Wastewater Systems Effluent Regulations

2017 Status Report

Environment and Climate Change Canada
Environnement et Changement climatique Canada

Canada

Cat. No.: En11-19E-PDF
ISSN: 2564-3789
EC21176

Environment and Climate Change Canada
Public Inquiries Centre
12th Floor, Fontaine Building
200 Sacré-Coeur Boulevard
Gatineau QC K1A 0H3
Telephone: 819-997-2800
Toll Free: 1-800-668-6767 (in Canada only)
Email: enviroinfo@ec.gc.ca

Aussi disponible en français

Review Notice

This summary of the status of wastewater systems is based on information reported under the *Wastewater Systems Effluent Regulations* or submitted under an equivalency agreement between a province or territory and the Government of Canada with respect to wastewater systems. The information has been compiled by Environment and Climate Change Canada officials. The content of this report is based on compiled data provided to the department and is not intended to signify views and policies of Environment and Climate Change Canada.

This summary has been compiled to inform the regulated community, stakeholders and the interested public on the performance of wastewater systems subject to the Regulations or covered under an equivalency agreement. The material has been prepared for informational purposes only. For all purposes of interpreting and applying the law, users should consult the *Wastewater Systems Effluent Regulations* on Justice Canada's website at http://laws-lois.justice.gc.ca/eng/regulations/SOR-2012-139/FullText.html.

Executive Summary

This report provides a summary of the information submitted by owners and operators of Canadian wastewater systems under the *Wastewater Systems Effluent Regulations* (WSER) for the 2017 calendar year. This is the second annual report since the publication of the Regulations.

The WSER came into force in 2012 under the *Fisheries Act* to manage wastewater releases by systems designed to collect an average daily influent volume of 100 m^3 or more. The WSER set national effluent quality limits that are achievable through secondary wastewater treatment and prohibit the discharge of effluent that is acutely lethal to rainbow trout.[1] These limits came into effect in January 2015. The regulations also specify requirements for carrying out effluent monitoring, reporting and record keeping.

Owners or operators of wastewater systems requiring time to upgrade in order to meet the WSER effluent quality limits had until June 2014 to apply for a transitional authorization to exceed the WSER effluent quality limits for a limited time. These authorizations were issued to 65 wastewater systems, expiring in 2020, 2030, or 2040. Dates for transitional authorizations were based on the level of risk determined by criteria set out in the WSER which takes into consideration effluent quality, volume and the receiving environment.

By the end of 2017, 1,881 wastewater systems out of an estimated 2,319 had submitted an identification report under the WSER. The majority (87%) of wastewater systems are owned by municipalities or other local governments. Lagoons make up more than half of the wastewater systems in Canada (56%), mechanical systems make up around a third (33%) and the remaining systems (11%) have no treatment.

Of the 1,881 systems that submitted identification reports, 1,556 submitted all required monitoring reports, with 29 systems failing to submit one or more report. A total of 1,218 systems did not report any exceedances of the effluent quality limits, while 365 systems reported at least one exceedance. A total of 474 systems tested for acute lethality with 424 systems (89%) reporting no failures and 50 systems (11%) reporting an acute lethality test failure.

A total volume of 5.68 billion m^3 of effluent was discharged from a final discharge point for the 2017 calendar year. Of this total, 4.1 billion m^3 (73%) met the WSER effluent quality limits, 1.5 billion m^3 (26%) was undertreated and did not meet the limits, and 0.084 billion m^3 (1%) of the effluent discharged underwent no treatment. These volumes do not include releases from combined sewer overflows (CSO), sanitary sewer overflows, or any other discharges occurring at a point other than the final discharge point.

In Canada, as of 2017, 179 systems had at least one CSO. A total reported volume of 167 million m^3 of effluent was released from CSOs in 2017 which represents approximately 3% of the total volume of effluent released from wastewater treatment systems.

The WSER are enforced by Environment and Climate Change Canada. Compliance issues are followed-up on in accordance with the Compliance and Enforcement Policy for the Habitat Protection and Pollution Prevention Provisions of the *Fisheries Act* (Environment Canada 2001c).

[1] Acute lethality means that the effluent at 100% concentration would kills more than 50% of the rainbow trout subjected to it during a 96-hour period.

Table of Contents

List of Figures

List of Tables

1.0 Introduction

The *Wastewater Systems Effluent Regulations* (WSER), developed under the *Fisheries Act*, came into force in 2012. The regulations deliver on a federal commitment in the 2009 Canadian Council of Ministers for the Environment (CCME) *Canada-wide Strategy for the Management of Municipal Wastewater Effluent* (CCME Strategy) to establish national baseline effluent quality limits. In Canada, the management of wastewater involves all levels of government, which has led to inconsistent regulatory regimes across the country. As a result, treatment levels range from very good in many areas to poor or no treatment, mostly on the coasts. The CCME Strategy represents a collective agreement to ensure that wastewater effluent is managed under a harmonized framework that is protective of the environment and human health, with each jurisdiction using its authority.

The WSER apply to wastewater systems that deposit effluent to surface water[2], and that collect an average daily volume of 100 m^3 or more of influent during a calendar year. Systems that are subject to the WSER typically serve populations of at least 250 individuals. Due to the extreme climatic conditions and remoteness of Canada's Far North, the WSER do not apply to wastewater systems located in Nunavut, the Northwest Territories, or north of the 54th parallel in Quebec or Newfoundland and Labrador. The WSER also do not apply in Yukon and to certain wastewater systems in Quebec, as equivalency agreements with Yukon and Quebec for the WSER came into effect in November 2014 and October 2018 respectively. Under equivalency, the Governor in Council orders that the WSER do not apply for wastewater systems that are subject to a provincial or territorial regulatory regime that is equivalent in effect to the WSER[3].

WSER effluent quality limits

- average carbonaceous biochemical oxygen demanding matter (CBOD) due to the quantity of CBOD matter in the effluent of less than or equal to 25 mg/L;
- average concentration of suspended solids (SS) in the effluent of less than or equal to 25 mg/L;
- average concentration of total residual chlorine in the effluent of less than or equal to 0.02 mg/L;
- maximum concentration of un-ionized ammonia in the effluent of less than 1.25 mg/L, expressed as nitrogen (N), at 15°C ± 1°C.

The effluent must also not be acutely lethal based on the test methods prescribed in the regulations.

The WSER set minimum limits for deleterious substances that are indicative of overall effluent quality that came into effect in 2015[4]. These limits are achievable through a secondary level of wastewater treatment, or equivalent. Secondary treatment removes over 95% of the total mass of conventional pollutants in wastewater. Significant amounts of non-conventional pollutants and bacteria that may be present are also removed through such treatment. Provinces or other jurisdictions may set requirements that are more stringent. In addition to effluent quality limits, the WSER also have requirements for effluent monitoring, record keeping and reporting.

[2] Surface water means any water or place referred to in subsection 36(3) of the *Fisheries Act*.

[3] For more information on the Yukon and Quebec equivalency agreements, visit: www.canada.ca/en/environment-climate-change/services/wastewater.html

[4] The limit for total residual chlorine for wastewater systems that deposit an average daily volume of effluent annually of less than 5000 m^3 comes into force on January 1, 2021

There are three types of authorizations under the WSER to temporarily exceed all or some of the WSER effluent quality limits: transitional authorizations, temporary bypass authorizations and temporary authorizations to deposit un-ionized ammonia. In order to receive an authorization specific requirements under the WSER must be met.

1. A transitional authorization provides time for a wastewater system not meeting the effluent quality limits to upgrade. Systems had until June 30, 2014 to apply. Qualifying systems were provided until 2020, 2030 or 2040 to upgrade based on risk-based criteria set out in the WSER.
2. A temporary bypass authorization allows for the bypass of a treatment process in order to conduct planned construction or maintenance work or in response to an anticipated event that is beyond the control of the owner or operator of the system and, as a result, exceed the effluent quality limits.
3. A temporary authorization to deposit un-ionized ammonia allows for a wastewater system that is at secondary level of treatment to discharge effluent that is acutely lethal due to the concentration of un-ionized ammonia if the receiving environment has the capacity to assimilate it.

This report provides a summary of the information provided by owners or operators of wastewater systems in identification reports, in effluent monitoring reports and combined sewer overflow reports, for those with combined sewers, for 2017. This report also includes information for Quebec as the Quebec equivalency agreement was not in place in 2017. Information shared under the Yukon equivalency agreement is also included. This document also provides information on authorizations issued under the WSER in 2017.

The WSER are enforced by Environment and Climate Change Canada in accordance with provisions of the Compliance and Enforcement Policy for the Habitat Protection and Pollution Prevention Provisions of the *Fisheries Act* with an emphasis on preventing harm to fish, fish habitat or human use of fish caused by physical alteration or pollution of waters frequented by fish. The policy sets out a range of possible responses to offences that can be used by enforcement officers in response to violations, including warnings, inspector's directions, ministerial orders, injunctions, prosecution and civil suits by the Crown for the recovery of costs. When violations are found, enforcement officers will select the appropriate response based on the following criteria: nature of offence, effectiveness in achieving the desired result with the offender, and consistency.

2.0 WSER Reporting

Owners or operators of wastewater systems are required to submit an identification report and regular effluent monitoring reports as well as combined sewer overflow reports (for those systems with combined sewers). The following sections provide more information on these reports and a summary of the data submitted to Environment and Climate Change Canada.

2.1. Identification Reports

Owners or operators of existing wastewater systems subject to the WSER were required to submit an identification report to Environment and Climate Change Canada (ECCC) by May 15, 2013. New wastewater systems must submit an identification report within 45 days after the wastewater system comes into operation. Identification reports include information on the system owner, type of treatment, operational details and location of discharge points.

This section provides a status of the number of identification reports submitted by the end of 2017 as well as a breakdown of wastewater systems by ownership and treatment type.

2.1.1. Summary for the Submission of Identification Reports

As of the end of 2017, 1,881 identification reports had been submitted out of an estimated total of 2,319 wastewater systems identified as being subject to the WSER. Table 1 presents the number of submitted identification reports and the estimated number of those missing by province and territory. This includes wastewater systems covered under the equivalency agreement with Yukon.

In 2017, Quebec had the highest number of missing identification reports. The low rate of submission of identification reports may be the result of the publication of a proposed equivalency agreement, which, when finalized, would result in the WSER not applying to the majority of wastewater systems in the province[5].

Table 1. Identification reports submitted under the WSER and estimated number of systems who are missing an identification report by the end of 2017 by province and territory

Province	Submitted	Missing	Total
Alberta	170	19	189
British Columbia	152	3	155
Manitoba	168	14	182
New Brunswick	125	1	126
Newfoundland and Labrador	175	8	183

[5] The final *Canada-Québec Agreement on Acts and Regulations Applicable to Municipal and Provincial Wastewater Systems in Québec* (equivalency agreement) was finalized on August 23, 2018 and took effect September 28th, 2018. The *Order Declaring that the Wastewater Systems Effluent Regulatons Do Not Apply in Québec* came into effect on October 1st, 2018.

Province	Submitted	Missing	Total
Nova Scotia	122	7	129
Ontario	456	7	463
Prince Edward Island	28	1	29
Québec	413	342	755
Saskatchewan	69	36	105
Yukon	3	0	3
Total	**1,881**	**438**	**2,319**

2.1.2. Overview of Wastewater Systems with Identification Reports

Table 2 shows the number of wastewater systems reporting by the end of 2017 by owner type as indicated in the identification reports. The vast majority of wastewater systems in Canada that are subject to the WSER are owned by municipalities and other local authorities, such as regional governments (87% of systems). Indigenous communities also own or operate a large number of wastewater systems, representing 9% of systems. The remaining systems are owned or operated by federal authorities or owners falling into the "other" category. Wastewater systems owned by private companies are classified in the "other" category. Private companies may own wastewater systems that serve municipalities, camps, or recreational areas.

Table 2. Identification reports submitted by owner type.

Owner Type	Number of Submitted Identification Reports	Percentage of Total Types of Owners Based on Identification Reports
Aboriginal	166	9%
Federal	26	1%
Municipal or another local authority	1,628	87%
Other	38	2%
Provincial	23	1%
Total	**1,881**	

2.1.3. Wastewater Treatment Type

Based on information reported, wastewater systems were divided into three categories:

- **No Treatment:** Typically in the form of a pipe that extends into a waterbody and discharges continuously with no treatment. Wastewater systems with limited screening or grit removal are also included in this category.
- **Lagoon:** In-ground ponds where wastewater is held for a specified time, known as the hydraulic retention time, and undergoes physical and biological treatment. Lagoons can either discharge intermittently, typically once or twice a year, or on a continuous basis. Types of lagoons can vary and include facultative, aerobic, anaerobic and aerated lagoons.
- **Mechanical:** Treatment technologies, other than lagoons, that use mechanical components such as tanks, pumps, blowers, screens and grinders to treat wastewater. This category includes systems with primary level of treatment such as clarifiers as well as those with more advanced treatment such as activated sludge and rotating biological contactors.

