



Report to: General Committee

Date Report Authored: May 26, 2014

SUBJECT: Sewer Use By-law Update and Effluent Compliance Program
PREPARED BY: Rebecca Fei, Compliance Engineer – Ext 2687
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RECOMMENDATION:

1. THAT the report entitled “Sewer Use By-law Update and Effluent Compliance Program”, dated May 26 2014, be received;
2. AND THAT Council enact the proposed Sewer Use By-law, as described in this report and in the form set out in Attachment “A”;
3. AND THAT Council repeal the current Sewer By-law (No. 436-86), as amended;
4. AND THAT Council receive the information on Markham’s Sanitary Sewer Effluent Compliance Program and the two-tier Sewer Use Compliance Collaboration with the Region of York;
5. AND THAT Staff be authorized and directed to do all things necessary to give effect to this resolution.

EXECUTIVE SUMMARY:

This report explains the necessity of updating the current Sewer By-law (No. 436-86) and describes the proposed updates. Staff is seeking Council’s approval of the proposed Sewer Use By-law.

The report updates Council on Markham’s Sanitary Sewer Effluent Compliance Program and provides the financial and human resources impact associated with this Program.

The report also introduces the two-tier Sewer Use Compliance Collaboration jointly developed by the Region of York (ROY) and the nine local municipalities.

PURPOSE:

This report describes needs for updating the current Sewer By-law (No. 436-86) and seeks Council’s approval for the proposed Sewer Use By-law. This report also mentions Markham’s Sanitary Sewer Effluent Compliance Program and the two-tier Sewer Use Compliance Collaboration with the Region of York.

BACKGROUND:

Sewer Use By-law Update

Markham’s current Sewer Use By-law (No. 436-86) was enacted on December 9, 1986 and had several amendments since then. The By-law was developed based on the early Ministry of Environment (MOE) Model Sewer Use By-law. This By-law is now outdated in many areas and requires a significant update.

Post mid 1990's, MOE stopped development and periodic updates of the model sewer use by-law and allowed Ontario municipalities to adopt their own by-laws. The Canadian Council of Ministers of Environment (CCME) developed a National Model Sewer Use By-law in 2009, as a part of a Canada-wide Strategy for Municipal Wastewater Effluent. The majority of Ontario municipalities have chosen to follow the CCME's Model Sewer Use By-law for developing and updating their sewer use by-laws. The ROY used the CCME's model by-law as a guideline to update their Sewer Use By-law in late 2011.

Staff has developed the proposed Markham Sewer Use By-law based on CCME's model sewer use by-law and to harmonize with ROY's Sewer Use By-law.

Markham's Sewer Effluent Compliance Program

Markham's Environmental Services Department is responsible for the collection of sanitary sewer effluent from residential homes, industrial, commercial, and institutional sites by means of the City's some 900 km of sanitary sewer mains, 74,000 sewer service connections, 13,400 plus sanitary sewer manholes and 5 pumping stations. The collected sewage is discharged into the ROY's trunk sewer mains.

Due to increasing number of sanitary sewer damages and blockages caused by contravention of the sewer use by-law, in early 2011 the Environmental Services Department established a proactive Sanitary Sewer Effluent Compliance Program to protect Markham's sewer infrastructure. Markham's effluent compliance program focuses on three parameters: pH, oil & grease and Suspended Solids (SS). The pH can cause sewer damage and the other two parameters can cause blockages. The following table provides records of blockage cleanup on sewer mains and service connections in the past 4 years.

Sanitary Sewer Maintenance (2009-2012)

	2009	2010	2011	2012
<i>Number of blockages in sewer mains</i>	7	11	27	27
• <i>Caused by Grease and Debris</i>	3	8	20	18
• <i>Caused by roots, structural damage, and etc</i>	4	3	7	9
<i>Number of blockages on service connections</i>	18	12	33	27
• <i>Caused by Grease and Debris</i>	N/A	6	18	10
• <i>Caused by roots, structural damage, and etc</i>	N/A	6	15	17

A recent Closed Circuit Television (CCTV) inspection program completed on about 900 km (9000 plus segments) of our sanitary sewer mains found the following:

Results of CCTV Inspection Program on Sanitary Sewer Mains (2010-2013)

<i>Type of Defects</i>	<i>Debris/Grease</i>	<i>Broken/Holes</i>	<i>Heavy Encrustation</i>
No. of affected Sewer Segments	1191	37	179

The identified 37 broken/holes have either been repaired or are being repaired in 2014 on a priority basis. Four of these broken/holes may have some connection with illegal sewer effluent and will be investigated. If the responsible party can be identified, the repair cost should be recoverable.

