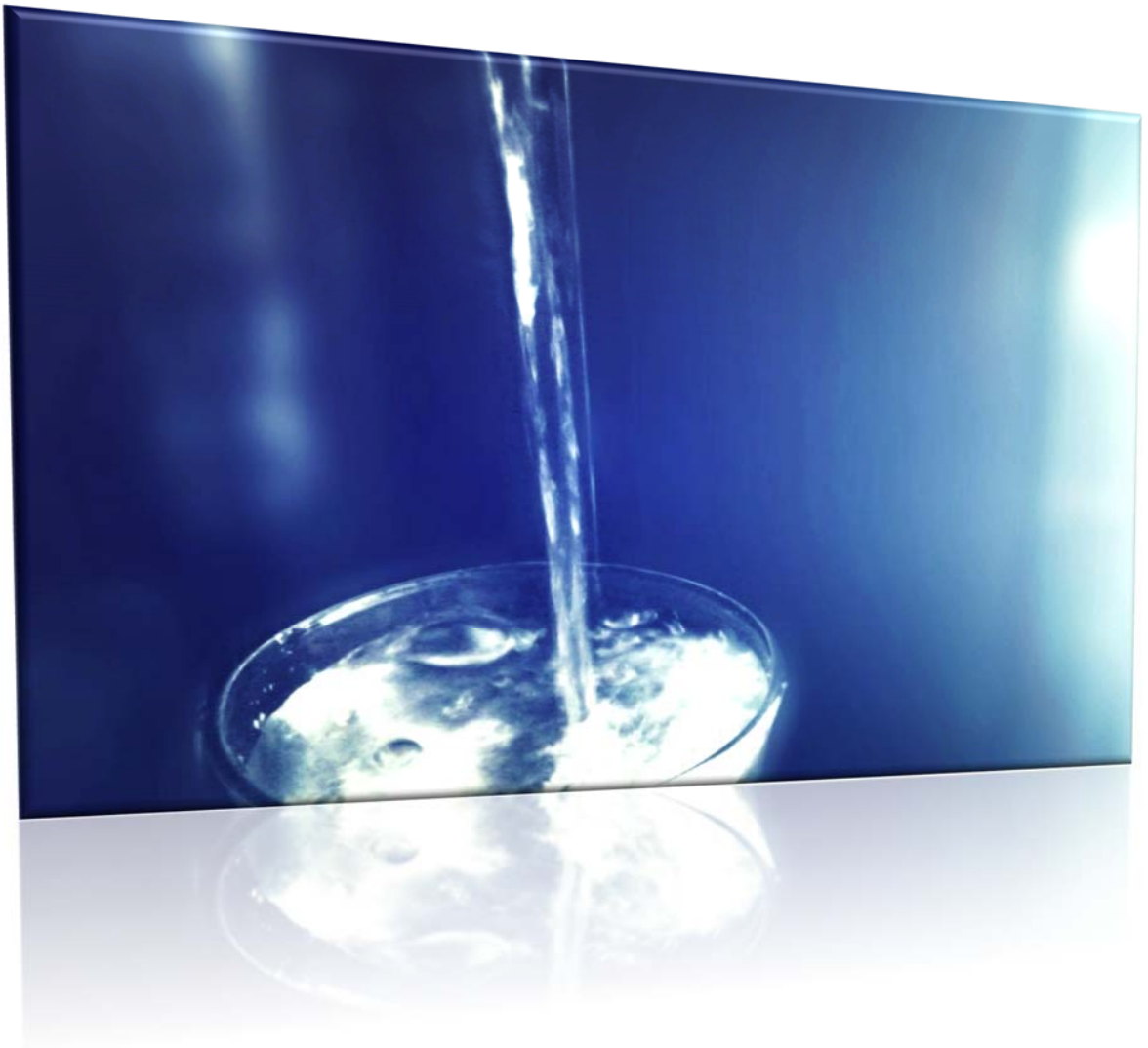


5.2



Sustainable Water Management

Summary of the Audit

Purposes

- Ensure that the action plan adopted within the framework of Montréal's Water Strategy would enable the city to meet the goals and measures set out by Ministère des Affaires municipales et de l'Occupation du territoire as part of the implementation of Québec Strategy for Drinking Water Conservation (QSDWC) in relation to the *Québec Water Policy*.
- Ensuring the application of the current regulations concerning the use of drinking water by the boroughs.

Results

In addition to these results, we have formulated various recommendations for the business units.

The details of these recommendations and our conclusion are outlined in our audit report, presented in the following pages.

Note that the business units have had the opportunity to formulate their comments, which appear after the audit report recommendations.

Our audit confirms, for the first goal of the QSDWC, that major efforts have made it possible, across the agglomeration, to reduce the total production and average distribution of drinking water per person per day. However, there remains a significant gap compared with the Canadian average.

