

March 29, 2016

To: His Worship the Mayor
and Members of City Council

Re: Trunk Relief Initiative Advance Funding - Third Force Main

**RECOMMENDATION OF THE PUBLIC WORKS AND INFRASTRUCTURE
COMMITTEE – MARCH 10, 2016**

1. That City Council approve the advancement of \$8.0 million from planned future year funding from the Integrated Wastewater Solutions for New Growth project (Trunk Relief Initiative), Capital Account U7048, to allow for the tendering and construction of a third wastewater force main, pump capacity upgrades to the McCarthy Boulevard Pumping Station (MBPS), and piping and process modification at the Wastewater Treatment Plant (WWTP) in 2016.

PUBLIC WORKS AND INFRASTRUCTURE COMMITTEE – MARCH 10, 2016

The Committee adopted a resolution to concur in the recommendations contained in the report. Recommendation #2 does not require City Council approval.

Councillors: Sharron Bryce, (Chairperson), John Findura and Bob Hawkins were present during consideration of this report by the Public Works and Infrastructure Committee.

The Public Works & Infrastructure Committee, at its meeting held on March 10, 2016, considered the following report from the Administration:

RECOMMENDATIONS

1. That City Council approve the advancement of \$8.0 million from planned future year funding from the Integrated Wastewater Solutions for New Growth project (Trunk Relief Initiative), Capital Account U7048, to allow for the tendering and construction of a third wastewater force main, pump capacity upgrades to the McCarthy Boulevard Pumping Station (MBPS), and piping and process modification at the Wastewater Treatment Plant (WWTP) in 2016.
2. That this report be forwarded to the March 29, 2016 meeting of City Council for approval.

CONCLUSION

The Trunk Relief Initiative project was originally intended to maximize and optimize available capacity at the MBPS, and within the wastewater trunk lines that form the City of Regina's (City) wastewater collection system. This project is being re-scoped to increase the capacity of the MBPS and advance planned works to manage wastewater flows generated by a 1:25 year rainfall event, to meet commitments made by the City to the Water Security Agency (WSA). In

addition to potential pumping upgrades, a third force main is required at the MBPS to deliver the increased flow to the WWTP. Piping and process modifications are also required at the WWTP to manage these increased flows.

The \$6.0 million provided in the 2016 Budget for the Integrated Wastewater Solution for New Growth project (Trunk Relief Initiative) is insufficient to cover the increased project scope costs. The estimated cost of the work at the WWTP is \$4.0 million and the estimated cost of the third force main is \$10.0 million for a total of \$14.0 million, leaving a funding shortfall of \$8.0 million. The recommendation is to advance \$8.0 million of the planned 2017 budget request of \$16.0 million, to advance the third force main project and cover the additional cost associated for the WWTP work.

The Administration has identified that proceeding with the on-site needs at the WWTP, and awarding the third force main tender in 2016 is key to ensuring the City can meet the committed timelines for increasing pumping capacity at the MBPS.

BACKGROUND

The wastewater system is intended to collect and move wastewater to the WWTP. In the city of Regina the majority of wastewater is conveyed to MBPS for screening and is then pumped to the WWTP for treatment. Inflow and infiltration (I&I) flows in the form of storm water and snow melt runoff entering the wastewater collection system is a significant issue for the City. Inflow occurs through direct connections such as weeping tile, submerged manholes and other direct connections. Infiltration of stormwater/groundwater enters 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 overflow the wastewater collection system and increase the risk of basement and surface flooding and emergency discharges to the environment. The stormwater system in certain areas of the city is not designed to accommodate large storm events and as a result rain water enters the wastewater system through I&I. The City is actively upgrading the stormwater system on a priority basis through projects such as the recent detention pond on Parliament Avenue and Lewvan Drive. The intent of storm water upgrades is to reduce surface flooding and reduce the amount of I&I entering the wastewater system.

In June 2014, a significant and prolonged rainfall event overwhelmed the stormwater and wastewater collection systems and caused widespread basement and surface flooding and emergency discharges to the environment. In response, the City's Water Works Department commissioned Stantec Consulting Ltd. (Stantec) to perform a capacity assessment specifically looking at the City's wastewater collection system focussing on the major components: the MBPS and the seven (7) trunks as shown on Figure 1.