The 1191 sewer segments with debris/grease and 179 heavy encrustation locations represent “blockage” risk to sewer mains and service connections if not cleaned out in a timely manner. After CCTV identifies those locations, the severity of problem is assessed and the flushing work is scheduled on a priority basis. The cleaning work is usually completed shortly after the need for cleaning is identified.

Two-Tier Sewer Use Program Memorandum of Understanding

The ROY is responsible to maintain the Region’s trunk sewer mains and to convey and discharge collected local municipal sewage into the Dufferin Creek Water Pollution Control Plant (WPCP) in Durham. The ROY has had a Sanitary Sewer Effluent Compliance Program for about 25 years to comply with the MOE Municipal Industrial Strategy for Abatement (MISA) regulations and ROY’s Sewer Use By-law.

Since the responsibility for sewage is within a two-tier governance system, in 2011 the ROY and nine area municipalities formed a working group to develop a collaborative sewer use program within York Region. In April 2013, a draft of the Sewer Use Program Memorandum of Understanding was finalized and outlines key areas of collaboration, which are governance, communication, stakeholder management and monitoring & enforcement.

Staff identified an overlap between Markham’s and ROY’s programs. To achieve a one point of sewer use compliance contact for businesses in Markham and to eliminate duplicate effort, Markham and the ROY have tabled a detail collaboration plan.

OPTIONS/ DISCUSSION:

Sewer Use By-law Update

In comparison with CCME’s model bylaw and common practices in Ontario, the current By-law No. 436-86 is outdated in many areas:

- By-law provisions are not sufficient to cover current sewer use situations.
 - For example, dental waste amalgam separators are commonly used by dental community, but are not covered by the current By-law. If those dental wastes are not managed properly, it will pose more impact of heavy metals, biomedical/pathological and chemical wastes on our environment.
- Discharge substances (or parameters) are incomplete and some discharge limits are not stringent enough for meeting provincial or federal regulations.
 - The current By-law only lists 24 discharge substances (or parameters) for sanitary sewer and 24 discharge substances (or parameters) for storm sewer. However,

CCME's Model By-law recommends more substances for both sanitary sewer and storm sewer.

- No flexibility in the By-law to assist businesses in a permanent behavioral change to achieve compliance.
 - Some effluent exceedences may require businesses to have significant changes to their entire production process.
- No comprehensive provisions to regulate physical connections to municipal sewer systems (i.e. service connections).
 - Currently, all requirements for sewer service connections are either written in the City's design standards or practiced in the working procedures. Inclusion of those requirements in the By-law can be more effective.
- By-law enforcement provisions are not detailed and strong enough to support Markham's effluent compliance program governance.

In order to support Markham's Sewer Effluent Compliance Program and the two-tier Sewer Use Collaboration, the current By-law has to be strengthened. The proposed Sewer By-law is in Attachment "A" of this report for Council review and consideration.

The updates from the current to the proposed by-law are outlined in Attachment "B" of this Report. The highlights of this proposed by-law include:

1) Focusing on clarity and ease of use

Staff focused on the clarity and ease of use through: introducing of table of contents; section titles for each sewer use topic; grouping specific topic content; etc.

2) Consistency with ROY's Sewer Use By-law

Generally, there are two areas regulated by a Sewer Use By-law:

- i. Regulate physical connections to municipal sewer systems;
- ii. Regulate quality of the wastewater discharged into municipal sewer systems.

Markham's by-law includes both areas. The ROY's by-law only addresses the 2nd area due to its sewer infrastructure jurisdiction limited to trunk mains and wastewater treatment plant. Only the local area municipalities have the service connections and the local sewage collection system.

The provisions related to "quality of wastewater discharge into municipal sewer systems" in the proposed Markham's Sewer Use By-law are consistent with ROY's provisions. It will make it much easier for businesses in Markham to understand both Markham's and ROY's sewer use requirements.

3) Sewer use compliance mechanisms

Through normal ongoing operations, some industries might produce effluent outside our by-law limits. We might not have known that they were producing such effluent

as we had not previously detected that in the samples being taken. Once we discover such effluent exceedences, we need to work with those industries to effect a permanent long term change.

We have introduced three sewer use compliance mechanisms to assist those businesses in their effort to comply with the by-law limits. We understand it may be a complicated and long journey for them to adjust and change their processes. We are introducing mechanisms that will allow us time to help them with the transition. They are included in Section 7 "Surcharge Agreement", Section 8 "Compliance Program" and Section 9 "Pollution Prevention Plan".

4) Adding new provisions to cover the specific industries or activity types

- Section 13 "Dental Waste Amalgam Separators",
- Section 14 "Food Related Oil & Grease Interceptors",
- Section 15 "Vehicle and Equipment Service Oil & Grease Interceptors",
- Section 16 "Sediment Interceptors".