Regarding the QSDWC's second goal, we note for 2015, on the one hand, a potential water loss rate estimated at 31%, whereas the goal is to achieve less than 20% of the water volume distributed, and, on the other hand, a leakage rate estimated at 98 cubic metres per day per kilometre of water line, compared with the objective of 15 cubic metres.

In order to fulfill the QSDWC's requirements and to achieve a responsible drinking water management, improvements need to be made, in our opinion, taking into account the main findings hereunder.

- A specific action plan to meet QSDWC's requirements has not been integrated into Montréal's Water Strategy.
- There is no evidence that water use regulations have been applied by the boroughs regarding equipment in industries, companies and institutions.
- Accountability mechanisms have not adequately informed decision-makers about all QSDWC issues.
- There has been no overall performance assessment regarding the implementation of measures to meet QSDWC's requirements.

Table of Contents

1. Background.....	149
2. Purposes and Scope of the Audit	150
3. Main Findings.....	151
4. Audit Results	151
4.1. Government Requirements Under the Québec Strategy for Drinking Water Conservation	152
4.2. Montréal's Water Strategy.....	154
4.3. Status Report.....	158
5. Conclusion	187
6. Appendix.....	190
6.1. Purposes and Evaluation Criteria.....	190

List of Acronyms

CC	city council	MAMOT	Ministère des Affaires municipales et de l'Occupation du territoire
ICI	industries, companies and institutions		
l/pers/d	litre per person per day	QSDWC	Québec Strategy for Drinking Water Conservation
m ³ /d/km	cubic metre per day per kilometre of water line	UAC	urban agglomeration council

5.2. Sustainable Water Management

1. Background

Water is one of the central issues of the 21st century. Globally, the freshwater needed to sustain life and to develop the living world represents only a very small proportion of the total water covering the earth. However, a small part of this freshwater is located in Québec. The St. Lawrence River, which supplies the Ville de Montréal (the city), is one of Québec's major freshwater reservoirs.

Since the early 1990s, various international conferences and forums on the subject have been held. Water has become a matter of great concern both internationally and locally. The issue of water has also become integral to the concept of sustainable development, with a growing desire to conserve this resource and protect it to ensure its renewal.

Several countries have introduced water protection measures, notably the United States and the European Union member countries. Worldwide, since the early 1990s, there has been increasing pressure to improve water management. In 2002, the Government of Québec came up to speed by adopting the *Québec Water Policy*. More than 50 commitments were implemented under this policy. Commitment 49 expressed a determination "to develop a Québec strategy for the conservation of drinking water which makes the allocation of any financial assistance contingent upon the adoption, by municipalities, of measures to conserve water and reduce leakage"¹.

In March 2011, as part of this commitment, the Government of Québec adopted the Québec Strategy for Drinking Water Conservation (QSDWC), the application of which is the responsibility of the Ministère des Affaires municipales et de l'Occupation du territoire (MAMOT). QSDWC took up the two goals of commitment 49, namely: [TRANSLATION] "To aim for a reduction of at least 20% of the average water consumption per person for Québec as a whole and a reduction in leakage losses to no more than 20% of the total volume of water produced"². According to the Government of Québec, these are the two main factors contributing to an abnormally high consumption of drinking water across the province. In Québec, there is overconsumption, or an overuse of this resource. Québec is also the province with the highest average leakage rate in water systems compared to other provinces.³

¹ Government of Québec. *Water. Ouf Life. Ouf Future. Québec Water Policy*, 2002, p. 70.

² Ministère des Affaires municipales et de l'Occupation du territoire, *Québec Strategy for Drinking Water Conservation*, 2011, p. 8.

³ *Ibid.*, p 7.

The government subsequently added five measures to these two goals, which will be more fully discussed in section 4.1.2. In order to encourage municipalities to comply with the application of QSDWC, the Government of Québec, in accordance with commitment 49 of the *Québec Water Policy* and the *Sustainable Development Act*⁴, provided financial assistance to municipalities for water infrastructure projects conditional on the implementation of these five measures. From 2011 to 2015, the city received a total of \$157.4 million in financial assistance for drinking water projects, such as the supply and treatment of drinking water (\$50.2 million), as well as for the drinking water distribution system (\$107.2 million). The funding obtained for the infrastructure projects related to the water supply system was significant. Although this financial assistance to the city was not denied or suspended, there was still a risk of not receiving all the financial assistance if the required measures were not put in place and the goals set out by MAMOT not met.

Compliance with the goals and implementation of the measures needed to be achieved gradually. To do this, QSDWC set a schedule for implementation in stages.

