

Management of Wastewater Discharge and Overflow Monitoring

Background

Between 2012 and 2014, both Environment and Climate Change Canada (ECCC) and Québec's Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs (MELCCFP) adopted regulations to manage wastewater and ensure the protection of human health and the environment. These include standards applying to effluent discharges and wastewater overflows. Whereas, in Québec, the *Regulation respecting municipal wastewater treatment works* (RRMWTW) allows for untreated wastewater overflows in rainy weather or in cases of emergency, the federal *Fisheries Act* does not.

The Ville de Montréal (the City) operates two wastewater treatment plants. The Jean-R.-Marcotte wastewater treatment plant, which has been in operation since 1984, can treat the equivalent of 3,040 Olympic-size pools of wastewater per day of rain. The second plant is much smaller and is located on Île Notre-Dame. Wastewater is collected on 63% of the territory by a combined sewer system carrying both domestic wastewater and rainwater. In the event the collection system overloads, overflows of untreated wastewater can occur through the 161 overflow structures located along the collection system.

Purpose of the audit

To ensure that the City has adequate mechanisms in place for the sound management of wastewater discharge and overflow monitoring in accordance with the regulatory requirements.

Results

In general, the City has implemented a series of mechanisms to ensure the sound management of wastewater discharges and overflows. Nevertheless, these mechanisms are not fully compliant with regulatory requirements. Discharge concentration standards at the treatment plants are being met and all the acute toxicity tests on daphnia and rainbow trout were successfully completed. Almost all (96%) of the overflow structures are equipped with instruments that detect overflows.

However, water sampling frequencies and timeframes for retesting positive toxicity tests were not always met. On several occasions, the telemetric overflow detection instruments failed and the City was unable to identify whether wastewater had overflowed. In addition, the required visits to overflow structures are not all carried out or the frequency of visits is not respected.

Also, the City does not notify ECCC of overflows when it rains. Although it notifies the MELCCFP and ECCC of dry weather overflows, it does not always do so within the required timeframes.

Finally, we observed inaccuracies and inconsistencies in the overflow tracking and operator competency data between the information submitted by the City to the MELCCFP and the data contained in the City's internal records.

Main Findings

Monitoring Compliance with Wastewater Discharge Standards

- For the two wastewater treatment plants:
 - The daily flow measurement is carried out each day;
 - Discharge concentration standards are being met and all acute toxicity tests on daphnia and rainbow trout have been successfully completed.
- The accuracy of the flow measurement is verified for the Jean-R.-Marcotte wastewater treatment plant. This was not the case for Île Notre-Dame plant in 2020 and 2021.
- The discharge monitoring data posted on the MELCCFP's website is of high quality.
- However, for one or the other of the wastewater treatment plants, we observed that:
 - The ultrasonic probe used to measure flows is not calibrated annually;
 - The frequency requirement of physical and chemical test sampling was not always met;
 - For toxicity tests, the sampling frequencies, time limits for repeat tests and minimum time between samples were not respected.

Monitoring Compliance With Wastewater Overflow Standards

- 96% of the overflow structures are equipped with instruments that detect overflows, 79% of which are equipped with an instrument that communicates in real time with the treatment plant when overflows occur.

- Following a hundred or so failures in the instruments connected by telemetry, it was not possible to identify whether or not overflows had occurred.
- 32% of weekly visits and 51% of monthly visits to overflow structures were not conducted.
- There are inaccuracies and inconsistencies between the overflow data contained in the internal database and that presented on the MELCCFP's website.

Operation and Event Reports

- 98% of monthly and annual reports are submitted to the MELCCFP on time.
- The City does not notify ECCC of overflows when it rains.
- The City does not provide timely notifications to the MELCCFP/ECCC of overflows in dry weather, in the event of an emergency or during planned work.
- There are inaccuracies in the information regarding the qualifications of the operators presented on the MELCCFP's website.

Operator Qualifications

- For 2019 and 2020, two staff members who performed duties related to treatment plant operations did not hold valid qualification certificates.

In addition to these results, we made various recommendations to the business units, which are presented in the following pages.