5) Creating a "Sewer Connections" section

Section 19 "Sewer Connections" has been included to detail the specific service connection into 13 sub-sections. This section reflects our current practices and those used in Ontario.

For any new By-law provisions to be effective, public education and information rollouts to key stakeholders are important. Since the ROY, as part of their by-law update and rollout, held several public consultation meetings on those provisions in 2010, many businesses are already aware of those new provisions. There does not appear to be a need to repeat ROY's effort. Staff plans to educate the public and businesses through enhancement of our Sewer Use Compliance website and developing brochures to reach certain group of businesses. During our effluent sampling at those business locations we will also be providing some education material to those businesses along with a reference to our Web site where more detailed information will be found.

Markham's Sanitary Sewer Effluent Compliance Program

The Environmental Services Department has introduced a proactive Sewer Effluent Compliance Program in early 2011 to protect our sewer infrastructure and the ground water. The Program consists of:

1) Sampling and Testing:

- On annual basis, staff reviews the list of businesses in Markham and try to categorize them to the type of effluent they might produce. We look at perceived risk of effluent exceedences (probability and consequence) and develop our sampling program locations. The number of locations to be sampled annually is based on our staffing levels.
- Three sampling methods have been utilized: (1) for each of these locations, a electronic pH logger is installed into a property line manhole for 10 to 12 days to obtain pH profile every few minutes of its sewer effluent; (2) we analyze the pH

results and for about 25% of the locations an automatic sampler is installed into a property line manhole to take 24 samples on a programmed time interval when we suspect there might be exceedence issues. If the lab results from these samples show exceedences, we notify the business of our finding and the need for process change; (3) for those exceedence locations (for about half of the locations sampled with automatic sampler), at a specific time we take a legal grab sample to confirm the test results. We use this result in official correspondence with the business.

- On a quarterly basis, staff takes routine samples from their sewer effluent and test for three parameters (i.e. pH, SS, Oil & Grease). Exceedences in these parameters limits can cause damage or blockage to our sewer collection system.

2) By-law Violation Notification:

- If a test result exceeds our By-law limits, staff issues a by-law violation notice through registered mailing to the business owners/tenants and request them to advise why such an exceedence has occurred.

3) Corrective Actions and Behavior Changes:

- Once the business owners/tenants identified the cause of the exceedence, they need to develop a corrective action plan. This involves both steps to be taken and a realistic time line.
- Staff follow-ups with progress of these corrective actions, takes further samples and ensures that their effluent is within by-law limits.

4) Sewer Use By-law Enforcement:

- The By-law will be progressively enforced on those on-going non-compliant businesses. Although the objective is a behavioral change, we need the power of the by-law to pursue both convictions and financial damage recovery.
- Those on-going non-compliant businesses will get financially penalized and convictions will be sought.

5) Sewer Damage/Blockage Investigation:

- When staff finds pH, oil & grease, or SS exceeding our by-law limits, a visual or a CCTV inspection will be carried out on those sewer segments to check if any damages/blockages occurred.
- Any pre-mature damages or abnormal blockages discovered through routine sewer infrastructure inspection will be investigated and responsible parties are to be identified and notified.

6) Damage Repairs/Blockage Cleanups and full Cost Recovery:

- Any damage/blockage pipe will be repaired/cleaned in a timely manner. We need to assure that such conditions do not cause issues for our other customers.
- Staff will communicate with the responsible parties and advise them of the situation. The City requires them to pay for the full cost of damage repairs or blockage cleanups when the cause can be attributed to them.

- If the responsible parties refuse to pay for the full cost of damage repairs/blockage cleanups, staff forwards the file to the Legal Department and pursue legal remedy for cost recovery.
 - We always work with the businesses first to address the matter before escalating it.
- 7) Requests of temporary Discharge into Sanitary or Storm Sewers:
- In order to be responsive to the building industry and accommodate their construction site dewatering needs, we need to entertain requests for handling this water in cost effective ways into our sewer systems. Because this is extra water that the sewer system was not designed for, we need to determine this flows impact. A request of temporary discharge water from construction dewatering activities, storm water pond cleanups and etc. into our sanitary or storm sewers will be reviewed. An approval letter will be issued if our affected sanitary or storm sewer has capacity and the quality of discharge water meets the By-law limits.

The Sewer Effluent Compliance Program has raised the awareness of by-law compliance with our business customers. Compliant sewer users don't need to pay for the cost of damage repairs/blockage cleanups caused by those non-compliant businesses. The number of non-compliance occurrences and sewer damage/blockage incidents is expected to be reduced as we continue to work closely with our business customers and provide them information on our lab result exceedences.