In addition, Montréal's Water Strategy, which is included in a document entitled *Enjeux, orientations et objectifs pour une nouvelle stratégie de l'eau, compteurs ICI et optimisation des réseaux*, was approved by the urban agglomeration council (UAC) in June 2012.⁵ The Strategy identifies five major issues for the city:

- Public health and safety;
- Responsible asset management and optimal use of assets;
- Sustained funding and responsible financial management;
- Increased environmental responsibility through sustainable water management;
- Adoption of sound management and operational practices.

These issues were reflected in a series of strategic goals to which was attached an action plan containing a series of activities to be carried out up to 2020.

In this context, the city, like other Québec municipalities, had to meet the goals set out in QSDWC and implement the various measures recommended. To this end, it was important that the city put in place monitoring and evaluation mechanisms that would enable it to ensure compliance with QSDWC and to integrate them into Montréal's Water Strategy action plan.

2. Purposes and Scope of the Audit

The purpose of this audit was to ensure that the action plan adopted within the framework of Montréal's Water Strategy would enable the city to meet the goals and

⁴ CQLR, chapter D-8.1.1.

⁵ Resolution CG12 0166, June 21, 2012.

measures set out by MAMOT as part of the implementation of QSDWC in relation to the *Québec Water Policy*.

This audit was also aimed at ensuring the application of the current regulations concerning the use of drinking water by the boroughs.

The audit mainly concerns the Service de l'eau and covers actions carried out between 2011 and September 30, 2016. Regarding the boroughs, and more particularly, the application of the regulations, the audit covers actions taken between the adoption of these by-laws in 2013 and August 31, 2016.

Our audit work consisted of conducting interviews with staff, examining various documents and conducting surveys that we considered appropriate in obtaining evidence. This audit is based on a review of the evaluation criteria presented in Appendix 6.1.

3. Main Findings

The audit work carried out revealed that improvements need to be made because:

- A specific action plan to meet QSDWC's requirements has not been integrated into Montréal's Water Strategy;
- There is no evidence that water use regulations have been applied by the boroughs regarding equipment in industries, companies and institutions (ICI);
- Accountability mechanisms have not adequately informed decision-makers about all QSDWC issues;
- There has been no overall performance assessment regarding the implementation of measures to meet QSDWC's requirements.

4. Audit Results

From the outset, it should be pointed out that within QSDWC's requirements certain aspects concern the agglomeration, while others only the city. Under *an Act Respecting the Exercise of Certain Municipal Powers in Certain Urban Agglomerations*⁶, the water supply (e.g., the production and distribution of drinking water from water treatment plants) falls within UAC's jurisdiction. However, with respect to the water supply, since the city is the central municipality, it can act on this matter.⁷ Thus, the city, in the framework of QSDWC's requirements, provides answers to MAMOT for both itself and the agglomeration.

⁶ CQLR, chapter E-20-001, article 19, paragraph 5.

⁷ CQLR, chapter E-20-001, article 17.

QSDWC incorporates two goals, which are accompanied by five measures, as has already been mentioned. In order to fully understand QSDWC's requirements, we will describe these two goals and the five measures that the city, along with Québec's other municipalities, must implement in accordance with the schedules set by MAMOT. We will also outline the current situation with regard to compliance with QSDWC's two goals, mainly using the latest Annual Report filed by the Service de l'eau to the authorities, i.e., the 2015 report.

Our audit work consisted of:

- Presenting QSDWC's requirements in terms of goals and measures;
- Reviewing the action plan of Montréal's Water Strategy to determine if it includes every element necessary to meet all of QSDWC's requirements;
- Assessing the current situation for the city and the agglomeration regarding their contribution to both the goals and implementation of the five measures required by QSDWC.

4.1. Government Requirements Under the Québec Strategy for Drinking Water Conservation

4.1.1. In Terms of Goals

4.1.1.A. Background and Findings

QSDWC's requirements for all Québec's municipalities are founded on the following two goals:

- A reduction of at least 20% in the amount of water distributed per person compared to 2001. The reduction should have reduced water consumption to 622 litres per person per day (l/pers/d), a threshold equal to the Canadian average for 2001. MAMOT uses as a base the average volume of water distributed⁸ at the launch of the *Québec Water Policy* (777 l/pers/d in Québec);
- A reduction in the leakage rate for all waterworks to a maximum of 20% of the volume of water distributed and a maximum of 15 cubic metres per day per kilometre of water line (m³/d/km).

These two goals were required to be met by December 31, 2016. They were linked to five measures that municipalities had to put in place according to a set schedule.

⁸ The volume of water distributed corresponds to the sum of residential, industrial, commercial, institutional and municipal consumption, including losses.

4.1.2. In Terms of Measures

4.1.2.A. Background and Findings

Table 1 presents the measures to be implemented under QSDWC.