Table 3 and Figure 1 summarize the number of wastewater systems by treatment types across Canada by province and territory. The most common type of wastewater system in Canada is lagoon (56%), followed by mechanical (33%), with the remaining systems (11%) depositing untreated effluent. Wastewater systems with no treatment are found in Newfoundland and Labrador, Nova Scotia, British Columbia and Quebec; some of which have transitional authorizations under the WSER.

Table 3. Summary of the number of wastewater systems by treatment type and by province and territory

Province	Mechanical	Lagoons	No Treatment	Total
Alberta	38	132	0	170
British Columbia	72	60	20	152
Manitoba	40	128	0	168
New Brunswick	20	105	0	125
Newfoundland and Labrador	17	8	150	175
Nova Scotia	55	34	33	122
Ontario	302	154	0	456
Prince Edward Island	5	23	0	28
Québec	65	340	8	413
Saskatchewan	7	62	0	69
Yukon	1	2	0	3
Total	**622 (33%)**	**1,048 (56%)**	**211 (11%)**	**1,881**

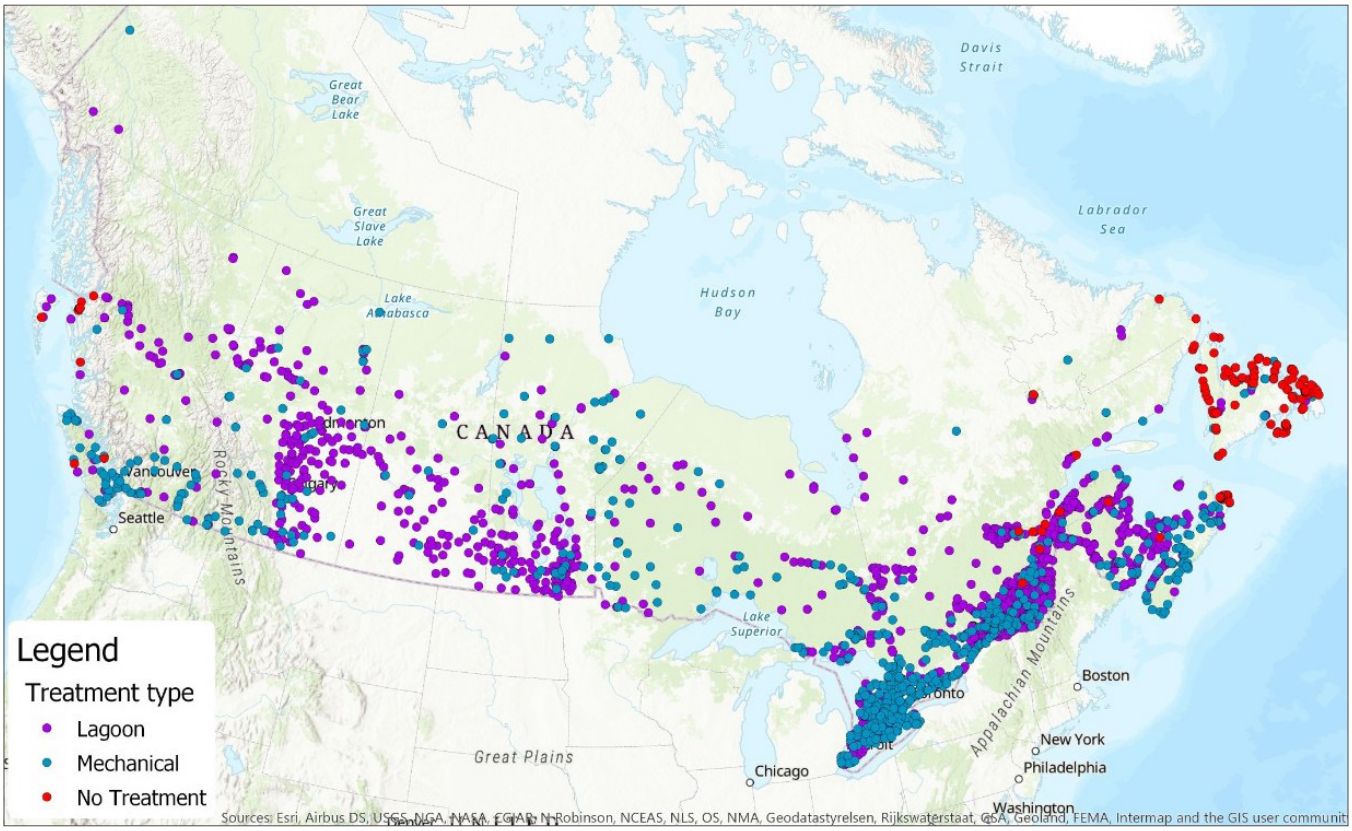

Figure 1. **Map of the wastewater systems across Canada by treatment type**

2.2. Effluent Monitoring Report Summary

Effluent monitoring reports are submitted either annually or quarterly, depending on both the volume of effluent discharged by the wastewater system and whether the system discharges continuously or intermittently as prescribed in the WSER. The information found in the monitoring reports includes:

- total volume and number of days effluent was discharged;
- average concentrations of CBOD and suspended solids; and
- results of acute lethality tests, if applicable.

Of the 1,881 systems that submitted identification reports by the end of 2017, 1,556 of these systems submitted all effluent monitoring reports.

Table 4. **Summary of status of effluent monitoring reports for 2017 by province and territory**

Province	Percent of Systems that Submitted all Reports (%)	Number of Systems	
		Missing One or More Reports	Submitted all Reports
Alberta	94	10	160
British Columbia	91	13	139
Manitoba	60	67	101
New Brunswick	97	4	121
Newfoundland and Labrador	71	51	124
Nova Scotia	84	19	103
Ontario	97	14	442
Prince Edward Island	96	1	27
Québec	65	144	269
Saskatchewan	97	2	67
Yukon	100	0	3
Total	83	325	1,556

2.2.1. Carbonaceous Biological Oxygen Demanding Matter (CBOD) and Suspended Solid (SS) Test Results

Table 5 shows the number of systems broken down by province that exceeded the CBOD and/or suspended solid limits of 25 mg/L under the WSER along with the total number of systems that met the limits. Some systems exceeded both the limits for CBOD and suspended solids. Systems are labelled as exceeding the effluent quality limits if there is at least one reported exceedance in any of the reporting periods in the calendar year. Overall, 73% of wastewater systems who submitted a monitoring report met the WSER effluent quality limits during all periods reported in 2017.

Figures 2 - 6 present the breakdown of systems that met and exceeded the effluent quality limits by treatment type. The majority of reported exceedances came from wastewater systems with no treatment followed by lagoons. For a more detailed breakdown, please see Supplementary Data Table 1 and Supplementary Data Table 2 in Annex 4.3.

Overall, wastewater systems had greater difficulties meeting suspended solids (SS) compared to CBOD with 352 systems exceeding SS and 243 systems exceeding CBOD. The larger number of SS exceedances can largely be attributed to lagoon systems. A total of 121 lagoon systems reported exceedances of SS compared to 39 which reported exceedances of CBOD.

Wastewater systems that received transitional authorizations under the WSER are not included in the effluent monitoring statistics. These systems are not required to achieve the WSER effluent quality limits until the deadline set in the transitional authorizations (please refer to section 3.1).

Table 5. **Summary of CBOD and SS results in 2017, by province and territory**

Province	Number of CBOD Exceedances	Number of SS Exceedances	Number of Systems with Exceedances*	Number of Systems with No Exceedances
Alberta	7	20	22	148
British Columbia	36	41	42	93
Manitoba	5	16	17	86
New Brunswick	13	22	24	93
Newfoundland and Labrador	133	141	141	9
Nova Scotia	19	27	30	72
Ontario	4	21	21	422
Prince Edward Island	3	3	4	23
Québec	18	44	46	222
Saskatchewan	4	16	17	49
Yukon	1	1	1	1
Total	243	352	365	1218

*This represents the total number of systems that had either CBOD or SS exceedances. Some systems had both CBOD and SS exceedances.

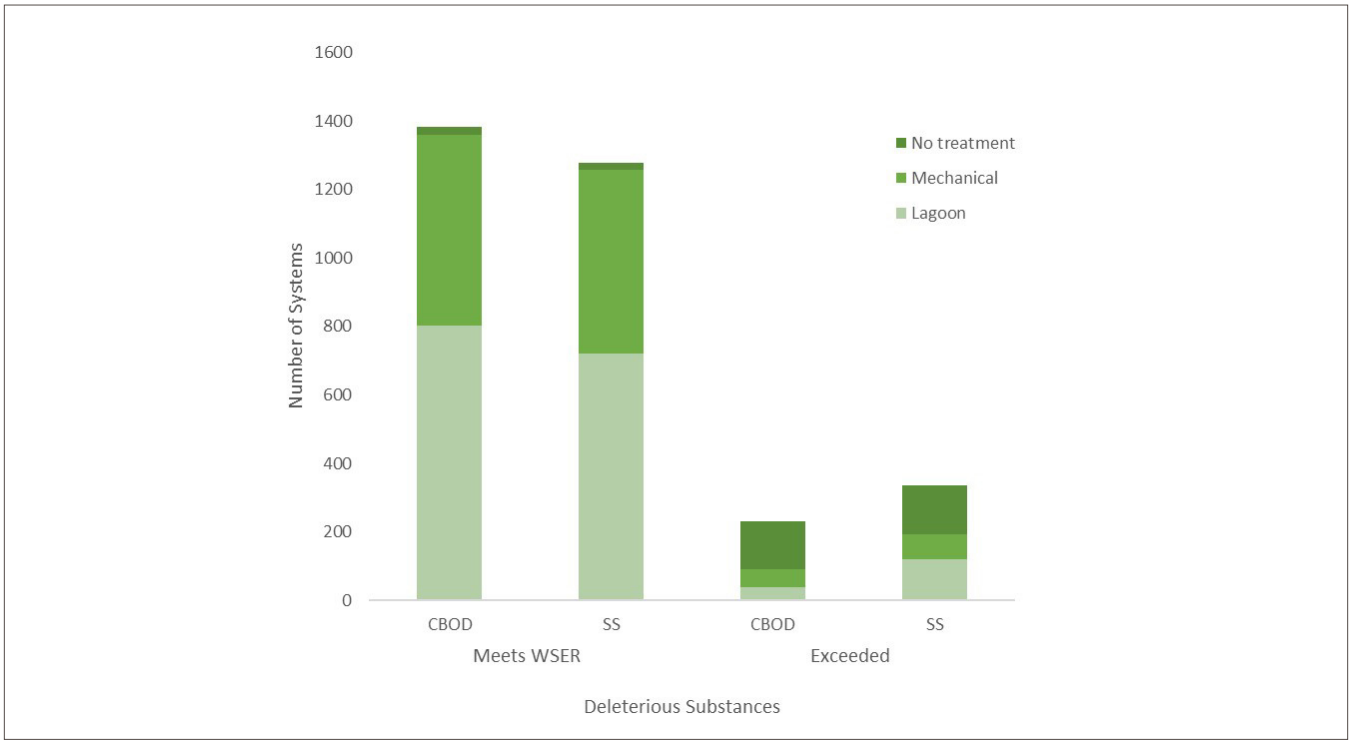

Figure 2. **Summary of CBOD and SS results in 2017 for wastewater systems under the WSER by treatment type**

Figure 3. Map of systems meeting the CBOD limits in 2017 for wastewater systems in western Canada

