

Clause 11 in Report No. 12 of Committee of the Whole was adopted, without amendment, by the Council of The Regional Municipality of York at its meeting held on September 22, 2016.

11

Direct Purchase of Services for Data Management for the
Sanitary Sewer Flow and Rainfall Monitoring Program

Committee of the Whole recommends adoption of the following recommendations contained in the report dated August 9, 2016 from the Commissioner of Environmental Services:

1. Council authorize the award of a contract to FlowWorks Inc. for sanitary sewer flow and rainfall monitoring data management services, pursuant to the direct purchase provisions of the Purchasing Bylaw, for a two-year term at a total cost of \$240,800 excluding applicable taxes.
2. Council authorize the Commissioner of Environmental Services to execute the Agreement on behalf of the Region.
3. The Commissioner of Environmental Services be authorized to exercise the option to renew the Agreement for three additional terms of one year each, on the same terms and conditions, at an annual cost of \$120,400, excluding applicable taxes, subject to an annual cost adjustment to the lesser of 2.5 per cent or the Consumer Price Index.

Report dated August 9, 2016 from the Commissioner of Environmental Services now follows:

1. Recommendations

It is recommended that:

1. Council authorize the award of a contract to FlowWorks Inc. for sanitary sewer flow and rainfall monitoring data management services, pursuant to the direct purchase provisions of the Purchasing Bylaw, for a two-year term at a total cost of \$240,800 excluding applicable taxes.

2. Council authorize the Commissioner of Environmental Services to execute the Agreement on behalf of the Region.
3. The Commissioner of Environmental Services be authorized to exercise the option to renew the Agreement for three additional terms of one year each, on the same terms and conditions, at an annual cost of \$120,400, excluding applicable taxes, subject to an annual cost adjustment to the lesser of 2.5 per cent or the Consumer Price Index.

2. Purpose

This report seeks authority for the Region to enter into a direct purchase agreement with FlowWorks Inc. for providing data management for the Sanitary Sewer Flow and Rainfall Monitoring Program (Flow Monitoring Program) under the direct purchase provisions of the Purchasing Bylaw.

Council approval is required because the contract price exceeds \$100,000.

The rationale for this direct purchase is that the compatibility and continuity of FlowWorks web-based platform with the Region's long-term Sanitary Sewer Flow and Rainfall Monitoring Program are the paramount considerations.

3. Background

The Purchasing Bylaw permits Direct Purchase pursuant to the provisions of Section 9

The *Purchasing Bylaw (2014-53)* permits direct purchases under certain circumstances:

- Section 9.1 (a) allows for direct purchase where the paramount consideration is compatibility of a purchase with existing equipment or service.

Council approval is required to award contracts under sections 9.1 (a) where the total costs exceed \$100,000. The total five-year cost of FlowWorks is approximately \$602,000 (excluding applicable taxes and an annual cost increase equal to the lesser of 2.5 per cent or the Consumer Price Index adjustments).

Continuous monitoring of sanitary sewer flow and rainfall is required to meet regulatory requirements

On February 17, 2011, Council approved the Inflow and Infiltration Reduction Strategy, which was developed in partnership with local municipalities. The Inflow and Infiltration Reduction Strategy was recently updated in March 2016.

The Flow Monitoring Program has been an integral part of the overall Inflow and Infiltration Reduction Strategy mandated by the Ministry and a key component of the Inflow and Infiltration Reduction Program's implementation since 2012.

Sanitary sewer flow and rainfall monitoring data assist the Region in determining inflow and infiltration problem areas and allow for post construction analysis required to determine inflow and infiltration reductions in the system. The Region reports these reductions to the Ministry of the Environment and Climate Change (the Ministry) on an annual basis as part of the Conditions of Approval for the Southeast Collector Sanitary Sewer Individual Environmental Assessment (SEC IEA).

A considerable amount of inflow and infiltration reduction work is underway as part of sustainable infrastructure management and as required by the Ministry under Condition 8 of the Southeast Collector approval.

The Inflow and Infiltration Reduction Strategy recommended a target inflow and infiltration reduction at the Southeast Collector trunk sewer of 40 million litres within a 24-hour period under a 25-year storm event to be achieved by 2031.