Table 1 – Measures Planned Under QSDWC

Measure	Description
1	Production of a status report and an action plan, including a description of the water conservation measures and the adoption of drinking water regulations by April 1, 2012. These documents then had to be kept up to date annually. ^[a]
2	Production of a water use report, measurement of production and distribution with calibrated flow meters and, if required, a leak detection and repair program: <ul style="list-style-type: none"> Effective April 1, 2012, all municipal bodies, in submitting a request for financial assistance, were required to file a water use report based on the 2011 data and to update it in subsequent years; Effective April 1, 2012, if the report showed a leakage rate for the distribution system greater than 20% of the volume of drinking water produced, or 15 m³/d/km, the municipal body had to put in place a detection and repair program for leaks on its drinking water distribution system.
3	<ul style="list-style-type: none"> Installation of water meters in non-residential buildings (ICI) and certain mixed-use buildings, part of which are used for any commercial activity known for their heavy use of water (e.g., hotel, beauty salon, food retail, laundry, dry cleaner); Assessment of typical residential consumption. <p>This measure would apply from April 1, 2014, if the Québec reduction targets of at least 10% of unit consumption and a leakage rate of less than 20% or 5 m³/d/km were not achieved. The deadline for completing the installation of the meters is September 1, 2018.^[b]</p>
4	Introduction of appropriate pricing for non-residential buildings (ICI) that receive water from municipal distribution systems, if Québec's targets of at least 20% reduction in unit consumption and a leakage rate below 20% or 15 m ³ /d/km were not achieved in the 2016 Report. An appropriate fee structure is planned for 2018.
5	Presentation of an Annual Report on water management to city council (CC) (starting in 2012, and for subsequent years).

^[a] The dates for submitting the drinking water form were changed by MAMOT for the years 2012 to 2015. They were as follows: Year 2011 → April 1, 2012; Year 2012 → July 1, 2013; Year 2013 → September 1, 2014; Year 2014 → September 1, 2015; Year 2015 → September 1, 2016.

^[b] MAMOT had set September 1, 2017 as the deadline for completing the installation of the water meters. This deadline has been extended to September 1, 2018, or later if a municipality installs more than 1,000 meters per year from 2018 (MAMOT, *Rapport annuel de l'usage de l'eau potable 2014, 2016*, p. 5 and MAMOT press release - *Révision des échéanciers*, July 18, 2016).

Effective January 1, 2012, the Government of Québec added cross-compliance clauses to its financial assistance programs for water infrastructure projects based on the achievement of QSDWC's goals.

Failure to meet QSDWC's requirements involved risks. Any municipality that did not comply with these requirements would be subject to the cross-compliance clause, that is, the suspension of provincial financial assistance applications until they were completed.

The most recent *Rapport annuel de l'usage de l'eau potable* from MAMOT⁹ did not precisely indicate the date for setting up fees. In addition, as part of our work, we observed that several schedules had been changed since the adoption of QSDWC and that more specific requirements had also been added in press releases or Annual Reports posted by MAMOT on its website. In order to ensure compliance with all of QSDWC's requirements, we believe that the Service de l'eau should request MAMOT to make available an updated summary of QSDWC's requirements and schedules to which the city is subject.

RECOMMENDATION	
4.1.2.B.	We recommend that the Service de l'eau request that the Ministère des Affaires municipales et de l'Occupation du territoire make available on its website an updated summary of all the requirements and schedules of the Québec Strategy for Drinking Water Conservation to facilitate compliance by the city.
BUSINESS UNIT'S RESPONSE	
4.1.2.B.	<p><i>Service de l'eau</i></p> <p><i>[TRANSLATION] Requests were made at the April 11, 2017 meeting of the committee established by MAMOT to develop the new version of the QSDWC. The meeting minutes outlining the requests made by the Service de l'eau will be sent to the Auditor General for information. (Planned completion: April 2017 – Completed)</i></p>

4.2. Montréal's Water Strategy

4.2.A. Background and Findings

Montréal's 10-year Water Strategy (2011-2020) was approved by UAC on June 21, 2012, and covered five main issues:

- Public health and safety;

⁹ MAMOT, *Rapport annuel de l'usage de l'eau potable* 2014, 2016.

- Responsible asset management and optimal use of assets;
- Sustained funding and responsible financial management;
- Increased environmental responsibility through sustainable water management;
- Adoption of sound management and operational practices.

This strategy incorporates an action plan that supports its implementation. For example, Montréal's Water Strategy action plan identifies three important elements: What should be done? When? How much will it cost? It thus aims to implement the goals related to the five issues of this strategy, which concern aspects affecting the territories of both the agglomeration and the city.

