
Subject: Councillor Information Request re 2014 Hauled Sewage Rate Review

Report to: Public Works Committee

Report date: Tuesday, June 14, 2022

Recommendations

1. That this Report **BE RECEIVED** for information.

Key Facts

- This report has been prepared in response to the Councillor Information Request made at the Public Works Committee held on April 5, 2022: *Provide information respecting the 2014 third party review regarding hauled sewage rate calculation methodology to Committee members.*
- The 2022 hauled sewage disposal rate is \$46/1000 gallons. Over the past 15 years, this rate has cumulatively increased by 15 per cent. Niagara's rates are competitive and generally lower than other Ontario municipalities.
- The Region began implementing inflationary cost increases to the Hauled Sewage rates starting in 2018. Prior to that time, the rate was not increased for 9 years.
- The WSP Canada Inc. report of 2014, attached as Appendix 1, recommended three alternative approaches to rate setting. The Region maintained a uniform rate for all hauled sewage types as recommended by Approach #1 in the WSP report.
- The Region is conducting a review of rate setting methodology in 2022.

Financial Considerations

The Hauled Sewage Program revenue partially offsets the operational cost of providing the service to sewage generators and sewage haulers. Fees and charges for hauled sewage continue to be assessed during the annual budget review process. Any upgrades to hauled sewage locations that require capital expenditures are presented in the annual capital budgets. Revenue from the program has risen from \$440K (2011) to \$890K (2021) which represents 1.13% of the net 2021 wastewater budget or 0.72% of the net 2021 total water and wastewater budget.

Analysis

Niagara Region has retained consultants on three separate occasions to review hauled sewage rate-setting methodologies.

In general, the consultants have proposed using an approach that includes contaminant removal costs for Biochemical Oxygen Demand (BOD), Total Suspended Solids (TSS), Total Phosphorus (TP) and Total Kjeldahl Nitrogen (TKN) as these factors are readily obtainable.

Hauled sewage contains substantially more of these contaminants than regular sanitary sewage. Sewage with excessive concentrations of BOD, TSS, TKN and TP can compromise the ability of a treatment plant to achieve its regulatory discharge limits.

The presence of the higher concentrations also reduces the capacity of the WWTP to accommodate future growth since the Region must reserve a certain amount of capacity to ensure that non-serviced properties continue to have access to a wastewater treatment plant for hauled sewage disposals.

Consultant Review:

In 2014, staff were directed to examine full cost-recovery for fees and charges as had been done in 2007 when a uniform hauled sewage rate was approved. An engineering consultant, WSP Canada Inc. was hired to review past approaches and municipal best practices for hauled sewage rate calculations.

The rate setting approach used in 2014 calculated a cost for the removal of the contaminants in regular sewage and then applied these unit removal costs to the loads of hauled sewage coming into the plant. The rate would then be set using typical hauled sewage concentrations recognizing that there is a wide variety of hauled sewage types being brought into the various WWTPs.

The consultant reviewed the operating and maintenance costs related to wastewater treatment at the Region's facilities. This resulted in a total wastewater treatment operating and maintenance cost. The consultant then reviewed the quantity of wastewater treated and the mass of material removed during the treatment of normal sewage to determine a base unit removal cost based on the units of mass removed – see Table 1.

Table 1: Base Unit Removal Cost Calculation (2014)

Year	Actual Costs for WW Operation and Maintenance	Total Kg Pollutant Removed	\$/kg
2009	\$ 47,656,713	26,683,819	\$ 1.79
2010	\$ 38,099,851	25,433,197	\$ 1.50
2011	\$ 44,683,556	26,987,671	\$ 1.66
2012	\$ 40,629,659	25,386,625	\$ 1.60
2013	\$ 42,781,364	30,230,877	\$ 1.42
5-Yr Average			\$ 1.59

For each load of hauled sewage brought to a wastewater treatment plant for disposal, the hauler is required to leave a sample from the delivered load. A portion of these samples are regularly analyzed by the Region's laboratory to determine the concentrations of BOD, TSS, TP, TKN and other parameters. For the 2014 consultant report, two hundred and twenty (220) samples of various types of hauled sewage were tested including wastewater from wineries, businesses and residences. The results from this testing were used to determine average concentrations for the aforementioned parameters in hauled sewage.

The average concentration of hauled sewage was used to determine an average weight of contaminants in hauled sewage. The cost as calculated in Table 1 was applied to the average weighting of contaminants in hauled sewage to determine a cost to treat hauled sewage in Table 2. Using this methodology, the rate to treat hauled sewage is calculated as \$59.51/1000 gallons.

Table 2: Hauled Sewage Sample Analysis and Mass of Contaminants

Calculations	A	B	C	D= A*B*C
Materials	Average Concentration of Contaminants in Hauled Sewage (kg/1000 gallons)	Average Weighting of Contaminants in Total Treated Sewage	5 Year Average Base Unit Removal Cost (\$/kg)	Cost for Hauled Sewage per 1,000 gallons
BOD	26.32	41.81%	\$ 1.59	\$ 17.51
TSS	50.78	51.77%	\$ 1.59	\$ 41.83
TP	0.35	0.97%	\$ 1.59	\$ 0.01
TKN	1.94	5.45%	\$ 1.59	\$ 0.17
Total	79.39	100.0%	\$ 1.59	\$ 59.51

As was previously noted, this is an average approach used to determine a uniform rate; the concentrations of these materials in hauled sewage can vary greatly from source to source. For instance, some winery wastewater hauled to Niagara's plants will contain TSS concentrations double that of the average calculated.

In 2022, once again staff reviewed the rate setting methodology and updated the five-year average Operating and Maintenance Costs for 2017-2021. The updated cost is calculated to be \$1.62 / kg. This would translate into a proposed hauled sewage rate of \$61.68 / 1000 gallons. The rate recommended to Council in 2022 was \$46 / 1000 gallons.

For context, if the \$61.68 hauled sewage rate was charged in 2021 instead of the \$45 / 1000 gallons rate actually charged, this would have generated approximately an additional \$331,000 in revenue for the wastewater program.

Alternatives Reviewed

The WSP report proposed three alternative methodologies. The other alternatives proposed required rates to be determined based on sewage types or actual laboratory testing results. Staff believe that these other approaches are impractical because of the complexity and given the resources available to monitor hauled sewage disposals.

Relationship to Council Strategic Priorities

- Supporting Businesses and Economic Growth
- Responsible Growth and Infrastructure Planning

Other Pertinent Reports

PW 12-2022 Hauled Sewage Program

Prepared by:

Jason Oatley, B.Sc., C.Chem.
Manager, Quality and Compliance
Public Works Department

Recommended by:

Bruce Zvaniga, P. Eng.
Commissioner of Public Works (Interim)
Public Works Department

Submitted by:

Ron Tripp, P. Eng.
Chief Administrative Officer

This report was prepared in consultation with Joe Tonellato, Director, Water and Wastewater Services, and reviewed by Pamela Hamilton, Program Financial Specialist and Dawn Macarthur, Supervisor, Water and Wastewater Compliance and Enforcement.

Appendices

Appendix 1 Hauled Sewage Rate Review Final Report, dated December 2014, prepared for Niagara Region by WSP Canada Inc.

Appendix 2 Summary of data from Appendix B of WSP report in Appendix 1