The sanitary sewer flow and rainfall monitoring data collected through the Flow Monitoring Program is constantly used to:

- Reveal deficiencies in local and regional sanitary sewer systems and identify high priority areas
- Assess levels of inflow and infiltration during and after a major rainfall event
- Assess progress towards meeting interim and ultimate inflow and infiltration reduction targets as mandated by the Ministry
- Infra-stretch - adjust capital projects timing based on reduced flow in the system realized through inflow and infiltration reductions, and advancing capacity to developers as per the inflow and infiltration reduction pilot project agreements

FlowWorks has been in use since 2012 and provides web-based data management services for approximately 330 monitoring sites

FlowWorks Inc. (FlowWorks) is currently a sub-consultant under the long-term Sanitary Sewer and Rainfall Monitoring Program contract (RFP 12-20) awarded by Council on May 17, 2012 and has been providing data management services for approximately 261 sanitary sewer flow monitoring sites (247 long-term monitoring sites and 14 temporary monitoring sites) and 69 rain gauges (see Attachment 1). Works under this contract, initially procured competitively and representing the best overall value to the Region, commenced in July 2012 and are expected to be completed by the end of 2016.

FlowWorks is a secure web-based platform for receiving, managing and analyzing monitoring data. It consolidates real time data collected remotely from all active flow and rainfall monitoring sites and allows Regional and local staff to have direct access and perform real-time analyses, set alarms and transform raw data into actionable information through a single web interface.

Toronto and Region Conservation Authority and Lake Simcoe Region Conservation Authority (Conservation Authorities) currently have data sharing agreements with the Region, which also allow them direct and secure access to rainfall data in FlowWorks. Rainfall data from rain gauges operated by the respective Conservation Authorities are shared with the Region through FlowWorks and conversely the Conservation Authorities have access to rainfall data from Region-owned rain gauges located across York Region.

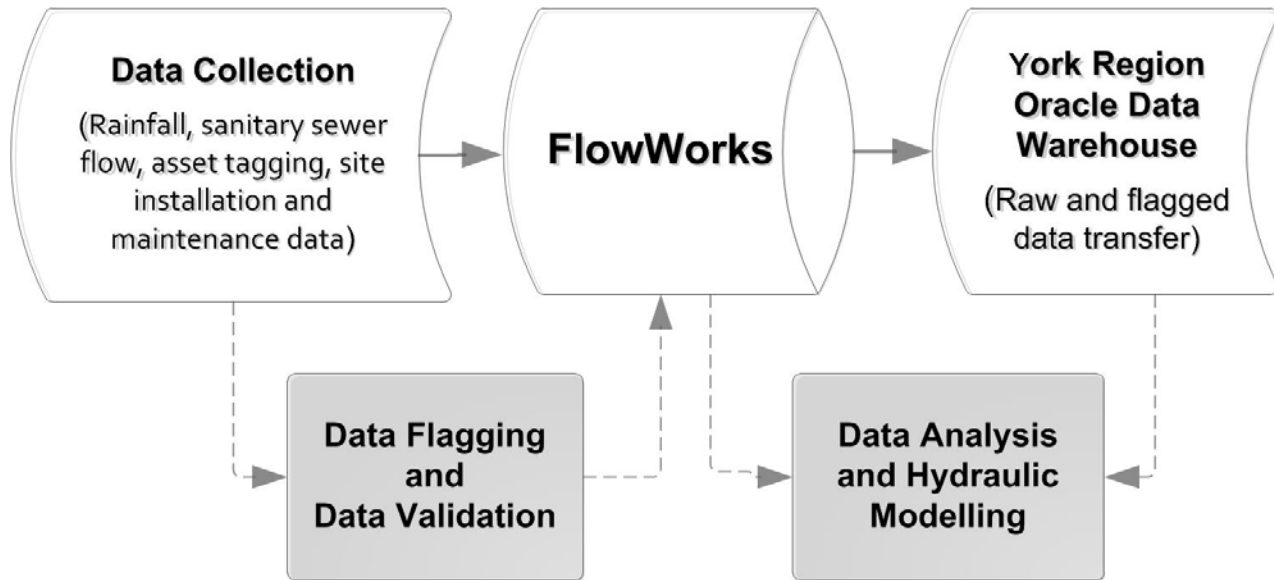
4. Analysis and Options

FlowWorks serves multiple purposes and has played an important role in the Flow Monitoring Program's development and functionality

With the launch of the Flow Monitoring Program in 2012, the Region completed extensive site investigations to selected monitoring sites, procured new flow and rainfall monitoring equipment in 2013, and installed equipment in monitoring sites throughout the Region. Monitoring sites are mapped in FlowWorks in a platform designed for the Region's Flow Monitoring Program where monitoring and equipment data related to each site are uploaded remotely. A one-time fee of site set-up has also been paid for each of the 330 monitoring sites.

Staff worked closely with FlowWorks to implement robust and customized data management tools to meet the Flow Monitoring Program’s needs, allowing seamless data flow as outlined in Figure 1.

Figure 1
Data Processes In and Out of FlowWorks



Maintaining the service of FlowWorks allows local and Regional staff as well as Conservation Authorities access to these tools without the need to reinvest time, money and effort to reconfigure new business specific applications and avoid incurring additional one-time set up fees with a new service provider.

