan (WWMP) project was used to develop a long-term plan to increase the capacity of the wastewater collection system to eliminate potential bypasses to the environment generated by a 1:25 year precipitation event while accommodating growth up to the 300,000 growth scenario identified in the OCP. Twenty conceptual options were evaluated against a variety of criteria including constructability, public impacts and capital cost with the following alternative recommended for implementation:

- Capacity upgrades at MBPS (underway)
- Upgrading or twinning the South Trunk from the MBPS to Regina Avenue

- Upgrading the Regina Avenue Trunk from Regina Avenue to Sinton Avenue
- Linear relief storage along the railway corridor from the South Trunk to Toronto Street
- Off-line storage at Reibling Park

The proposed upgrades are ordered by their ability to improve the system capacity and were presented in the report *Phase 1: System Response – Wastewater Master Plan* (Stantec 2017). The Administration accepted the results of the report and submitted it to the WSA in partial compliance with the City's October 2015 commitments.

The Administration is proceeding with the recommended capacity upgrades and will require professional and consulting services to complete the design of the upgrading or twinning of the South Trunk to determine alignment options, sizing, phasing opportunities and estimated costs.

## RECOMMENDATION IMPLICATIONS

### Financial Implications

This project was submitted as part of the five-year Utility Capital Program in the 2019 Utility Budget process – Wastewater Capacity Upgrades, with funding requested for 2019, 2021 and 2023. Future requests are scheduled for 2025, 2026 and 2027. See Table 1 below:

**Table 1: Budget Requests**

| **Funding Source** | **2019 5-Year Utility Budget** | | | | | | **Future Requests** | | | **Totals** |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | |
| **Reserve** | 1,190 | - | 1,190 | - | 10,920 | - | 7,420 | 700 | 7,000 | 28,420 |
| **SAF** | 510 | - | 510 | - | 4,680 | - | 3,180 | 300 | 3,000 | 12,180 |
| **Totals** | 1,700 | - | 1,700 | - | 15,600 | - | 10,600 | 1,000 | 10,000 | 40,600 |

Overall project funding has been split 70/30 between the Utility Reserve and Servicing Agreements Fees (SAF) because development up to the 300,000 growth scenario is expected to be accommodated. This work is included in both the long-term Utility and SAF Models.

### Environmental Implications

Completing the capacity upgrades to the South Trunk will help the City to leverage the considerable investment already made to construct the third force main and upgrades to the MBPS, reducing the risk of future wastewater bypasses to Wascana Creek and within the collection system. While increased capacity at MBPS and in the South Trunk reduces the risk, an extreme weather event beyond the planned capacity upgrades may still result in a wastewater bypass. The upgrade to accommodate a storm event of 1:25 years would substantially reduce the risk of wastewater bypasses.

### Policy and/or Strategic Implications

The completed Wastewater Capacity Upgrades – South Trunk Project will help achieve the

City's strategic objectives by supporting the goals of:

- Optimizing existing infrastructure
- Providing reliable, environmentally sound and sustainable infrastructure solutions.

Other Implications

Completion of the Wastewater Capacity Upgrades – South Trunk Project will assist the City in accommodating development up to the 300,000 growth scenario described in the OCP, while reducing the risk of bypasses to the environment in the existing system in compliance with the WSA commitments.

Accessibility Implications

None with respect to this report.

COMMUNICATIONS

Internal and external stakeholders directly affected by the project will be consulted throughout the process, including the WSA. A communication plan will be developed to communicate the design and construction activities.

DELEGATED AUTHORITY

The recommendations contained in this report require City Council approval.

Respectfully submitted,

Pat Wilson, Director
Water, Waste, & Environmental Services

Respectfully submitted,

Kim Onrait, Executive Director
Citizen Services

Report prepared by:
Water & Sewer Engineering Branch