

March 29, 2016

To: His Worship the Mayor
and Members of City Council

Re: Sewer Service Bylaw Change -Weeping Tile Discharge-Removal from Sanitary Sewer
System

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

1. That City Council approve and authorize amendments to *The Sewer Service Bylaw, No. 5601* to include provisions relating to weeping tile discharge, as identified in this report and in Appendix A.
2. That the City Solicitor be directed to prepare amendments to *The Sewer Service Bylaw, No. 5601* to include provisions identified in recommendation 1 to this report.

PUBLIC WORKS AND INFRASTRUCTURE COMMITTEE – MARCH 10, 2016

The Committee adopted a resolution to concur in the recommendations contained in the report. Recommendation #3 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:

RECOMMENDATION

1. That City Council approve and authorize amendments to *The Sewer Service Bylaw, No. 5601* to include provisions relating to weeping tile discharge, as identified in this report and in Appendix A.
2. That the City Solicitor be directed to prepare amendments to *The Sewer Service Bylaw, No. 5601* to include provisions identified in recommendation 1 to this report.
3. That this report be forwarded to the March 29, 2016 City Council meeting for approval.

CONCLUSION

Administration recommends that *The Sewer Service Bylaw, No. 5601* (Bylaw) is amended to retain the current prohibition on weeping tile discharge into the sanitary sewer system for Skyview, Lakeridge Addition, the Creeks, Greens on Gardiner and the Towns subdivisions and

to expand the prohibition of weeping tile discharge into the sanitary system from both new development and re-development by disallowing:

- weeping tile discharge from the neighbourhoods of Westerra and Tower Crossing;
- weeping tile discharge from all new development and infill development where a building permit is issued after December 31, 2016; and
- weeping tile discharge from all existing buildings where a building permit is issued for a renovation involving the repair or replacement of a weeping tile collection system after December 31, 2016.

The proposed Bylaw change is consistent with *Design Regina: The Official Community Plan Bylaw No. 2013-48* (OCP). Prohibiting weeping tile discharge into the sanitary system for new developments and infill developments will reduce inflow and infiltration (I/I) thereby reducing the frequency of system surcharge and basement flooding. Furthermore, prohibiting connection to the sanitary system from infill development, and select home renovations over time, will help the City of Regina (City) to reduce the risk of wastewater bypasses at the McCarthy Boulevard Pumping Station (MBPS). This will be accomplished because the weeping tile flow will be discharged to the storm system instead of the sanitary system, which will reduce the volume of wastewater flowing through MBPS during wet weather events.

The proposed Bylaw change will also allow continued optimization of existing infrastructure as well as optimizing sewer capacity in new subdivisions and minimizing development costs.

BACKGROUND

Previous Bylaw Change

In 2009, the City amended the Bylaw to prohibit weeping tile discharge from entering the sanitary sewer system from the Skyview, Lakeridge Addition, the Creeks, Greens on Gardiner and the Towns subdivisions. Council Report CR09-111 cited optimizing existing sewer infrastructure, reducing basement flooding, and minimizing development costs in the above mentioned subdivisions as the reasons for the Bylaw change. Prior to 2009, weeping tile connection to the sanitary system was permitted in all developments.

OCP

In 2013, City Council approved the OCP. The OCP provides high level policy and direction around future growth of the City to a population of approximately 300,000. One of the policy directives in the OCP under Section 6, Infrastructure states:

6.11 Support runoff infiltration and retention by:

- 6.11.1 Separating stormwater and sanitary sewer systems and continuing to reduce the incidence of water runoff being directed to the sanitary system;

Recent Area Plans

City Council has recently approved neighbourhood level plans for the Westerra and Tower Crossing developments which have prohibited weeping tile discharge from connecting to the sanitary system to reduce I/I. Neighbourhood plans or Secondary plans are incorporated into the Part B of the OCP.

City Development Standards

For those neighbourhoods which do not have the weeping tile restrictions set out in the current Bylaw, a developer may elect to discharge weeping tile into the sanitary system. Electing to discharge weeping tile to the sanitary system requires a larger I/I allowance to be used in computing peak wastewater flow rates for the design of sewer trunks as outlined in Chapter 8 of the City's Development Standards Manual (DSM). In general, a higher I/I value results in larger sanitary sewer infrastructure to support the additional flows.

Previous Regina Weeping Tile Studies

In 2005 Water Resource Consultants (WRC) conducted a study to evaluate the City's weeping tile monitoring program and to determine the contribution of weeping tile flows to the sanitary system. The study estimated that weeping tile adds one to three per cent to the base sanitary system flow citywide. The study also estimated that during wet weather events weeping tile contributes 10 to 40 per cent of the extraneous flows into the sanitary system.

DISCUSSION

Administration conducted a small scale study of three 2014 storm events that compared wet weather sanitary flows in the areas serviced by the Harbour Landing Lift Station and the Creeks Lift Station. Harbour Landing is permitted to connect weeping tile discharge to the sanitary system and the Creeks and Greens on Gardiner are prohibited from connecting weeping tile discharge to the sanitary system. A summary of the results of the analysis are outlined in Appendix B to this report.

The study substantiated the findings of the 2005 WRC study concluding the per capita extraneous flow in Harbour Landing was approximately double that of the Creeks and Greens on Gardiner during the three wet weather events. This analysis provides further evidence that weeping tile discharge can be a significant source of flows during wet weather events and efforts to eliminate these flows from the sanitary system are a worthwhile endeavour through the appropriate Bylaw changes.