The Region would likely incur additional costs associated with a different vendor (e.g. new one-time fee for site set up) and may not be the most efficient use of staff resources particularly when FlowWorks is currently meeting all our data management needs with its customized data management features.

Continuous data management is of paramount importance to regulatory compliance

The Region’s ability to comply with Condition 8 of Southeast Collector approval and report on annual reductions in inflow and infiltration to the Ministry is directly impacted by the continuity of the Flow Monitoring Program.

FlowWorks manage numerous sets of “big data” related to equipment, site characteristics and flow and/or rainfall monitoring from multiple sources that are of paramount importance to inflow and infiltration analysis and reduction quantification. Accordingly, continuing to engage FlowWorks in data

management for the Flow Monitoring Program will minimize the risk of not having available data required for annual status reporting to the Ministry.

Region has invested close to \$160,000 in site setups and customized tools, reporting and programming in FlowWorks

A clear and detailed process has been developed through combined efforts between the Region and FlowWorks. These processes have proven to be successful, cost effective and efficient. Data quality collected from all monitoring sites has been consistently high with an average of 95 per cent good data and meter communication downtime of less than 1 per cent, on average. This performance was established through customizing tools, reports and program applications.

Over 930 million data points have been stored and managed in FlowWorks since 2012 and over 920,000 data points are archived to the Region's data warehouse daily directly from FlowWorks.

Link to key Council-approved plans

The Flow Monitoring Program supports the Inflow and Infiltration Reduction Strategy required by the Ministry through Condition 8 of Southeast Collector approval, which sets an inflow and infiltration reduction target of 40 million litres per day (MLD) by 2031. As of the end of 2015, the Region and local municipalities have achieved a total reduction of inflow and infiltration of 9.6 MLD in the YDSS, representing 24 per cent of the 2031 target reduction of 40 MLD. This reduction was achieved through completion of remedial works including downspout disconnections, sewer and maintenance hole repairs.

Continued use and support of existing data management systems aligns with the following 2015 to 2019 Strategic Plan objectives and key regional performance measures:

- Reduce quantity of inflow and infiltration in Regional and local wastewater systems – through implementation of the Inflow and Infiltration Reduction Strategy.
- Continue to deliver and sustain critical infrastructure – through monitoring changes in regional and local sanitary sewer flows over time with reliable technology systems used to host, manage and make data easily accessible for analysis and modelling purposes, and infra-stretch to maximize use of built infrastructure and adjust timing of new capital.

- Strengthen organizational capacity and effectiveness – through implementation of best practices, continuous improvement and efficient use of existing systems.

5. Financial Implications

The projected total five-year cost for the direct purchase of FlowWorks services is \$602,000 (excluding applicable taxes), with an average annual cost of \$120,400. The cost for a two-year term totalling at \$240,800, excluding applicable taxes, is included within the approved 2016-2018 budget for the Inflow and Infiltration Reduction Program. Funding for three additional one-year terms will be included in the Inflow and Infiltration Reduction Program as part of the 2017 budget process.

The annual cost of \$120,400 for the FlowWorks services is based on the existing contract (RFP 12-20), which was procured through the Region's competitive Request for Proposal evaluation process. Three consulting firms responded to the Request for Proposal (RFP12-20) and were evaluated in accordance with the Region's Purchasing Bylaw to ensure best overall value.

The Flow Monitoring Program is an integral part of the Inflow and Infiltration Reduction Strategy, which recovers capacity in the system by reducing inflow and infiltration. This permits advancing of capacity assignment without the need to advance infrastructure investments.

6. Local Municipal Impact

This financial investment supports local and Regional efforts

The combined Regional and local wastewater collection system is comprised of over 3,000 kilometres of pipe network, with a majority of the system in the jurisdiction of the local municipalities. The majority of monitoring sites within the Flow Monitoring Program are installed in the local sanitary sewer systems, which provide wastewater flow data to support local and Regional efforts at determining high inflow and infiltration risk areas for further investigation and remediation.

Local municipal staff has been involved in developing the Inflow and Infiltration Reduction Strategy to ensure local objectives are met and are key partners in the Flow Monitoring Program. A Memorandum of Understanding between the Region and each local municipality has been executed as part of the Flow Monitoring Program. Local municipal staff have full access to flow and rainfall monitoring data within their respective municipality through FlowWorks. Conservation

Authorities also have access to rainfall data through data sharing agreements with the Region.

7. Conclusion

A direct purchase agreement with FlowWorks will enable staff to continue using the services provided by FlowWorks including the custom programming, data reporting and archiving features that the Region has developed with FlowWorks.

It is recommended that Council authorize the direct purchase of FlowWorks flow and rainfall monitoring data management services to ensure the continued success of the Sanitary Sewer Flow and Rainfall Monitoring Program.