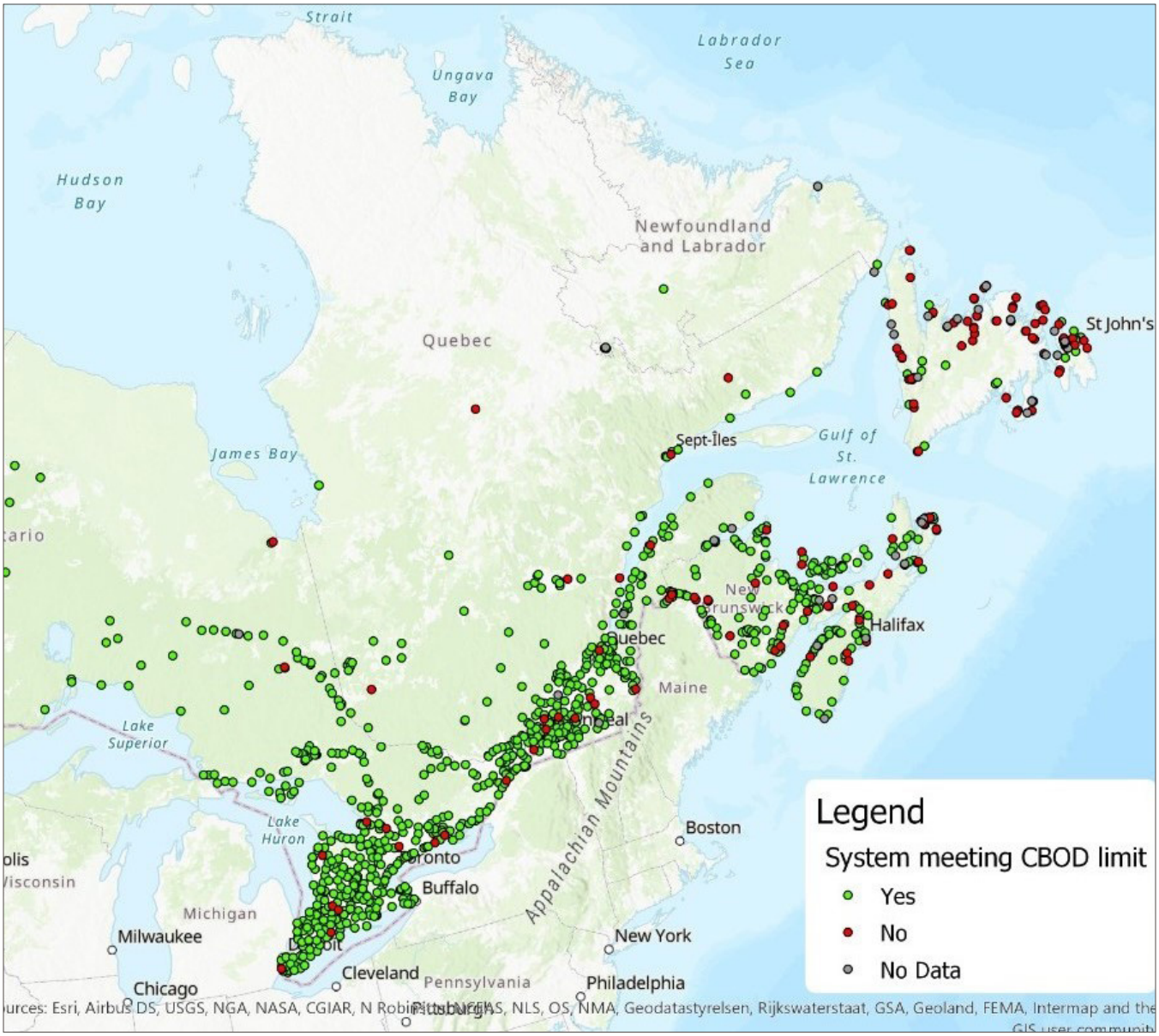

Figure 4. Map of systems meeting the CBOD limits in 2017 for wastewater systems in eastern Canada

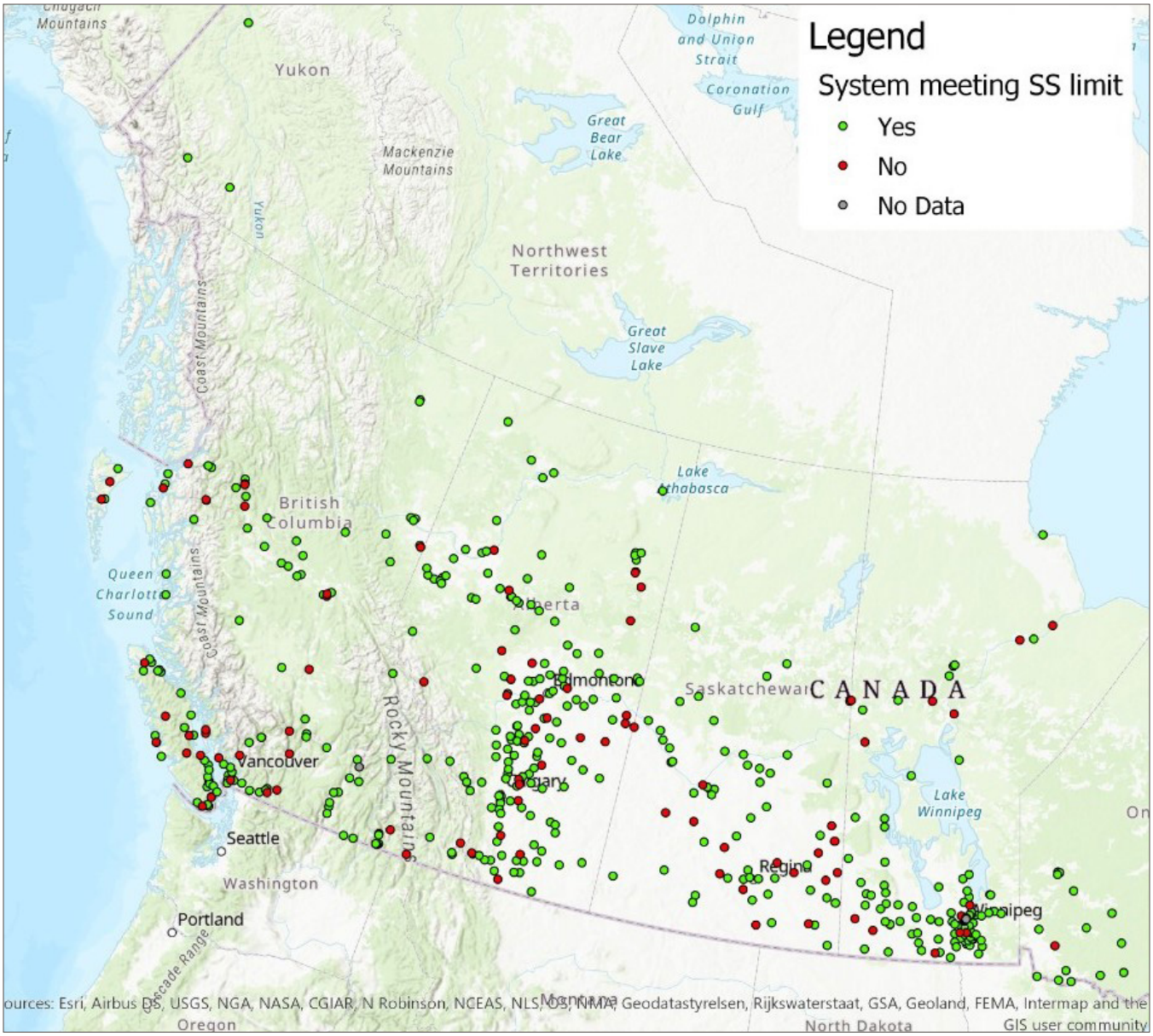

Figure 5. **Map of systems meeting SS limits in 2017 for wastewater systems in western Canada**

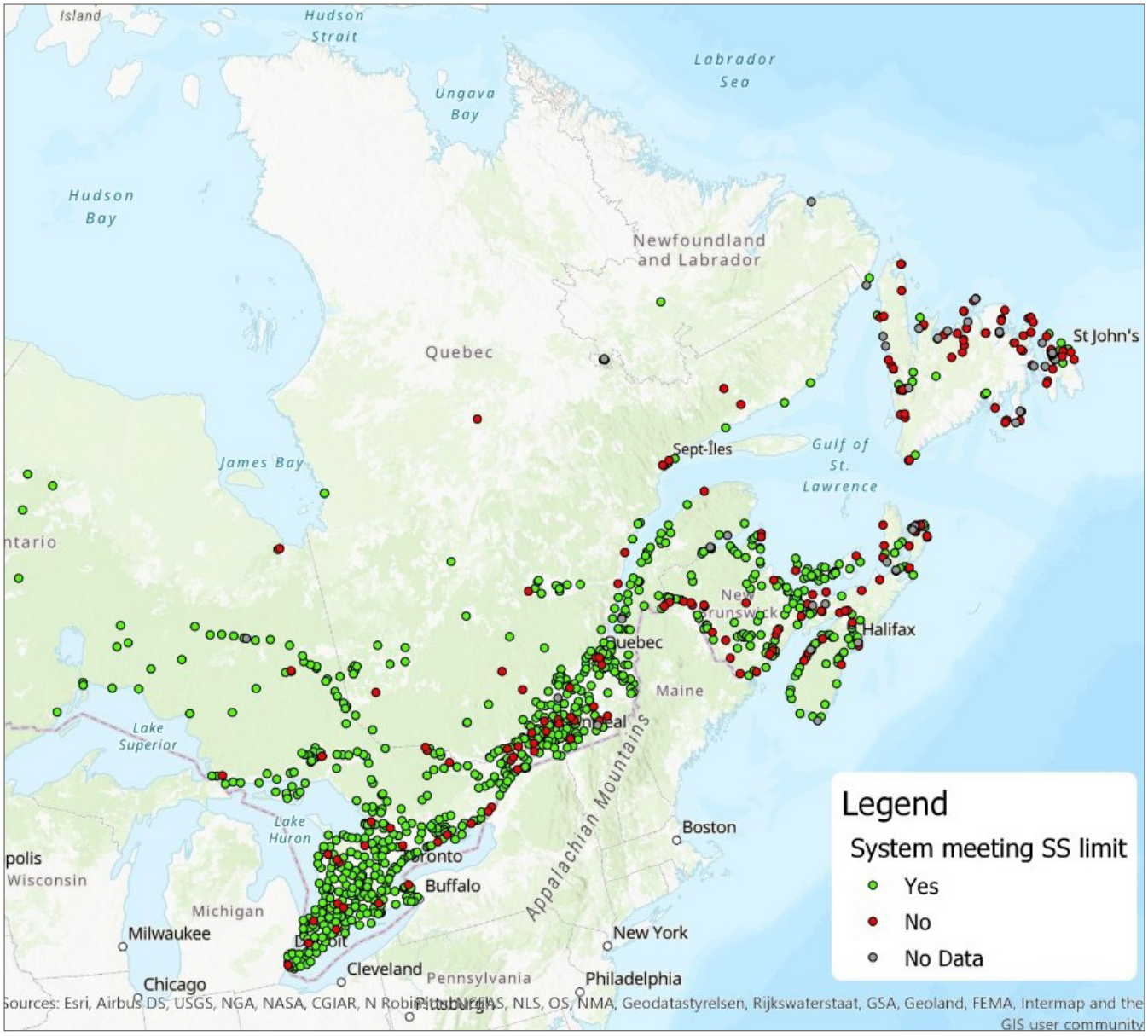

Figure 6. Map of systems meeting SS limits in 2017 for wastewater systems in eastern Canada

2.2.2. Acute Lethality Testing Results

The WSER require that wastewater systems discharge an effluent that is not acutely lethal. For the purposes of the WSER, "acute lethality" means that the effluent at 100% concentration kills more than 50% of the rainbow trout subjected to it during a 96-hour period[6].

Under the WSER, owners or operators of wastewater systems discharging annual average daily effluent volumes greater than 2,500 m^3 are required to determine and report on the acute lethality of the effluent. Table 6 and Figure 7 summarize the results of the acute lethality tests performed in 2017. Figure 8 and 9 present a summary of acute lethality test results across Canada.

A total of 474 wastewater systems tested for acute lethality in 2017, with 90% of systems passing all acute lethality tests. Of the systems reporting an acute lethality test failure, 68% were lagoon systems, 26% were mechanical systems, and the remaining 6% came from systems with no treatment. For a more detailed breakdown of acute lethality test results by province please see Supplementary Data Table 3 in the Annex section 4.3.

Table 6. Summary of reported acute lethality test results, by province

Province	Number of Systems with Failures	Number of Systems with No Failures
Alberta	9	41
British Columbia	3	43
Manitoba	3	17
New Brunswick	0	23
Newfoundland and Labrador	4	3
Nova Scotia	0	17
Ontario	3	173
Prince Edward Island	0	3
Québec	24	94
Saskatchewan	4	10
Yukon*	0	0
Total	**50**	**424**

* – Yukon is not required to submit acute lethality data under the equivalency agreement

[6] The determiniation of acute lethality is to be made using *Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout* (EPS 1/RM/13). The acute lethality test may be pH stabilized, using the *Procedure for pH Stabilization During the Testing of Acute Lethality of Wastewater Effluent to Rainbow Trout* (EPS 1/RM/50).