QSDWC requires, in Measure 1, that a status report be produced, as well as an action plan that should be updated annually. However, MAMOT had produced, for the municipalities, a standard drinking water use form. It included an action plan indicating specific aspects it wished to see put in place by the municipalities. In addition, the form was approved by MAMOT and this approval was a condition of eligibility for any application for financial assistance under the infrastructure programs.¹⁰

It is important to distinguish between Montréal's Water Strategy action plan and the action plan required by QSDWC, the latter of which is included in the drinking water use form and which prescribes or identifies actions that QSDWC considers useful for each municipality to know regarding drinking water conservation. The first is a plan that incorporates measures, cost estimates and schedules in the framework of the five issues of Montréal's Water Strategy and the city's choices for water management.

In addition, QSDWC has goals and measures that contain several requirements that must be implemented by the city. As with all five issues of Montréal's Water Strategy, it is important that an action plan incorporate actions to be taken to meet QSDWC's requirements. The action plan is important because it provides a process to be followed and an overview of the project to be carried out, as well as serving as an operational control tool for decision-making.

At this stage of our work, we wanted to know if the action plan supporting Montréal's Water Strategy included all the elements needed to meet QSDWC's requirements: i.e., the governmental requirements concerning the conservation of drinking water.

Our audit work has shown that no other action plan specifically designed to meet QSDWC's goals and measures had been developed by the city following its adoption in 2011 by the Government of Québec. However, in addition to Montréal's Water Strategy action plan, we found that the 2010-2015 sustainable development plan, and more recently the 2016-2020 plan, also included actions related to sustainable water management without, however, covering all aspects of QSDWC.

¹⁰ *Ibid.*, page 6.

A review of Montréal's Water Strategy reveals that it mentions various aspects that concern QSDWC, in particular:

- The Strategy's two main goals of reducing water produced by plants by 20% and reducing water line breakdowns in the distribution systems by 20%;
- The leakage and auscultation investigation research program;
- Renewal of the water supply system;
- Restarting the water meter installation program in ICIs;
- Updating regulations on the use of drinking water.

However, our work also revealed that Montréal's Water Strategy action plan was not always consistent with certain elements required by QSDWC, specifically:

- The action plan had not been updated since its adoption in June 2012, although some deadlines had been changed. For example, QSDWC indicated that meter installation was to be completed by September 1, 2018, or later if 1,000 meters were installed annually, and it now sets September 1 of each year as the deadline for filing the drinking water use form;
- The meter installation project in ICI was no longer up to date and did not take into account QSDWC's schedule. Montréal's Water Strategy called for the installation of 16,200 meters in ICI buildings over a six-year period. This number is now 23,500 meters, and the last deadline we found for installing meters was July 2022, while QSDWC had set this deadline for September 1, 2018;
- There is no provision for the actions to be taken in preparing the documents required by QSDWC for MAMOT (drinking water use form) and for CC (Annual Report);
- The action plan made no mention of the measures that would have to be taken related to QSDWC's requirements. For example, the introduction of user fees for drinking water, flow meter accuracy verification and sampling to determine residential consumption.

According to information we obtained from people we met from the Service de l'eau, after the Working Committee on Non-Residential Taxation and Economic Development,¹¹ a committee was set up in fall 2016 at the Direction générale's request to examine aspects related to user fees with a view to submitting a proposal to the municipal administration in 2017. However, we question the fact that in fall 2016 a committee was set up to examine user fees for drinking water, but Montréal's Water Strategy action plan did not include a scenario to this effect, although it had been included in one of the measures provided for by QSDWC since 2011. The implementation of these user fees corresponds to Measure 4 and its completion was initially planned for April 1, 2017.¹²

¹¹ Working Committee on Non-Resident Taxation and Economic Development, *Pour une métropole en affaires*, August 2016.

¹² The *Rapport annuel de l'usage de l'eau potable 2014* by MAMOT as well as information obtained from MAMOT now indicate a schedule "from 2018" to set up pricing.

In this regard, we realized that there had been some confusion when the 2017 operating budget was presented by the Service de l'eau to the Finance and Administration Commission, there being some misunderstanding on the part of certain managers regarding the setting-up of the user fees measure. We believe that a matter of such importance should not have escaped the attention of the city. The Service de l'eau was certainly aware that, since 2011, one of the goals set by MAMOT in QSDWC (reducing the leakage rate of all water supply systems to a maximum of 20% of total volume distributed and to a maximum of 15 m³/d/km) could not be achieved by the city within the planned schedule.