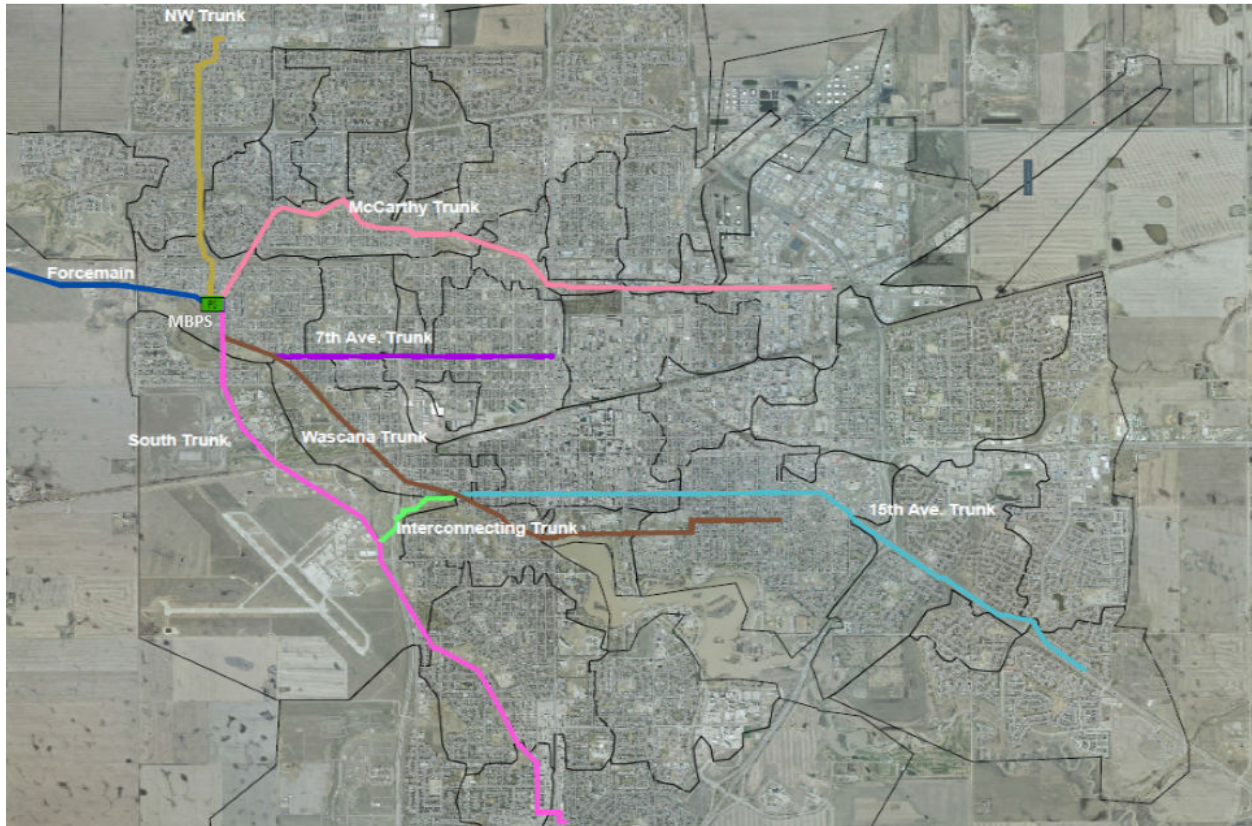


Figure 1: McCarthy Boulevard Pumping Station and Sanitary Trunk Mains Location Plan

The final report, *City of Regina Sanitary Sewage System Assessment* (Stantec 2014), concluded that the collection system has an average capacity to manage the flows generated by a 1:5 year storm event. The report identified a number of improvements, which would increase the overall system capacity to be better able to manage increased flow experienced due to 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 MBPS and optimize the available capacity of the trunk mains, with the ultimate goal of being better able to manage increased flow during significant rainfall events.

In addition to wastewater capacity upgrades, the City recognized the key to reducing rainwater runoff inflows to the wastewater system is improved stormwater management, particularly in older, more established areas of the city. The City developed a prioritized plan for constructing major improvements in developed areas (e.g. dry bottom detention facilities), and stormwater management is a key infrastructure component in designing new areas of the city. The City also embarked on an extensive plan to clean and rehabilitate the wastewater collection system as part of an ongoing program, separate from the Trunk Relief Initiative project, to restore capacity and improve operational reliability.

As a result of a heavy rainfall event in late June 2015, the city again experienced basement flooding and 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. This will reduce the risk

of bypasses to Wascana Creek once construction is complete. Specifically, the City committed to upgrading the capacity of the MBPS to be able to:

1. manage the flows generated by a 1:10 year precipitation event by December 31, 2017 without bypassing to Wascana Creek; and,
2. manage a 1:25 year event without bypassing to Wascana Creek by December 31, 2020.

The initial phase of the Trunk Relief Initiative was identified as the ideal vehicle to deliver the capacity upgrades at the MBPS within the committed timelines, and the Administration has been working closely with Stantec to modify the project scope accordingly.

DISCUSSION

I&I flows entering the wastewater collection system due to heavy precipitation events have been a significant issue for the city. This issue has caused widespread basement and surface flooding, as well as necessitating bypasses to Wascana Creek in recent years. In addition to undertaking several long-term programs to improve stormwater management and reduce I&I, the City committed to the WSA to advance planned work to increase the capacity of the MBPS. The increased hydraulic capacity at MBPS will be better able to manage increased flow during wet weather events without bypasses to Wascana Creek.