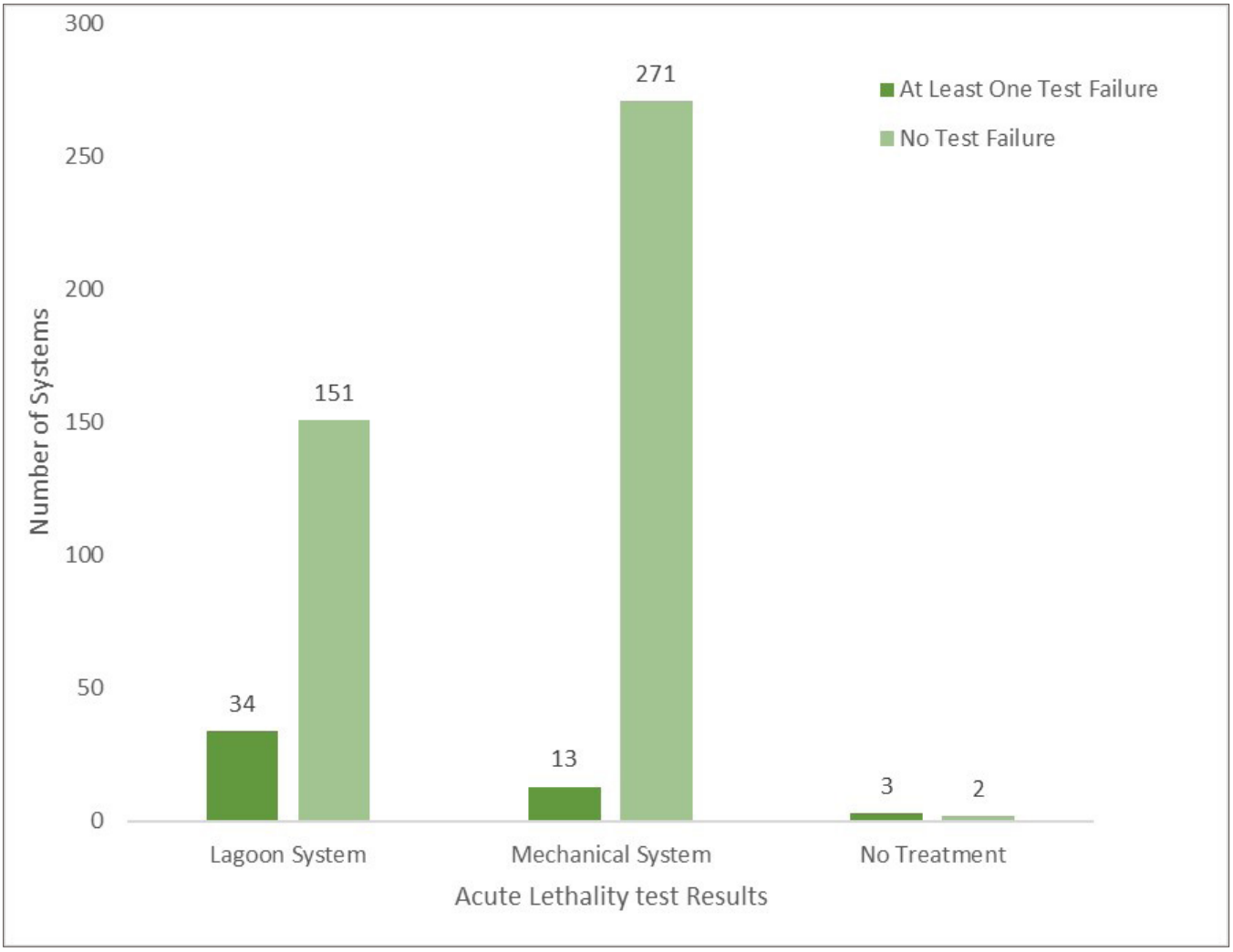

Figure 7. **Reported acute lethality test results reported under the WSER by treatment type in 2017**

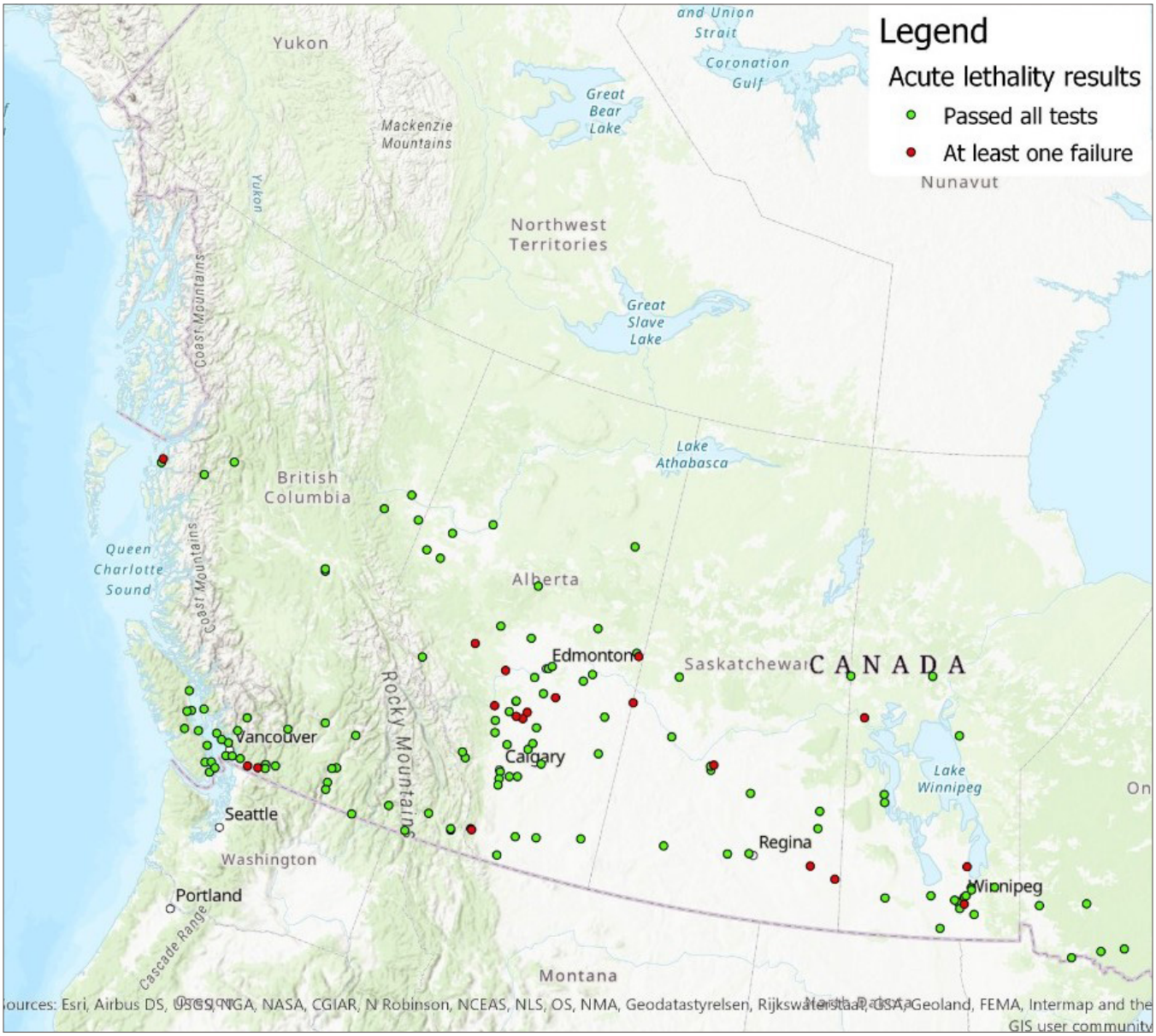

Figure 8. Map of the acute lethality results in 2017 for wastewater systems in western Canada

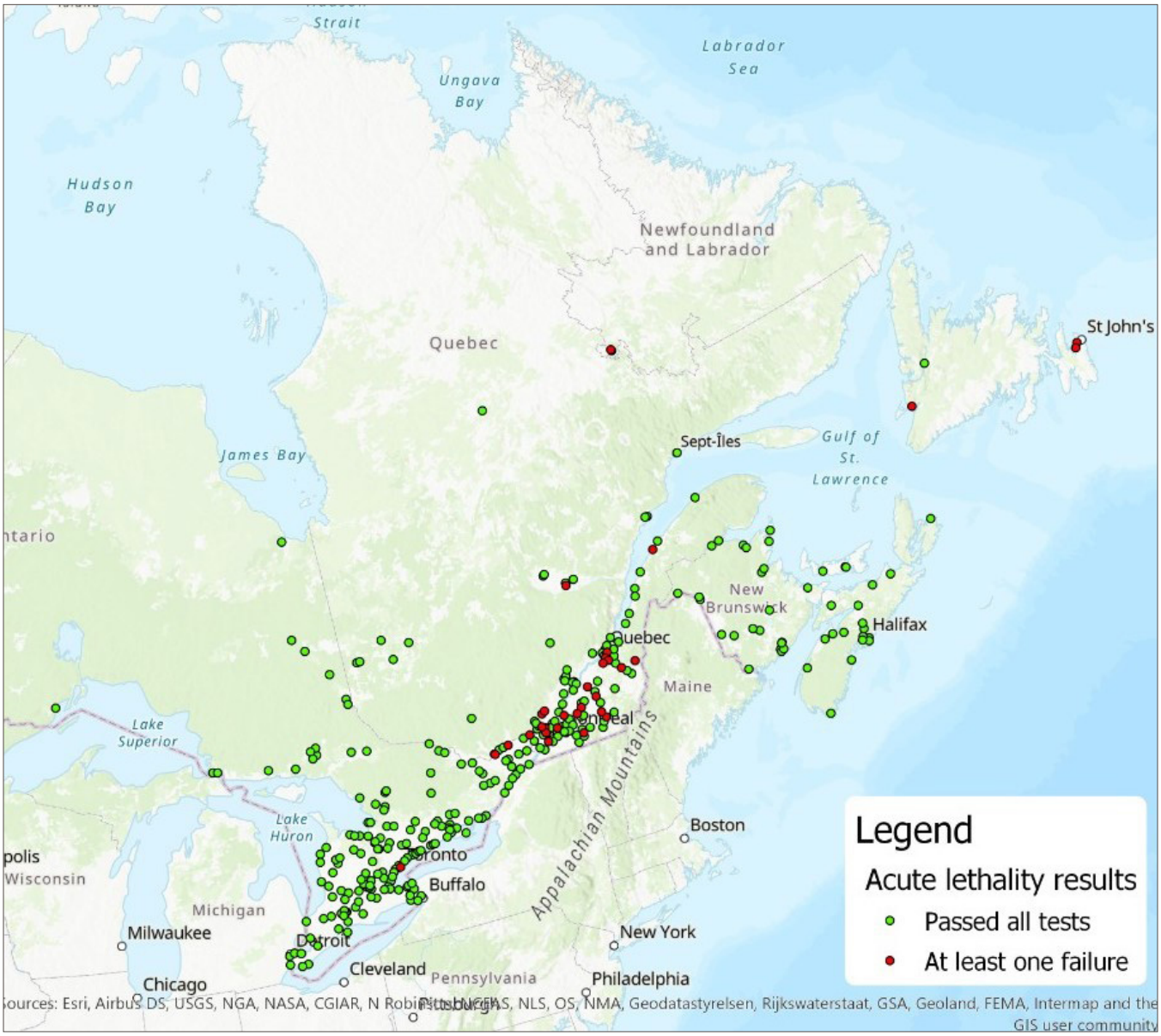

Figure 9. Map of the acute lethality results in 2017 for wastewater systems in eastern Canada

2.2.3. Total Effluent Volumes

Wastewater systems are required to monitor and report their effluent flows at the final discharge point under the WSER. Figure 10 demonstrates the total reported effluent volume discharged via the final discharge point, by province and territory. These volumes do not include discharges of wastewater from combined sewer overflow points.

A total volume of 5.68 billion m^3 of effluent was reported as being discharged from the final discharge point. Ontario reported the highest volume of effluent at 2.06 billion m^3 (36%). Quebec reported the second highest volume at 1.88 billion m^3 (33%) followed by British Columbia at 659 million m^3 (12%) and Alberta at 487 million m^3 (9%). The remaining provinces and Yukon each deposit less than 5% of the total effluent deposited.