Consequently, in the light of all of these findings, we believe that a specific action plan should have been developed and incorporated into Montréal's Water Strategy so as to determine all the actions that needed to be undertaken in meeting QSDWC's requirements. In addition, since MAMOT extended some deadlines, in particular for meter installations, user fees and flow meter accuracy verification, we believe that the development of such an action plan would still be useful and even necessary in order to inform the managers concerned and the elected representatives about all the scenarios currently playing out in meeting QSDWC requirements that apply to both the city and the agglomeration. It would also minimize the potential for confusion resulting from the use of various documents that include information that is inconsistent with that found in Montréal's Water Strategy action plan, and consequently favour the application of measures while reducing the risk of losing some government funding. A specific action plan would certainly have permitted better monitoring of the city's obligations to make the necessary decisions at the appropriate time.

RECOMMENDATION

4.2.B.

We recommend that the Service de l'eau integrate into Montréal's Water Strategy a specific action plan that includes the measures to be undertaken to meet all the requirements of the Québec Strategy for Drinking Water Conservation in accordance with the schedules that the Ministère des Affaires municipales et de l'Occupation du territoire has set, or will set, in order to reduce the risk of not being able to take advantage of the financial assistance provided.

BUSINESS UNIT'S RESPONSE

4.2.B.

Service de l'eau

[TRANSLATION] Include a section specific to the QSDWC objectives in the future version of Montréal's Water Strategy. (Planned completion: December 2019)

4.3. Status Report

It is therefore important to know the status of the city and the agglomeration with respect to the two goals that we presented previously, as well as the five measures stemming from them.

4.3.1. Goals

4.3.1.A. Background and Findings

As previously mentioned, the first goal was to reduce by at least 20% the average amount of drinking water distributed per person per day throughout Québec.

The *Rapport annuel de l'usage de l'eau potable 2011* submitted by MAMOT shows that the target of achieving the Canadian average of 622 l/pers/d by December 31, 2016, was reached for the entire province of Québec. The amount of water distributed per person per day decreased from 777 litres in 2001, the base year, to 620 l/pers/d¹³ in 2011, or a reduction of 20% (see Table 2).

For the Montréal agglomeration, Table 2 shows that, compared with 2001, water production per person per day decreased by 22% in 2014 (2014 Annual Report filed with CC and UAC) and by 26% in 2015 (2015 Annual Report filed with CC and UAC). For the Montréal agglomeration, QSDWC's target of a 20% reduction was therefore reached two years before the set deadline, i.e., before December 31, 2016. The 20% targeted reduction was achieved and even exceeded in 2014 and this trend continues. It should be noted, however, that the percentage reduction was estimated in relation to the average water production in 2001 (the base year), which was then 1,120 l/pers/d for the agglomeration. However, this average production was well above both the Québec average (777 l/pers/d) and the Canadian average (622 l/pers/d) in 2001. The last Annual Report (for the year 2014) produced by MAMOT in 2016 indicates that the Canadian average has since fallen to 466 l/pers/d. The difference of 498 litres distributed per person per day in 2001 relative to the Canadian average was 407 l/pers/d in 2014, a reduction of 91 l/pers/d, or 18%.

As previously mentioned, for the Montréal agglomeration, these were the water production data that were used to determine the 26% reduction.

However, our audit work revealed some confusion regarding the terminology used to achieve this goal. MAMOT refers to "water distribution" in its latest Annual Report published in 2016, while the Service de l'eau refers to "water production". In order to avoid confusion and to present identical information, we believe that the Service de

¹³ MAMOT, *Rapport annuel de l'usage de l'eau potable 2011*.

l'eau should request that MAMOT clarify this situation since the results obtained would be somewhat different if one term were used instead of another.

Regarding the second goal: the *Rapport annuel de l'usage de l'eau potable* by MAMOT for 2014 indicates that QSDWC's overall goal, which aims to limit losses to a maximum of 20% of the total volume distributed and to a maximum of 15 m³/d/km, has not been reached.¹⁴

Regarding the city, Table 2 shows that, for the years 2011 to 2015, the leakage rates remained high compared to the 20% maximum of water volume distributed and a maximum of 15 m³/d/km. For 2015, these rates were 31% and 98 m³/d/km, respectively.

As a result, since the goals relating to potential water losses, compared to the quantity of water distributed and to the minimum cubic metre per day per kilometre of water line, did not meet QSDWC's requirements, all of Québec municipalities, including the city, must implement the measures we have described above, in accordance with the conditions and the schedule associated with them.

It should be pointed out that Montréal's Water Strategy provides for a 20% reduction in drinking water produced by plants and a 20% reduction in water line breakage in distribution systems (2011-2020).

Also, the 2010-2015 Sustainable Development Plan provided for a 15% reduction in drinking water production by 2015 compared to 2000, while the 2016-2020 plan provides for a 20% reduction in drinking water produced by the city's plants between 2011 and 2020.

¹⁴ *Op. cit.*, p. 7.