The status of Markham's Sewer Effluent Compliance Program is developed in Attachment "C" of this Report.

Two-Tier Sewer Use Program Memorandum of Understanding

The ROY's program has been in place for about 25 years and focuses on parameters that can directly impact the functioning and the cost of running a wastewater treatment plant.

The ROY and nine local municipalities formed a working group to develop a collaborative sewer use program within the boundaries of York Region. In April 2013, a draft of the Sewer Use Program Memorandum of Understanding was finalized. Key areas of collaboration are categorized as: governance, communication, stakeholder management and monitoring & enforcement. Seven principles are defined to support collaboration between the ten partners:

- 1) Leaderships in policy development and best practices;
- 2) Inter-municipal and external communication protocol and practice;
- 3) Effective and consistent enforcement;
- 4) Universal application of the by-laws;
- 5) Financial sustainability;
- 6) Clearly defined roles and responsibilities;
- 7) Transparent, equitable and engaging program.

To fulfill the “universal application of the by-laws” principal, the proposed Sewer Use Bylaw is consistent with the ROY’s Bylaw No. 2011-56.

Even though the focus of the Markham and ROY programs are different, staff identified an overlap between the two programs; i.e. some businesses are being monitored by both parties since their sewer use issues are a concern of both Markham and ROY. To achieve one point of sewer use compliance contact for those businesses in Markham and to eliminate duplicate sewer use services, staff met with ROY to develop a Roles and Responsibilities Matrix defining expectations of the two parties. The collaboration effort between Markham and the ROY are based on the above seven principals and will:

- Establish one point of contact for sewer use services for Markham’s businesses;
- Minimize duplicate sampling tasks;
- Allow full sampling and lab results sharing;
- Enhance the effectiveness and efficiency of sewer use service program delivery.

FINANCIAL CONSIDERATIONS AND TEMPLATE:

- 1 The lab test fees spent in the last few years on the Sewer Effluent Compliance Program are:

Year	2011	2012	2013
Total of Wastewater Lab Test Fees	\$29,910	\$23,667	\$7,186

Starting in 2013, 5 electronic pH loggers have been utilized for initial sewer effluent sampling. Only pH exceeding results from those pH loggers were followed-up by 3 Automatic samplers or grab samples. This mechanism streamlined effluent sampling and fewer samples were needed to be sent to the Lab for testing. As a result the 2013 Lab Test Fees was less than those in 2011 and 2012.

- 2 Since the establishment of the Program in 2011, staff discovered and identified 6 sewer damage locations caused by pH level exceedances in sewer effluent. All of the damaged locations have now been repaired. The damage repair costs have been fully reimbursed from the responsible parties for 5 of those locations for a total amount of \$135,300 and the responsible parties have been convicted of the appropriate offences. The 6th location had significant damage and was fully repaired at a cost of \$432,500. The property owner is refusing payment of this amount and the matter is at litigation stage seeking recovery.
- 3 Since the establishment of the Program in 2011, 10 temporary discharge requests have been received and approved.

HUMAN RESOURCES CONSIDERATIONS

Markham’s Sewer Effluent Compliance Program currently monitors 110 to 120 businesses each year. The associated workload can be managed by existing staff.

ALIGNMENT WITH STRATEGIC PRIORITIES:

Municipal Services/Excellence Markham –Markham’s new Sewer Use By-law will require businesses to follow good sewer use practice. Markham’s Sewer Effluent Compliance Program is proactive and will work with businesses to effect a behavioral change while protecting our sewer infrastructure from premature repairs and replacement.


BUSINESS UNITS CONSULTED AND AFFECTED:

The following departments and business units were consulted during the preparation of the Sewer Use Bylaw update and this report:

- Regional Municipality of York
- Engineering
- Operations
- Building Standards
- Legislative Services
- Legal Services
- Asset Management

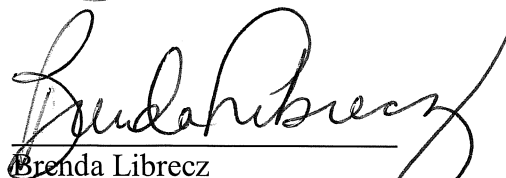
RECOMMENDED

BY:



Peter Loukes, P.Eng.

Director, Environmental Services



Brenda Librecz

Commissioner, Community and Fire Services

ATTACHMENTS:

Attachment “A” – Sewer Use By-law (2014-XXX) and Schedule “A”

Attachment “B” – Summary of Markham’s Sewer Use By-law Update

Attachment “C” – Status of Markham’s Sanitary Sewer Effluent Compliance Program

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