A review of five other Canadian municipalities found that Saskatoon, Edmonton, Calgary, Winnipeg, and London have all disallowed weeping tile discharge into the sanitary sewer system since 2004, 1988, 1988, 1990, and 1985 respectively.

Weeping Tile Discharge Options

The available options for discharge of weeping tile to the storm system are direct discharge into the storm sewer and discharge to the surface. Other cities practice both of these discharge options for managing weeping tile flow discharge.

Administration currently does not specify which of the above discharge options is required, but provides a Standard Construction Specification for both as shown in Appendix C to this report and permits developers to choose their respective options. In all instances, home builders have selected, and the Administration has accepted, the discharge to surface option which is generally considered the most economical for the builder and least intrusive on new infrastructure for the City.

All five cities referenced earlier began with a weeping tile strategy of surface discharge, but have completely moved, or are planning to move, away from this strategy. Winnipeg and Saskatoon

currently employ a strategy of pumping to the surface and are experiencing issues such as freezing in the winter and saturated lawns in the summer. Both cities have indicated to Administration they are looking to Edmonton and Calgary as templates for strategies to manage discharge issues better. Edmonton and Calgary prefer the discharge into storm sewer method for managing weeping tile flow discharge.

Administration has indicated experiencing some undesirable conditions due to weeping tile surface discharge. Greens on Gardiner has experienced winter icing, and some parks and open space areas have experienced plant mortality, odours, and boggy conditions where groundwater tables are high causing sump pumps to discharge over extended periods of dry weather.

Although Administration does not have experience with the direct connection option shown in Drawing S-32A in Appendix C to this report, the possibility of cross connection between the sanitary and storm systems has been identified. One municipality interviewed has stated that during a pilot project to evaluate direct storm connections, several home builders connected the home's wastewater to the storm connection and weeping tile discharge to the sanitary connection.

It is currently unclear whether or not surface discharge is the most desirable strategy for Regina, but will be subject of further review by Administration with potential changes being implemented either through changes in standards and/or bylaws.

Enforcement

Enforcement of this proposed Bylaw change will primarily be through the review and approval of a building permit. New buildings in greenfield and re-development areas will be inspected to ensure compliance with the Bylaw requirements. A small sample of applicable home renovations may be inspected to ensure compliance. However, Administration does not currently have the capacity to inspect every applicable home renovation for compliance.

RECOMMENDATION IMPLICATIONS

Financial Implications

Removing weeping tile from the sanitary system will reduce infrastructure cost by reducing the size of new wastewater collection pipes as well as reducing the size of lift stations and related offline storage. In addition the cost to upgrade existing wastewater infrastructure to accommodate growth will be reduced. This cost saving is currently being realized in some new development areas as recent area plans submitted to the City for review have included the elimination of weeping tile discharge into the sanitary system within the plan area.

If the City were to implement a strategy of direct weeping tile connection to a storm sewer, infrastructure costs undertaken by the proponent would increase along with the cost to the City for additional operation and maintenance. The City would also need to consider costs related to inspections to ensure both storm and sanitary services are properly installed by home builders. The City is dealing with potential cross connection in some existing homes. The opportunity to direct wastewater to the storm system exists when a storm connection is provided to the home. Additional education and enforcement may be required to ensure that wastewater is not cross connected to the storm system.

Environmental Implications

Removal of weeping tile from infill development will lessen the impact of wet weather events in older areas of the City. Over time, this will lower the frequency and magnitude of wastewater bypasses at the MBPS and other lift stations in the City. The City also has many other projects that are ongoing to reduce the risk of wastewater bypasses including capital upgrades and an ongoing cross connection program.

The design of new wastewater collection systems, lift stations and related offline storage will account for the smaller wet weather flows resulting from the removal of discharge from weeping tile. This input alone may not have any effect on the frequency which the sanitary system would need to bypass to the storm system or natural watercourses in new development areas. However, the magnitude of a bypass during an extreme wet weather event is expected to be lower where weeping tile is not connected to the sanitary system assuming the rainfall event surpasses the level of service designed within the sanitary collection system. This conclusion was evident during the June 29, 2014 storm, where bypasses occurred in both the Creeks and Harbour Landing; the per capita spill volume was larger in Harbour Landing.

Policy and/or Strategic Implications

The primary focus of this Bylaw change is to support Administration's efforts to reduce the risk of wastewater bypasses by reducing the I/I experienced by the sanitary sewer collection system during wet weather events.

In regard to weeping tile discharge flows further investigation, research and consultation with impacted stakeholders will be required to determine the best approach for Regina. The City's development standards, specifications and associated bylaws will be updated to convey the City's preferred method and requirements for weeping tile discharge. It is intended this review occur in 2016 and further weeping tile discharge standards and/or bylaws changes would be implemented in 2017.

Other Implications

None with respect to this report.

Accessibility Implications

None with respect to this report.

COMMUNICATIONS

The City has contacted the Regina & Region Home Builders Association (RRHBA) for comment. RRHBA membership includes a number of impacted stakeholders involved in the design and construction of homes and new neighbourhoods through the land developers, home builders and subtrades represented by the association.

The RRHBA has indicated support of this proposed Bylaw change citing a positive impact on design requirements of the sanitary system in new neighbourhoods as well as a positive impact on the environment.

If the recommendations are adopted by City Council, a communications strategy will be developed to inform affected home builders and home owners of the Bylaw change.

The RRHBA will receive written notification of City Council's decision.

DELEGATED AUTHORITY

The recommendations contained in this report require City Council approval.

Respectfully submitted,

PUBLIC WORKS AND INFRASTRUCTURE COMMITTEE

Linda Leeks

Linda Leeks, Secretary