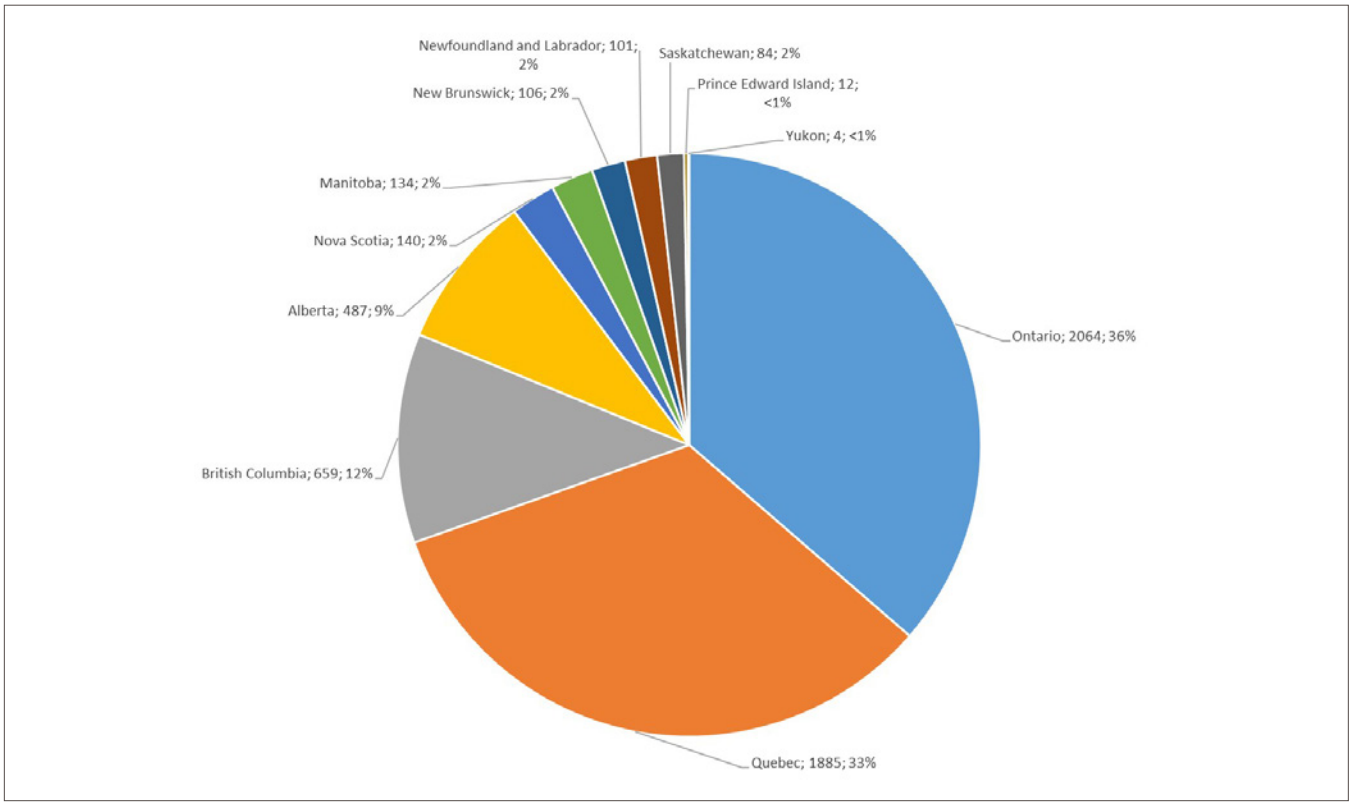

Figure 10. Total reported effluent volume (million m^3) by province and territory

2.2.4. Effluent Volumes Discharged by Treatment Level

Table 7 shows the volume effluent discharged from the final discharge point of wastewater systems in 2017 broken down by effluent quality for each province. Wastewater effluent is categorized as either undergoing “No Treatment”, being “Undertreated”, or “Meets WSER” effluent quality limits as defined below:

- **No Treatment:** Effluent deposited from a wastewater system with no treatment process. Wastewater systems limited to screening or grit removal are included in this category.
- **Undertreated:** Effluent deposited from a wastewater system with treatment processes in place but did not meet the WSER effluent quality limits for CBOD and suspended solids.
- **Meets WSER:** Effluent deposited from a wastewater system with treatment processes in place and met the WSER effluent quality limits for CBOD and SS. This would indicate a secondary level of treatment.

Overall, 73% of the reported total volume of effluent that was deposited across Canada met the WSER effluent quality limits.

Undertreated effluent represents 26% of the reporting effluent volume deposited.

Untreated wastewater represent 1% of the total effluent deposited in Canada. Undertreated and untreated effluent is mainly discharged from coastal areas or large water bodies in British Columbia, Newfoundland and Labrador, Nova Scotia, and Quebec. Figure 11 shows wastewater systems based on their level of treatment across Canada including those that are untreated, undertreated, secondary (meet WSER effluent quality limits) and have advanced treatment (treated beyond a secondary level of treatment).

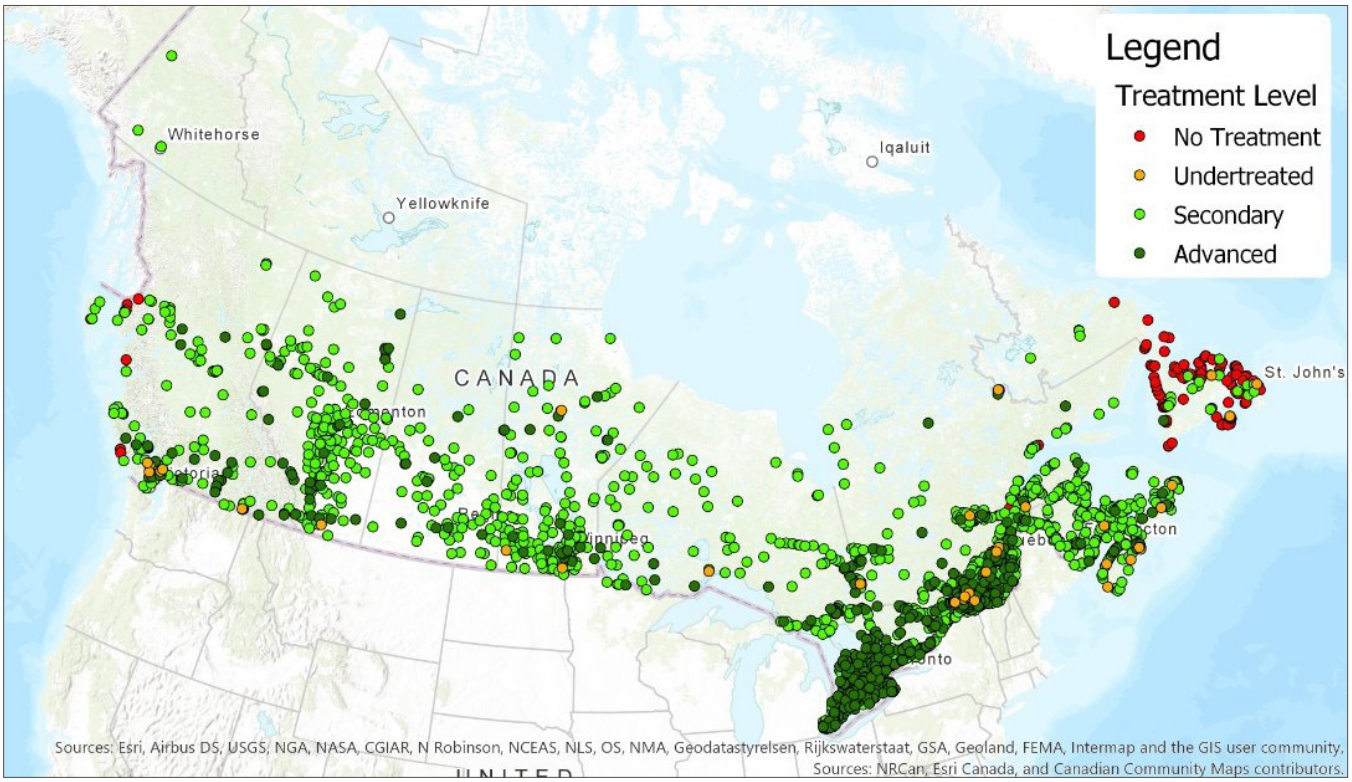

Figure 11. **Map of the wastewater systems across Canada by treatment level**

Table 7. **Summary of effluent deposited by treatment level, by province in millions m^3 for the year 2017**

Province	Total Volume of Untreated Effluent	Total Volume of Undertreated Effluent	Total Volume of Effluent that Met WSER	Total Volume of Effluent Deposited
Alberta	0	5	482	487
British Columbia	37	269	352	659
Manitoba	0	18	116	134
New Brunswick	0	32	74	106
Newfoundland and Labrador	30	63	9	101
Nova Scotia	15	57	68	140
Ontario	0	14	2050	2064
Prince Edward Island	0	1	11	12
Québec	2	995	889	1885
Saskatchewan	0	3	81	84
Yukon	0	0	4	4
Total	**84**	**1458**	**4134**	**5676**

2.3. Combined Sewer Overflow Reports

Many older municipalities in Canada have combined sewers that collect both storm water and wastewater. Combined sewers are designed to discharge untreated wastewater when the volume collected exceeds the capacity of the system due to heavy rainfall or snowmelt. The WSER require owners or operators of wastewater systems with combined sewers to submit an annual report on the total volume and the number of days wastewater is discharged per month via combined sewer overflow (CSO) points as a result of precipitation.

2.3.1. Wastewater Systems with CSO Points

Table 8 presents the number of wastewater systems in each province that have at least one CSO point. Figure 12 presents the 179 systems that reported having at least one CSO point as well as volumes. Approximately half of the systems that identified CSO points in Canada are located in Quebec. Ontario also has a significant number of systems with CSO points (23%).

Table 8. **Number of combined sewer systems, by province**

Province	Number of Systems
Alberta	1
British Columbia	5
Manitoba	3
New Brunswick	15
Newfoundland and Labrador	1
Nova Scotia	18
Ontario	41
Prince Edward Island	1
Québec	93
Saskatchewan	1
Total	**179**

A complete list of the 179 wastewater systems that reported having a combined sewer system can be found in Annex 4.2.

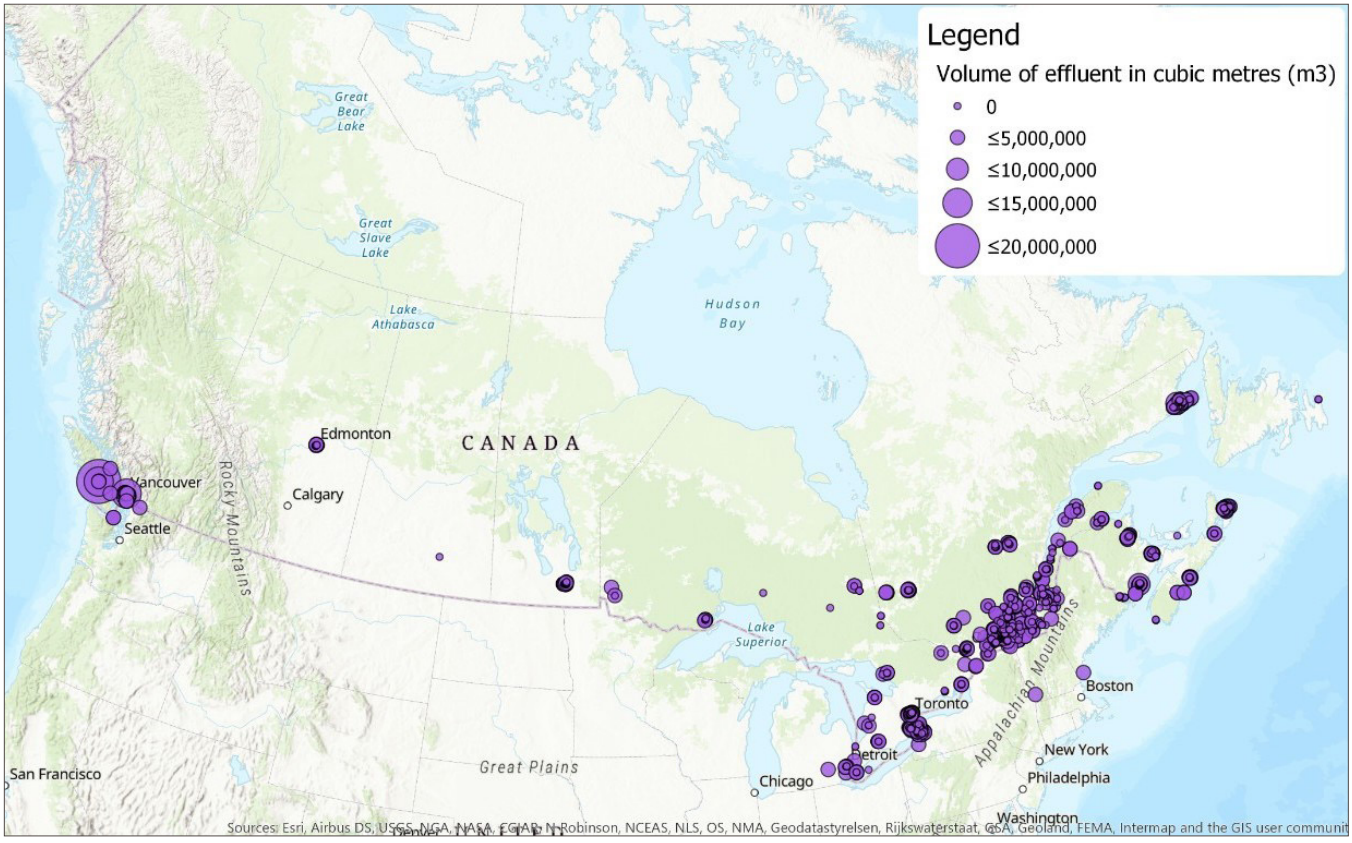

Figure 12. **Map of the combined sewer systems and their volumes of effluent in 2017 for wastewater systems in Canada**

2.3.2. CSO Points and Volume by Province and Territory

Combined sewer systems have multiple points at which the combined sewer can overflow, discharging untreated wastewater. Systems must identify each individual point where a CSO can occur in their identification report, and must report annual volumes from each of these points.