**Table 2 – Comparative Data for Two of QSDWC's Goals
(All of Québec, Montréal Agglomeration and Ville de Montréal^[a])**

	2001	2011	2012	2013	2014	2015
<p>First QSDWC goal for all of Québec targeted for the 2016 report:</p> <p>Reduce by at least 20% the amount of water distributed^[b] per person compared to 2001 (777 litres per person per day)</p>	<p>Target set for December 31, 2016: 2001 Canadian average for all of Québec (622 litres per person per day)</p> <p>The first goal was achieved for all of Québec^[c]</p>	620 l/pers/d	612 l/pers/d	596 l/pers/d	589 l/pers/d	
		20%	21%	23%	24%	
<p>Concurrently:</p> <p>Data for water production in the Montréal agglomeration^[d]</p>	Water production 751 M m ³	654 M m ³	651 M m ³	639 M m ³	630 M m ³	600 M m ³
	Reduced production	13%	13%	15%	16%	20%
	Water production per person per day 1,120 litres per person per day	941 l/pers/d	934 l/pers/d	903 l/pers/d	873 l/pers/d	823 l/pers/d
	Reduced production per person per day	16%	17%	19%	22%	26%
<p>Second QSDWC goal for all of Québec targeted for the 2016 report:</p> <p>Reduce the leakage rate of all waterworks to a maximum of 20% of the water volume distributed and a maximum of 15 cubic metres per day per kilometre of water line</p>	<p>Target: maximum of 20% of total volume of water distributed</p> <p>Goal was not reached for all of Québec^[c]</p>	26%	26%	28%	26%	
	<p>Target: maximum of 15 cubic metres per day per kilometre of water line</p> <p>Goal was not reached for all of Québec^[c]</p>	28 m ³ /d/km	27 m ³ /d/km	30 m ³ /d/km	27 m ³ /d/km	
<p>Concurrently:</p> <p>Data on potential losses for Montréal^[e]</p>	Estimated leakage of 40% of water produced in 2002	33% of total water volume distributed	33%	30%	33%	31%
	Estimated leakage in cubic metre per day per kilometre of water line	117 m ³ /d/km	117 m ³ /d/km	98 m ³ /d/km	112 m ³ /d/km	98 m ³ /d/km
	No estimate for 2001					

[a] Data from the Annual Report filed by the Service de l'eau to the authorities.

[b] The Service de l'eau used the water production data to establish the decrease in the Montréal agglomeration.

[c] Data from MAMOT's Annual Reports on drinking water use for the years 2011 to 2014.

[d] Supplying drinking water is an agglomeration jurisdiction.

[e] Data from the drinking water use form sent to MAMOT for the years 2011 to 2015.

RECOMMENDATION

4.3.1.B.

We recommend that the Service de l'eau:

- intensify its efforts to reduce total water consumption, taking into account the goals of the Québec Strategy for Drinking Water Conservation (which are similar to those of Montréal's Water Strategy) and other top-performing comparable public organizations in order to curb the overuse of water and the inherent operating costs;
- make a request to the Ministère des Affaires municipales et de l'Occupation du territoire that the terminology used in the various documents under the first goal of the Québec Strategy for Drinking Water Conservation be consistent, in order that the terms of reference can be better understood and to facilitate comparisons with other municipalities.

BUSINESS UNIT'S RESPONSE

4.3.1.B.

Service de l'eau

[TRANSLATION] Introducing user fees for drinking water, as mandated by the Direction générale, is the measure that will have the greatest impact on eliminating waste in the ICI (industries, companies, institutions) sector. Inspectors may be reassigned to deal with outstanding cases after the meters have been installed. (Planned completion: December 2018)

In the residential sector, awareness and enforcement efforts will be continued through La Patrouille bleue and by issuing courtesy notices to residents who violate regulations on the use of drinking water. Additional representations will be made to the boroughs to encourage them to use the by-law enforcement resources made available to them by the Service de l'eau. (Planned completion: April 2017 – Ongoing efforts)

Requests were made at the April 11, 2017 meeting of the committee established by MAMOT to develop the new version of the QSDWC. The meeting minutes outlining the requests made by the Service de l'eau will be sent to the Auditor General for information. (Planned completion: April 2017 – Completed)

4.3.2. Measure 1 – Production of a Status Report and Action Plan

4.3.2.A. Background and Findings

To be eligible for financial assistance request, Measure 1 of QSDWC required that all municipal bodies produce a status report and an action plan by April 1, 2012, that included a description of water conservation measures and the adoption of a drinking water regulations. These documents then had to be kept up to date annually.

Thus, regardless of whether or not the two goals had been achieved, actions related to this measure had to have been implemented by April 1, 2012.