For more information on this report, please contact Stephen Fung, Director, Infrastructure Asset Management, Environmental services at ext. 73025.

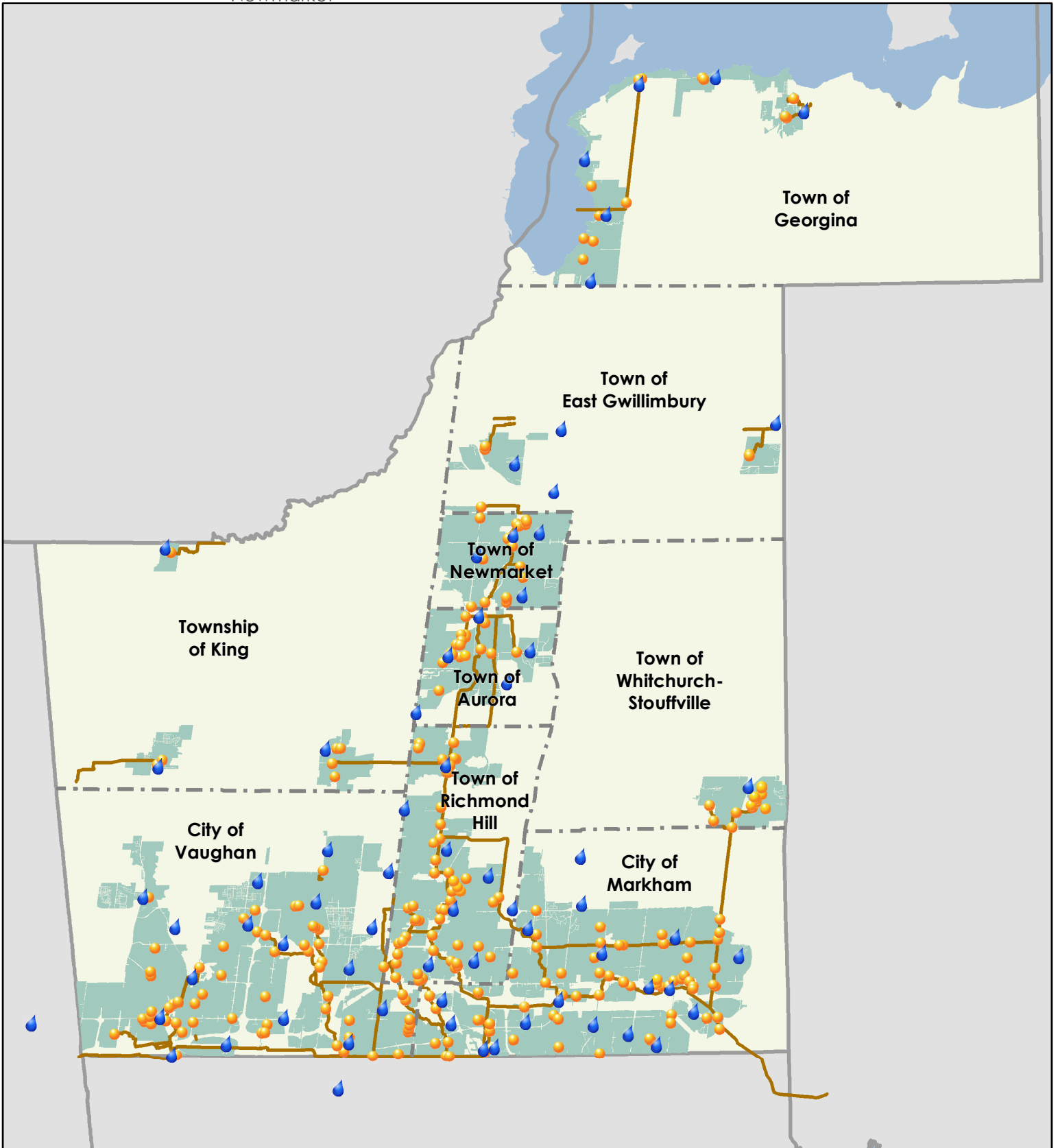
The Senior Management Group has reviewed this report.

August 9, 2016

Attachment

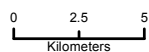
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Accessible formats or communication supports are available upon request



**Direct Purchase of Services for
Data Management for the Sanitary
Sewer Flow and Rainfall Monitoring Program**

Flow and Rainfall Monitoring Sites
September 8, 2016



Produced by:
Infrastructure Asset Management,
Environmental Services Department
The Regional Municipality of York
July 2016

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Legend

-  Flow Monitoring Site
-  Rainfall Monitoring Site
-  Wastewater Main
-  Flow Monitoring Catchment Area