Figure 13 presents the total reported number of CSO points in each province and the total report volume of untreated wastewater discharged from these points in 2017. There are a total of 2,091 CSO points in Canada. As Quebec has the majority of combined sewer systems, it also has the most CSO points in Canada (48%) followed by Ontario (32%), New Brunswick (7%), Nova Scotia (5%), Manitoba (4%) and British Columbia (2%). The total reported volume nationally is 167 million m^3. Of the reported volumes, British Columbia is responsible for the highest volume of untreated effluent discharged from CSO points (42%). Quebec and Nova Scotia reported 16% and 14% of the volume discharged by CSOs, respectively. The remaining volume of effluent discharged by CSOs come from Alberta, Manitoba, Ontario, and New Brunswick, each discharging less than 13% of the national total.

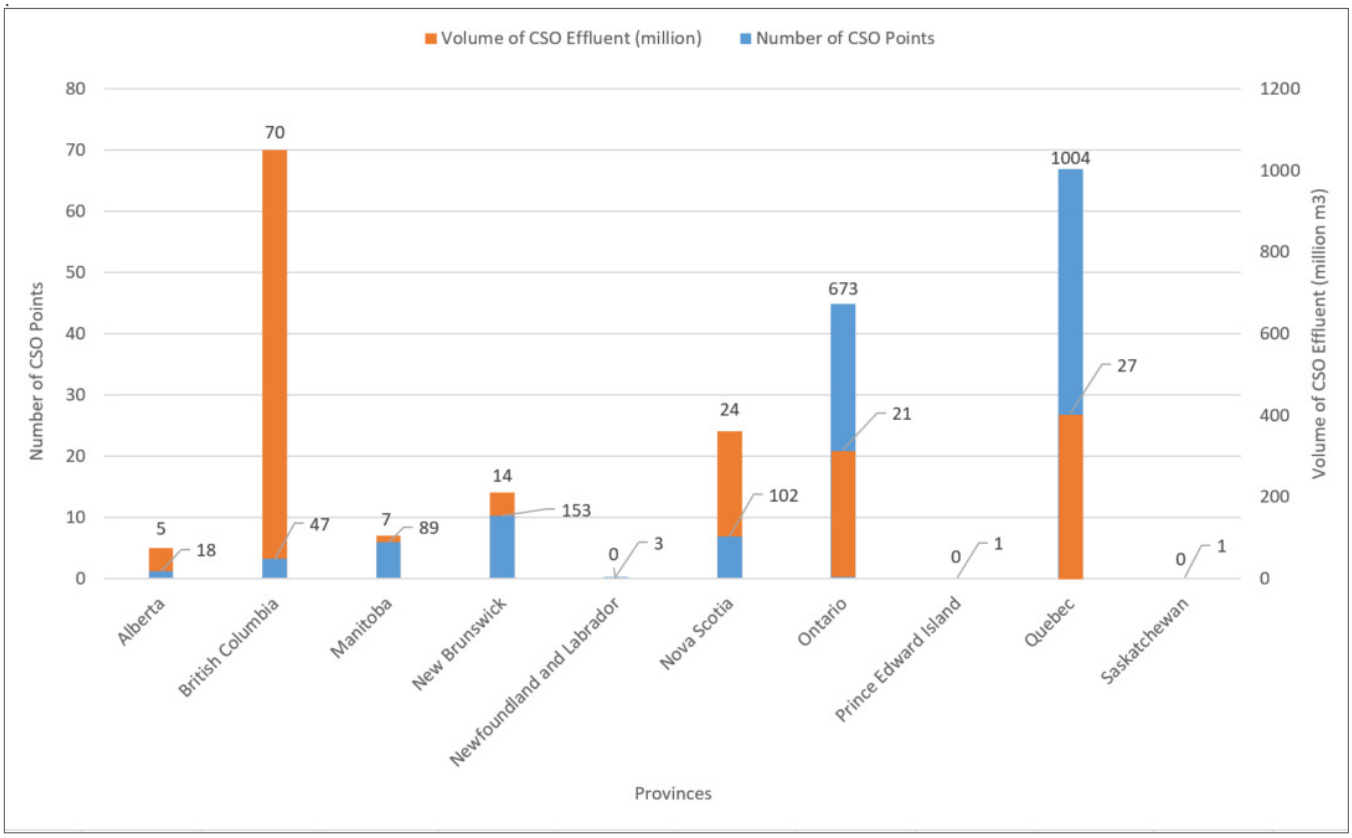

Figure 13. Number of CSO points and total volume of CSO effluent discharged by province and territory

3.0 Authorizations

There are three types of authorizations under the WSER that allow wastewater systems to temporarily exceed all or some of the WSER effluent quality limits: transitional authorizations, temporary bypass authorizations and temporary authorizations to deposit un-ionized ammonia. Information on these authorizations is presented below.

3.1. Transitional Authorizations

Owners or operators of a wastewater system subject to the WSER and not designed to achieve the national effluent quality limits had until June 30, 2014 to apply for a transitional authorization (TA). A TA establishes the conditions under which such systems may continue to operate and sets the deadline (end of 2020, 2030 or 2040) to meet the mandatory national effluent quality limits. The deadline for upgrading a given wastewater system is based on criteria set out in the WSER. The criteria in the regulations take into consideration effluent volume, quality and the receiving environment.

A total of 65 wastewater systems in the country were issued a TA. The complete list of systems with TAs is posted on the Government of Canada website.

3.2. Temporary Bypass Authorizations

The owner or operator of a wastewater system may apply for a Temporary Bypass Authorization if the wastewater system will need to bypass treatment processes to conduct maintenance, repairs or upgrades and, as a result, exceed the effluent quality limits of the regulations. The bypass must be designed within the constraints of technical and economic feasibility, to minimize the volume of effluent deposited and the concentration of deleterious substances in the effluent deposited.

Table 9 outlines the 30 temporary bypass authorizations that were issued for 20 wastewater systems in 2017.

Table 9. Temporary bypass authorizations issued in 2017

Province	Owner Name	System Name	System City	Duration (hours)
Alberta	Town of Drayton Valley	Drayton Valley Waste Water Treatment Facility	Drayton Valley	624
Alberta	Town of Drayton Valley	Drayton Valley Waste Water Treatment Facility	Drayton Valley	840
British Columbia	District of Tumbler Ridge	District of Tumbler Ridge Wastewater Treatment Plant Facility	Tumbler Ridge	1032
British Columbia	District of Ucluelet	Hyphocus Island	Ucluelet	1512
British Columbia	District of Ucluelet	Hyphocus Island	Ucluelet	528

Province	Owner Name	System Name	System City	Duration (hours)
British Columbia	Regional District of Nanaimo	French Creek Pollution Control Centre	French Creek	336
New Brunswick	City of Saint John	Eastern Wastewater Treatment Facility	Saint John	16
New Brunswick	Grand-Sault/Grand Falls	Grand Falls Aerated Lagoon	Grand Falls	8
New Brunswick	City of Fredericton	Barker St. Treatment Facility	Fredericton	936
New Brunswick	Town of Sussex	Town of Sussex Wastewater Treatment Facility	Lower Cove	672
Ontario	City of Thunder Bay	Water Pollution Control Plant	Thunder Bay	312
Ontario	City of Thunder Bay	Water Pollution Control Plant	Thunder Bay	0.5
Ontario	Regional Municipality of Peel	G.E. Booth Wastewater Treatment Plant	Mississauga	16
Ontario	DEPARTMENT OF NATIONAL DEFENCE	Canadian Forces Base Borden	Borden	96
Ontario	The Corporation of the City of Kingston	CATARAQUI BAY WASTEWATER TREATMENT	Kingston	7
Québec	Ville de Québec	Station Est d'épuration des eaux usées	Québec	7
Québec	Ville de Gatineau	Usine d'épuration régionale	Gatineau	20
Québec	Ville de Dolbeau-Mistassini	Bassins d'épuration - Mistassini	Dolbeau-Mistassini	8
Québec	Ville de Dolbeau-Mistassini	Bassins d'épuration - Mistassini	Dolbeau-Mistassini	12
Québec	Municipalité de St-Lambert-de-Lauzon	ETANG	St-Lambert-de-Lauzon	1008
Québec	Municipalité de St-Lambert-de-Lauzon	ETANG	St-Lambert-de-Lauzon	936
Québec	Ville de Mirabel	Station d'épuration Saint-Canut	Mirabel	12
Québec	pekuakamiulnutsh Takuhikan	pekuakamiulnutsh Takuhikan etang aere	Mashteuiatsh	552
Québec	pekuakamiulnutsh Takuhikan	pekuakamiulnutsh Takuhikan etang aere	Mashteuiatsh	288
Québec	Municipalité de Saint-Honoré	SAINT-HONORÉ	Saint-Honoré	8

Province	Owner Name	System Name	System City	Duration (hours)
Québec	Municipalité de Saint-Honoré	SAINT-HONORÉ	Saint-Honoré	168
Québec	Municipalité de Saint-Honoré	SAINT-HONORÉ	Saint-Honoré	336
Québec	Municipalité de Sainte-Angèle-de-Monnoir	Station d'épuration des eaux usées	Sainte-Angèle-de-Monnoir	2688

3.3. Temporary Authorization to Deposit Un-ionized Ammonia

The owner or operator of a wastewater system that is at secondary level of treatment (i.e. meets the effluent quality limits for CBOD and SS) may apply for a temporary authorization to deposit un-ionized ammonia if the effluent from the system is acutely lethal due to the presence of un-ionized ammonia. To be accepted, the concentration of un-ionized ammonia in the receiving water at any point that is 100 m from the point of entry where the effluent is deposited must be less than or equal to 0.016 mg/L, expressed as nitrogen (N).

In 2017, there were two active temporary authorizations to deposit unionized ammonia, both were issued in 2015 and presented in Table 10.

Table 10. Systems with a Temporary Authorization to Deposit Un-ionized Ammonia

Province	Owner Name	System Name	System City	Expiration Date
Alberta	City of Calgary	Fish Creek Wastewater Treatment Plant	Calgary	2018-03-25
British Columbia	City of Fort St John	North Lagoons	Fort St John	2018-07-07

4.0 Annexes

4.1. 50 Largest Systems in Canada, by Volume of Total Effluent Discharged

Province	Owner Name	System Name	System City	Volume (million m^3)
Québec	Ville de Montréal	Station d'épuration des eaux usées Jean-R.-Marcotte	Montréal	872
Ontario	City of Toronto	Ashbridges Bay Treatment Plant	Toronto	241
British Columbia	Greater Vancouver Sewerage and Drainage District	Iona Island Wastewater Treatment Plant	Richmond	205
British Columbia	Greater Vancouver Sewerage and Drainage District	Annacis Island Wastewater Treatment Plant	Delta	184
Ontario	City of Ottawa	Robert O. Pickard Environmental Centre	Ottawa	172
Ontario	Regional Municipality of Peel	G.E. Booth Wastewater Treatment Plant	Mississauga	163
Ontario	City of Hamilton	Woodward Avenue Wastewater Treatment Plant	Hamilton	126
Ontario	Regional Municipality of Durham	Duffin Creek WPCP	Pickering	122
Ontario	City of Toronto	Humber Treatment Plant	Toronto	120
Alberta	City of Calgary	Bonnybrook Wastewater Treatment Plant	Calgary	113
Québec	Ville de Longueuil	Centre d'épuration Rive-Sud (CERS)	Longueuil	109
Alberta	Westend Regional Sewage Services Commission	Westend Regional Sewage Facility	Black Diamond	98
Québec	Ville de Laval	Station d'épuration La Pinière	Laval	93
Alberta	EPCOR Water Services Inc.	Gold Bar Wastewater Treatment Plant	Edmonton	93