To meet the performance targets committed by the City to the WSA, preliminary analysis indicates that installing a third force main from the MBPS to the WWTP and increasing MBPS pumping capacity will be required. The third force main is expected to be tendered in the summer/fall of 2016 with completion by December 31, 2017, at an estimated cost of \$10.0 million. Modifications to the piping and process at the WWTP site will also be required to be able to manage the increased flow. A portion of the 2016 funding will be required for the construction of on-site modifications at the WWTP site to manage the increased flows. The cost of the WWTP site work is currently estimated at \$4.0 million.

The existing two force mains have sufficient capacity to manage dry weather or average flows; however, the system becomes surcharged during heavy rainfall events as I&I enters the collection system and increases flows beyond the capacity of the wastewater system.

In the *2015 Utility Budget*, \$1.5 million was provided for the initial phase of the Trunk Relief Initiative while \$6.0 million was provided in the 2016 Budget for capital construction, and a further \$16.0 million was requested in 2017 under the Integrated Wastewater Solutions for New Growth project. The Administration has identified two options to consider.

Option 1: Advance Funding from 2017 Budget Request

Due to the scale of this force main project, it is vital that it be tendered and construction begin in summer/fall of 2016 in order to meet the committed completion date of December 31, 2017. A portion of the available 2016 capital funding will be used to cover the cost of on-site piping and process modifications at the WWTP to manage increased flows. The wastewater contractor is scheduled to be doing similar site work in the spring of 2016, so the necessary modifications will be constructed under a change order to expedite installation.

Awarding the construction contract for the third force main in the summer/fall of 2016 would provide the successful contractor approximately 18 months to complete construction by December 31, 2017.

Therefore, there is currently an estimated shortfall of \$8.0 million to be able to tender the third force main project in 2016. The Administration recommends that \$8.0 million be advanced from the planned 2017 budget request to allow for the on-site modifications at the WWTP and tendering and construction of the third force main to occur in 2016. This request is within the original planned funding for the Trunk Relief Initiative project. The timing of the planned funding is simply advanced.

Option 2: Include Funding in 2017 Budget Request

This option would be consistent with the Administration's original plan before the commitments were made to the WSA. The Administration would include the \$8.0 million funding request in the 2017 budget request. As there would not be sufficient capital budget available in 2016, the third force main would not be tendered until 2017. This would put the commitments made to WSA at risk, as the contractor may not have adequate time to complete the construction before December 31, 2017.

RECOMMENDATION IMPLICATIONS

Financial Implications

The \$8.0 million can be advanced from the Integrated Wastewater Solutions for New Growth project. This funding was submitted for approval as part of the 2016 – 2020 Utility Capital Budget process; therefore, the 2017 request will be reduced by \$8.0 million. The Integrated Wastewater Solution for New Growth project is a multiyear, multi project budget request and includes a total request of \$73.8 million over a five year period (2016-2020). As project details continue to develop, this five year budget projection may be adjusted.

Environmental Implications

Completing the hydraulic upgrades to MBPS will reduce the risk of future wastewater bypasses and have a positive effect on the environment. While increased capacity at MBPS 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

Tendering of the third force main project in summer/fall of 2016 will provide the successful contractor approximately 18 months to complete construction, and allow the City to meet the committed timelines for increasing the capacity of the MBPS to manage increased flows during heavy rainfall events. The City has committed to WSA that upgrades will be completed at MBPS to be able to manage the flows generated by a 1:10 year precipitation event by December 31, 2017 without bypassing to Wascana Creek, and to be able to manage a 1:25 year event without bypassing to Wascana Creek by December 31, 2020.

Other Implications

Currently there is active construction occurring at the WWTP as part of the WWTP Upgrade Project. The third force main will be installed from MBPS to the lagoons at the WWTP. The portion of the force main that will be located on the WWTP site needs to be coordinated with the onsite contractor. In order to reduce risk to the City, the onsite contractor will be requested to install the portion of the force main that occurs on the WWTP site. As there is other similar work occurring at this site, it is important to coordinate the work, which will reduce cost to the City.

Accessibility Implication

None with respect to this report.

COMMUNICATIONS

Internal and external stakeholders directly affected by the project have been engaged throughout the process. These parties include:

- a) Stantec – Project Consultant for the Trunk Relief Initiative;
- b) Water Security Agency;
- c) AECOM Canada Ltd. – City Consultant for the Wastewater Treatment Plant Project;
- d) City of Regina Major Projects Division; and,
- e) City of Regina Sewer and Drainage Operations Branch

These stakeholders will be updated on any decisions.

DELEGATED AUTHORITY

The recommendations contained in this report require City Council approval.

Respectfully submitted,

PUBLIC WORKS AND INFRASTRUCTURE COMMITTEE



Linda Leeks, Secretary