Province	Owner Name	System Name	System City	Volume (million m^3)
Québec	Ville de Québec	Station Est d'épuration des eaux usées	Québec	75
Ontario	Regional Municipality of Peel	Clarkson Wastewater Treatment Plant	Mississauga	68
Québec	Ville de Québec	Station Ouest d'épuration des eaux usées	Québec	65
Manitoba	City of Winnipeg, Water & Waste Department	North End Water Pollution Control Centre (NEWPCC)	Winnipeg	63
Ontario	City of Toronto	Highland Creek Treatment Plant	Toronto	62
Québec	Ville de Gatineau	Usine d'épuration régionale	Gatineau	61
Ontario	City of Windsor	Lou Romano Water Reclamation Plant	Windsor	52
Newfoundland and Labrador	City of St. John's	Riverhead Wastewater Treatment Facility	St. John's	51
Ontario	Corporation of the City of London	Greenway Pollution Control Centre	London	44
Ontario	The Regional Municipality of Halton	Burlington Skyway Wastewater Treatment Plant	Burlington	37
Nova Scotia	Halifax Regional Water Commission	Halifax Wastewater Treatment Facility	Halifax	32
Saskatchewan	City of Saskatoon	WASTEWATER TREATMENT PLANT	Saskatoon	32
Alberta	City of Calgary	Pine Creek Wastewater Treatment Plant	Calgary	31
British Columbia	Greater Vancouver Sewerage and Drainage District	Lions Gate Wastewater Treatment Plant	West Vancouver	30
Ontario	City of Thunder Bay	Water Pollution Control Plant	Thunder Bay	30
Alberta	Alberta Capital Region Wastewater Commision	Alberta Capital Region Wastewater Commission Treatment Plant	Fort Saskatchewan	30
Québec	Ville de Trois-Rivières	Étangs aérés de Trois-Rivières	Trois-Rivières	30
Ontario	The Corporation of the City of Kingston	Ravensview Wastewater Treatment	Kingston	29
Québec	Ville de Sherbrooke	Station d'épuration de Sherbrooke	Sherbrooke	26
British Columbia	Greater Vancouver Sewerage and Drainage District	Lulu Island Wastewater Treatment Plant	Richmond	26

Province	Owner Name	System Name	System City	Volume (million m^3)
Ontario	Regional Municipality of Waterloo	Kitchener Wastewater Treatment Plant	Kitchener	25
Saskatchewan	City of Regina	Wastewater Facility	Regina	25
New Brunswick	Greater Moncton Wastewater Commission	GMWC Wastewater Treatment Facility	Riverview	23
Ontario	City of Greater Sudbury	Sudbury Wastewater Treatment Plant	Sudbury	22
Québec	Ville de Salaberry-de-Valleyfield	usine d'épuration de la Seigneurie	Salaberry-de-Valleyfield	22
Québec	Ville de Saint-Jean-sur-Richelieu	Station d'épuration des eaux usées	Saint-Jean-sur-Richelieu	22
Québec	Régie d'Assainissement des Eaux du Bassin de Laprairie	Régie d'Assainissement des Eaux du Bassin de Laprairie	Sainte-Catherine	22
Ontario	The Regional Municipality of Halton	Mid-Halton Wastewater Treatment Plant	Oakville	22
Ontario	Corporation of the City of Guelph	City of Guelph Wastewater Treatment Plant	Guelph	21
Manitoba	City of Winnipeg, Water & Waste Department	South End Water Pollution Control Centre (SEWPCC)	Winnipeg	20
British Columbia	City of Abbotsford	JAMES Pollution Control Center	Abbotsford	20
Québec	Ville de Granby	Station d'épuration des eaux usées de Granby	Granby	19
Québec	Régie d'asssainissement Sainte-Thérèse-Blainville	Station d'épuration Sainte-Thérèse-Blainville	Blainville	19
Ontario	Corporation of the City of Cornwall	Cornwall Wastewater Treatment Plant	Cornwall	19
Nova Scotia	Halifax Regional Water Commission	Dartmouth Wastewater Treatment Facility	Dartmouth	19
Ontario	Regional Municipality of Durham	Corbett Creek WPCP	Whitby	19

4.2. 179 Systems with Combined Sewers

Province	Owner Name	System Name	System City
Alberta	EPCOR Water Services Inc.	Gold Bar Wastewater Treatment Plant	Edmonton
British Columbia	Capital Regional District	Clover Point Pump Station	Victoria
British Columbia	City of Port Alberni	Sewage Lagoon	Port Alberni
British Columbia	City of Powell River	Townsite WWTP	Powell River
British Columbia	Greater Vancouver Sewerage and Drainage District	Annacis Island Wastewater Treatment Plant	Delta
British Columbia	Greater Vancouver Sewerage and Drainage District	Iona Island Wastewater Treatment Plant	Richmond
Manitoba	City of Winnipeg, Water & Waste Department	North End Water Pollution Control Centre (NEWPCC)	Winnipeg
Manitoba	City of Winnipeg, Water & Waste Department	South End Water Pollution Control Centre (SEWPCC)	Winnipeg
Manitoba	City of Winnipeg, Water & Waste Department	West End Water Pollution Control Centre (WEWPCC)	Winnipeg
New Brunswick	City of Bathurst	City of Bathurst Waste Water Treatment Plant	Bathurst
New Brunswick	CITY OF CAMPBELLTON	WASTEWATER TREATMENT PLANT	Campbellton
New Brunswick	City of Miramichi	Loggieville Lagoon	Miramichi
New Brunswick	City of Miramichi	Newcastle Waste Water Treatement Lagoon	Miramichi
New Brunswick	City of Miramichi	Southside Waste Water Treatment Lagoon	Miramichi
New Brunswick	City of Saint John	Eastern Wastewater Treatment Facility	Saint John
New Brunswick	City of Saint John	Lancaster Lagoon WWTP	Saint John
New Brunswick	City of Saint John	Millidgeville WWTP	Saint John
New Brunswick	Greater Moncton Wastewater Commission	GMWC Wastewater Treatment Facility	Riverview
New Brunswick	KC Properties (GP) Limited	Lakeside Estates	Lakeville
New Brunswick	Town of Dalhousie	Dalhousie Wastewater Treatment Plant	Dalhousie

Province	Owner Name	System Name	System City
New Brunswick	Town of Saint Andrews	Saint Andrews waste water treatment plant	Saint Andrews
New Brunswick	Town of St. Stephen	St. Stephen Lagoon	Dufferin
New Brunswick	Village of Blacks Harbour	Blacks Harbour Waste Water Treatment Facility	Blacks Harbour
New Brunswick	Village of Hillsborough	Hillsborough Lagoon	Hillsborough
Newfoundland and Labrador	City of St. John's	Riverhead Wastewater Treatment Facility	St. John's
Nova Scotia	Cape Breton Regional	Battery Point Treatment Plant	Sydney
Nova Scotia	Cape Breton Regional	Dominion / Bridgeport WWTP	Dominion
Nova Scotia	Cape Breton Regional	Donkin Sewer Shed - D1	Donkin
Nova Scotia	Cape Breton Regional	Glacebay - GB2	Glacebay
Nova Scotia	Cape Breton Regional	Glacebay - GB8	Glacebay
Nova Scotia	Cape Breton Regional	Meadowbrook Lagoon	Sydney Mines
Nova Scotia	Cape Breton Regional	New Victoria Sewer Shed	New Victoria
Nova Scotia	Cape Breton Regional	New Waterford - NW1	New Waterford
Nova Scotia	Cape Breton Regional	North Sydney, Sydney Mines, Florence (North Division) - ND2	Sydney Mines
Nova Scotia	Cape Breton Regional	Tower Road Lagoon	Glace Bay
Nova Scotia	Cape Breton Regional	Westmount / Coxheath - C1	Edwardsville
Nova Scotia	Cape Breton Regional	Westmount / Coxheath - C3	Edwardsville
Nova Scotia	Halifax Regional Water Commission	Dartmouth Wastewater Treatment Facility	Dartmouth
Nova Scotia	Halifax Regional Water Commission	Halifax Wastewater Treatment Facility	Halifax
Nova Scotia	Municipality of the Town of Yarmouth	Town of Yarmouth Wastewater Treatment Plant	Yarmouth
Nova Scotia	Town of Bridgewater	Bridgewater Wastewater Treatment Plant	Bridgewater
Nova Scotia	Town of Mahone Bay	Sewage Treatment Plant	Mahone Bay
Nova Scotia	Town of Port Hawkesbury	Town of Port Hawkesbury Wastewater Plant	Port Hawkesbury
Ontario	City of Hamilton	Woodward Avenue Wastewater Treatment Plant	Hamilton

Province	Owner Name	System Name	System City
Ontario	City of Kenora	Kenora Area wastewater facility	Kenora
Ontario	City of Ottawa	Robert O. Pickard Environmental Centre	Ottawa
Ontario	City of Owen Sound	Owen Sound WPCP	Owen Sound
Ontario	City of Sarnia	Water Pollution Control Centre	Sarnia
Ontario	City of Temiskaming Shores	Haileybury Mechanical Sewage Treatment Plant	Haileybury
Ontario	City of Thunder Bay	Water Pollution Control Plant	Thunder Bay
Ontario	City of Toronto	Ashbridges Bay Treatment Plant	Toronto
Ontario	City of Toronto	Humber Treatment Plant	Toronto
Ontario	City of Toronto	North Toronto Treatment Plant	Toronto
Ontario	City of Windsor	Little River Pollution Control Plant 1	Windsor
Ontario	City of Windsor	Lou Romano Water Reclamation Plant	Windsor
Ontario	Corporation of the City of Cornwall	Cornwall Wastewater Treatment Plant	Cornwall
Ontario	Corporation of the City of London	Greenway Pollution Control Centre	London
Ontario	Corporation of the Municipality of Central Huron	Town of Clinton Sewage Treatment Plant	Clinton
Ontario	Corporation of the Municipality of Leamington	LEAMINGTON POLLUTION CONTROL CENTRE	Leamington
Ontario	CORPORATION OF THE TOWN OF HAWKESBURY	Hawkesbury Wastewater Plant	Hawkesbury
Ontario	Corporation of the Town of Iroquois Falls	Iroquois Falls Sewage Treatment Plant	Iroquois Falls
Ontario	Corporation Town of Smiths Falls	Smiths Falls Water Pollution Control Plant	Smiths Falls
Ontario	Foleyet Local Services Board	Foleyet Wastewater Treatment Lagoon	Foleyet
Ontario	Municipality of Temagami	Temagami North Wastewater Treatment Lagoon	Temagami
Ontario	Regional Municipality of Niagara	Baker Road Wastewater Treatment Plant	Grimsby
Ontario	Regional Municipality of Niagara	Crystal Beach Wastewater Treatment Plant	Crystal Beach

Province	Owner Name	System Name	System City
Ontario	Regional Municipality of Niagara	Fort Erie Wastewater Treatment Plant	Fort Erie
Ontario	Regional Municipality of Niagara	Niagara Falls Wastewater Treatment Plant	Niagara Falls
Ontario	Regional Municipality of Niagara	Niagara-on-the-Lake Lagoon	Niagara-on-the-Lake
Ontario	Regional Municipality of Niagara	Port Colborne Wastewater Treatment Plant	Port Colborne
Ontario	Regional Municipality of Niagara	Port Dalhousie Wastewater Treatment Plant	St. Catharines
Ontario	Regional Municipality of Niagara	Port Weller Wastewater Treatment Plant	St. Catharines
Ontario	Regional Municipality of Niagara	Stevensville/Douglastown Lagoon	Stevensville
Ontario	Regional Municipality of Niagara	Welland Wastewater Treatment Plant	Welland
Ontario	Separated Town of Prescott	Prescott Wastewater Treatment Plant	Prescott
Ontario	The Corporation of the City of Belleville	Belleville Wastewater Treatment Facility	Belleville
Ontario	The Corporation of the City of Kingston	Ravensview Wastewater Treatment	Kingston
Ontario	The Corporation of the Town of Goderich	Goderich Water Pollution Control Plant	Goderich
Ontario	The Corporation of the Town of Parry Sound	Parry Sound WWTP	Parry Sound
Ontario	The Corporation of the Township of Manitouwadge	Manitouwadge Wastewater Lagoons	Manitouwadge
Ontario	The Corporation of the Township of North Glengarry	Alexandria Sewage Works	Alexandria
Ontario	The Corporation of the Township of North Huron	Wingham STP	Wingham
Ontario	Town of Amherstburg	Amherstburg Wastewater Treatment Plant	Amherstburg
Ontario	Township of Black River-Matheson	Matheson Wastewater Treatment Plant & Collection System	Matheson
Prince Edward Island	City of Charlottetown	Charlottetown Pollution Control Plant	Charlottetown
Québec	DEPARTMENT OF NATIONAL DEFENCE	MDN, usine de traitement des eaux usées Valcartier	Courcelette

Province	Owner Name	System Name	System City
Québec	Étangs aérés Saint-Côme-Linière	Étangs aérés Saint-Côme-Linière	Saint-Côme-Linière
Québec	Municipalité de Dégelis	Étang aéré de Dégelis	Dégelis
Québec	Municipalité de la Paroisse d'Hérouxville	Étang Hérouxville	Hérouxville
Québec	Municipalité de La Présentation	Station d'épuration	LaPrésentation
Québec	MUNICIPALITÉ DE LAC-DES-ÉCORCES	Étangs d'épuration Lac-des-Écorces	Lac-des-Écorces
Québec	Municipalité de Saint-Alexis-des-Monts	Station d'assainissement des eaux	Saint-Alexis-des-Monts
Québec	Municipalité de Sainte-Brigide-d'Iberville	Étangs Aérés	Sainte-Brigide d'Iberville
Québec	municipalité de Sainte-Claire	usine d'épuration de Sainte-Claire	Sainte-Claire
Québec	Municipalité de Sainte-Émélie-de-L'Énergie	Usine d'épuration des eaux usées	Sainte-Émélie-de-l'Énergie
Québec	Municipalité de Saint-Félix-de-Valois	Station d'épuration Saint-Félix-de-Valois	Saint-Félix-de-Valois
Québec	Municipalité de Saint-Germain-de-Grantham	Station d'épuration	Saint-Germain-de-Grantham
Québec	Municipalité de Saint-Jean-Baptiste	Usine de traitement des eaux usées	Saint-Jean-Baptiste
Québec	Municipalité de Saint-Jean-de-Dieu	Etangs aérés de Saint-Jean-de-Dieu	Saint-Jean-de-Dieu
Québec	Municipalité de Saint-Jean-Port-Joli	Étangs Aérés Saint-Jean-Port-Joli	Saint-Jean-Port-Joli
Québec	MUNICIPALITÉ DE SAINT-LUDGER	STATION D'ÉPURATION	SAINT-LUDGER
Québec	Municipalité de Saint-Magloire	Municipalité de Saint-Magloire	Saint-Magloire
Québec	Municipalité de Saint-Mathieu-de-Beloeil	Station d'épuration	Saint-Mathieu-de-Beloeil
Québec	Municipalité de Saint-Narcisse	Étang	Saint-Narcisse
Québec	Municipalité de Saint-Valérien-de-Milton	Station d'épuration	Saint-Valérien-de-Milton
Québec	Municipalité de Ste-Félicité	Usine d'épuration des eaux usées	Ste-Félicité
Québec	Municipalité de St-Joseph de Coleraine	Étangs aérés	St-Joseph de Coleraine
Québec	Municipalité de St-René-de-Matane	Station d'épuration des eaux usées	St-René-de-Matane
Québec	Municipalité de St-Ulric	Station d'épuration des eaux usées	St-Ulric
Québec	Municipalité de Windsor	Usine d'épuration de la municipalité de Windsor	Windsor
Québec	Municipalité d'Upton	Station d'épuration	Upton

Province	Owner Name	System Name	System City
Québec	Municipalité L'Isle-Aux-Allumettes	Usine d'épuration	L'Isle-Aux-Allumettes
Québec	Municipalité Mt Carmel	Étangs Aérés Mt Carmel	Mont Carmel
Québec	Municipalité Saint-Michel-des-Saints	Usine d`épuration	St-Michel-des-Sts
Québec	Municipalité St Aubert	Étangs aérés de St-Aubert	St-Aubert
Québec	Municipalité St Cyprien	Étangs aérés St-Cyprien	St Cyprien
Québec	Municipalité st François RDS	Étangs aérés St François de RDS	St François-de-la-Rivière-du-sud
Québec	Municipalité St-Benoit Labre	Station Épuration St-Benoit Labre	St-Benoit Labre
Québec	Municipalité St-Gédéon-De-Beauce	Station Épuration St-Gédéon	St-Gédéon de Beauce
Québec	Municipalité St-Jacques	Usine d'épuration	St-Jacques
Québec	Municipalité St-Jean-de-Matha	Station d'épuration des eaux usées	Saint-Jean de Matha
Québec	Municipalité St-Théophile de Beauce	Station Épuration St-Théophile	St-Théophile
Québec	Municipatlité de St-Jude	Station d'épuration	Saint-Jude
Québec	Paroisse de Sainte-Flavie	Paroisse de Sainte-Flavie	Sainte-Flavie
Québec	Régie Assainissement des Coteaux	Étangs Aérés RAC	Coteau-du-Lac
Québec	Régie d'Assainissement des eaux de la Vallé du Richelieu	Régie d'assainissement des eaux de la Vallée du Richelieu	Mont St-Hilaire
Québec	Régie d'assainissement des eaux Richelieu/St-Laurent	Station d'épuration	Sorel-Tracy
Québec	Régie d'assainissement du grand Joliette	les étangs aérés	Joliette
Québec	Saint-Alexandre-de-Kamouraska	RBS Saint-Alexandre-de-Kamouraska	Saint-Alexandre-de-Kamouraska
Québec	Saint-Maxime-du-Mont-Louis	Étang Mont-Louis	Mont-Louis
Québec	Village de Hemmingford	Système de traitement des eaux usées	Hemmingford
Québec	ville Beauceville	Usine épuration de Beauceville	Beauceville
Québec	Ville d'Acton Vale	Usine d'épuration d'Acton Vale	Acton Vale
Québec	Ville d'Alma	Étangs Nord	Alma
Québec	Ville d'Alma	Étangs SCM	Alma
Québec	Ville d'Alma	Étangs Sud	Alma
Québec	Ville de Beaupré	STEU Beaupré	Beaupré
Québec	Ville de Bedford	Station d'épuration	Bedford

Province	Owner Name	System Name	System City
Québec	ville de Cookshire-Eaton	étangs aérés de Cookshire	Cookshire-Eaton
Québec	ville de Cookshire-Eaton	Étangs aérés Sawyerville	Cookshire-Eaton
Québec	Ville de Daveluyville	Ville de Daveluyville	Daveluyville
Québec	Ville de East Angus	Usine d'épuration des eaux de East Angus	East Angus
Québec	Ville de Farnham	Station d'épuration de Farnham	Farnham
Québec	Ville de Granby	Station d'épuration des eaux usées de Granby	Granby
Québec	Ville de Laval	Station d'épuration Auteuil	Laval
Québec	Ville de Laval	Station d'épuration Fabreville	Laval
Québec	Ville de Laval	Station d'épuration La Pinière	Laval
Québec	Ville de L'Épiphanie	Usine d'Épuration L'Épiphanie	L'Épiphanie
Québec	Ville de Longueuil	Centre d'épuration Rive-Sud (CERS)	Longueuil
Québec	VILLE DE LOUISEVILLE	ETANG DE LOUISEVILLE	LOUISEVILLE
Québec	Ville de Magog	Étangs aérés Omerville	Magog
Québec	Ville de Magog	Station d'épuration des eaux	Magog
Québec	Ville de Maniwaki	Station d'épuration	Maniwaki
Québec	Ville de Marieville	Station d'épuration	Marieville
Québec	Ville de Mirabel	Station d'épuration Saint-Benoît	Mirabel
Québec	Ville de Montréal	Île Notre-dame	Montreal
Québec	Ville de Montréal	Station d'épuration des eaux usées Jean-R.-Marcotte	Montréal
Québec	ville de notre dame de l'ile perrot	étangs aérés de notre dame de l'ile perrot	notre dame de l'ile perrot
Québec	VILLE DE PLESSISVILLE	Station d'Épuration	Plessisville paroisse
Québec	Ville de Pont-Rouge	Bassins D'épuration ville de Pont-Rouge	Pont-Rouge
Québec	VILLE DE RIGAUD	USINE D'ÉPURATION DES EAUX	RIGAUD
Québec	Ville de Rivière-du-Loup	Station d'épuration	Riviere-du-Loup
Québec	Ville de Rouyn-Noranda	Étangs Rouyn-Noranda	Rouyn-Noranda
Québec	Ville de Sainte-Catherine-de-la-Jacques-Cartier	Étangs aérés Sainte-Catherine-de-la-Jacques-Cartier	Sainte-Catherine-de-la-Jacques-Cartier
Québec	ville de saint-félicien	Étangs eaux usées St-Félicien	Saint-Félicien

Province	Owner Name	System Name	System City
Québec	ville de saint-félicien	Étangs eaux usées St-Méthode	Saint-Félicien
Québec	Ville de Saint-Jerome	STATION D'ÉPURATION DES EAUX USÉES	Saint-Jerome
Québec	Ville de Saint-Tite	STEU Ville de Saint-Tite	Saint-Tite
Québec	Ville de Trois-Rivières	Étangs aérés de Saint-Louis de France	Trois-Rivières
Québec	Ville de Trois-Rivières	Étangs aérés de Trois-Rivières	Trois-Rivières
Québec	Ville de Val-d'Or	Usine d'épuration	Val-d'Or
Québec	Ville de Victoriaville	Usine d'épuration Achille-Gagnon	Victoriaville
Québec	Ville de Warwick	Étangs Warwick	Warwick
Québec	ville Sainte-Marie	Étangs aérés Sainte-Marie	Sainte-Marie
Québec	Ville Saint-Ephrem	Étangs aérés Saint-Ephrem	Saint-Ephrem
Québec	Ville Saint-Joseph-de-Beauce	Station épuration	Saint-Joseph-de-Beauce
Québec	Ville Saint-Prosper	Étangs aérés Saint-Prosper	Saint-Prosper
Québec	Ville St Pascal	Étangs aérés St Pascal	St Pascal
Saskatchewan	City of Regina	Wastewater Facility	Regina

4.3. Supplementary Monitoring Data

Supplementary Data Table 1. Number of systems that meet the WSER standard for CBOD by province and treatment type in 2017.

Province	CBOD Performance	Mechanical	Lagoon	No Treatment	Total
Alberta	Meets WSER	40	125	0	165
	Exceeded WSER	1	6	0	7
British Columbia	Meets WSER	56	48	0	104
	Exceeded WSER	17	9	10	36
Manitoba	Meets WSER	21	79	0	100
	Exceeded WSER	4	1	0	5
New Brunswick	Meets WSER	15	93	0	108
	Exceeded WSER	6	7	0	13

Province	CBOD Performance	Mechanical	Lagoon	No Treatment	Total
Newfoundland and Labrador	Meets WSER	7	3	8	18
	Exceeded WSER	10	4	119	133
Nova Scotia	Meets WSER	48	33	11	92
	Exceeded WSER	10	1	8	19
Ontario	Meets WSER	298	141	0	439
	Exceeded WSER	3	1	0	4
Prince Edward Island	Meets WSER	5	19	0	24
	Exceeded WSER	1	2	0	3
Québec	Meets WSER	45	206	4	255
	Exceeded WSER	11	4	3	18
Saskatchewan	Meets WSER	7	55	1	63
	Exceeded WSER	0	4	0	4
Yukon	Meets WSER	0	2	0	2
	Exceeded WSER	1	0	0	1
Total	Meets WSER	542	804	24	1370
	Exceeded WSER	64	39	140	243

Supplementary Data Table 2. **Number of systems that meet the WSER limits for SS by province and treatment type in 2017.**

Province	SS Performance	Mechanical	Lagoon	No Treatment	Total
Alberta	Meets WSER	39	113	0	152
	Exceeded WSER	2	18	0	20
British Columbia	Meets WSER	54	45	0	99
	Exceeded WSER	19	12	10	41
Manitoba	Meets WSER	18	71	0	89
	Exceeded WSER	7	9	0	16
New Brunswick	Meets WSER	13	86	0	99
	Exceeded WSER	8	14	0	22
Newfoundland and Labrador	Meets WSER	5	1	4	10
	Exceeded WSER	12	6	123	141
Nova Scotia	Meets WSER	45	29	10	84
	Exceeded WSER	13	5	9	27
Ontario	Meets WSER	291	131	0	422
	Exceeded WSER	10	11	0	21
Prince Edward Island	Meets WSER	6	18	0	24
	Exceeded WSER	0	3	0	3
Québec	Meets WSER	41	183	5	229
	Exceeded WSER	15	27	2	44
Saskatchewan	Meets WSER	7	43	1	51
	Exceeded WSER	0	16	0	16
Yukon	Meets WSER	0	2	0	2
	Exceeded WSER	1	0	0	1
Total	**Meets WSER**	**519**	**722**	**20**	**1261**
	Exceeded WSER	**87**	**121**	**144**	**352**

Supplementary Data Table 3. **Acute lethality test results by province and treatment type in 2017.**

Province	Acute Lethality Test Result	Mechanical	Lagoon	No Treatment	Total
Alberta	Failures	0	9	0	9
	Passes	22	19	0	41
British Columbia	Failures	2	0	1	3
	Passes	31	11	1	43
Manitoba	Failures	2	1	0	3
	Passes	8	9	0	17
New Brunswick	Failures	0	0	0	0
	Passes	9	14	0	23
Newfoundland and Labrador	Failures	2	0	2	4
	Passes	1	1	1	3
Nova Scotia	Failures	0	0	0	0
	Passes	11	6	0	17
Ontario	Failures	3	0	0	3
	Passes	152	21	0	173
Prince Edward Island	Failures	0	0	0	0
	Passes	2	1	0	3
Québec	Failures	4	24	0	24
	Passes	31	63	0	94
Saskatchewan	Failures	0	4	0	4
	Passes	4	6	0	10
Yukon	Failures	0	0	0	0
	Passes	0	0	0	0
Total	**Failures**	**13**	**34**	**3**	**50**
	Passes	**271**	**151**	**2**	**424**