4.3.2.1. Status Report and Action Plan for the Ministère des Affaires Municipales et de l'Occupation du Territoire

4.3.2.1.A. Background and Findings

The status report requested by MAMOT had to include a description of the status regarding the municipal water system infrastructure in place, the users to be served (population, industries, retail stores, institutions, etc.), water measurement systems, water volumes produced to supply other municipal bodies, or water volumes acquired from other municipal bodies, as well as the needs and prospects for investment in water infrastructure. It also had to include the status of problems and of the work required to maintain compliance by facilities, as well as the availability of water for the population.

The action plan requested by MAMOT had to include, in particular, the actions required to achieve its goals, the adoption by the municipality of drinking water regulations dealing with external use (watering, pools, car washes, etc.), the installation of new equipment and its replacement (sprinkler systems, cooling systems, meters, etc.) and measures that would be applied to reduce water consumption.¹⁵

In this regard, MAMOT provided an approved standard form that municipalities had to complete. The form included a section entitled "Status Report" and a section entitled "Action Plan." All of the elements just mentioned, both in terms of the status report and the action plan, were included in those sections. This form had to be completed each year. Our audit work revealed that since MAMOT created QSDWC in 2011, for each of the years examined, from 2011 to 2015, the form was completed and sent to MAMOT.

¹⁵ Ministère des Affaires municipales et de l'Occupation du territoire, *Québec Strategy for Drinking Water Conservation*, p. 20 and 21.

However, our work revealed that the drinking water use form for 2011 was sent to MAMOT on April 18, 2012, although the deadline was April 1, 2012. Forms for the years 2012 to 2015 were sent within the deadline set by MAMOT. However, for all these years, the executive committee gave its approval to send the forms after the date to send the form to MAMOT. According to the information and documents obtained, the drinking water use forms for all these years were approved by MAMOT.

We believe, however, that it is important that the deadlines set by MAMOT, as well as approval from the authority concerned before sending the appropriate documents to MAMOT, be met in order to avoid undue delays in receiving financial assistance.

RECOMMENDATION

4.3.2.1.B. We recommend that the Service de l'eau ensure that the drinking water use form be approved by the appropriate authority before it is sent to Ministère des Affaires municipales et de l'Occupation du territoire so that elected officials can review and correct it if necessary.

BUSINESS UNIT'S RESPONSE

4.3.2.1.B. *Service de l'eau*
 [TRANSLATION] Mark the words "Draft document" on all documents sent to MAMOT before they are approved by the authorities. (Planned completion: May 2017)

4.3.2.2. Regulations

4.3.2.2.A. Background and Findings

Measure 1 requires that the regulations on the use of drinking water be adopted by April 1, 2012. MAMOT provides a by-law template on its website. Although some boroughs already had regulations on water use, new regulations were adopted in 2013 for both the city and the Montréal agglomeration.

Two by-laws were adopted in 2013. The first one titled *By-law concerning the use of drinking water (13-023)* was adopted by CC on June 17, 2013. It concerns overwatering by all residential and non-residential buildings, and also affects some equipment in residential areas, such as cooling and air conditioning systems, automatic sprinklers and decorative ponds. The by-law prescribes the replacement of certain non-compliant installations by January 1, 2016 (automatic watering systems, decorative ponds and water displays), while others must be replaced by January 1, 2018 (air conditioning, cooling and heating units).

The second by-law titled *By-law concerning certain uses of drinking water on urban agglomeration territory (RCG 13-011)* was adopted by the UAC on June 20, 2013. This by-law covers certain equipment in non-residential buildings that use drinking water, including air conditioning and cooling units, car washes and automatic watering systems. This by-law also requires that certain non-compliant systems (automatic sprinkler systems, decorative ponds and water displays) be replaced by January 1, 2016, while others (air conditioning, cooling and heating units, urinals and car washes) must be replaced by January 1, 2018.

By-law 13-023 falls under the jurisdiction of CC, while By-law RCG 13-011 comes under that of UAC. However, CC delegated the application of By-law 13-023 to the boroughs, while UAC delegated the application to the related municipalities. As the city is a related municipality, CC sub-delegated the application of By-law RCG 13-011 to the boroughs.

Although the By-law was adopted in June 2013, Measure 1 specified that it had to be adopted no later than April 1, 2012. Once again, in order to avoid incurring additional delays in receiving financial assistance, we feel it is important to comply with the deadlines set by MAMOT.

In addition, according to MAMOT, regulations and awareness of water use are both important. MAMOT indicates that they could even permit a significant reduction in residential water consumption since outdoor use can represent up to 50% of consumption during the warmer months. Thus, application of the regulations could be of great importance as a measure for conserving drinking water by bringing about a reduction in overconsumption of drinking water.

As part of our audit work, we wanted to investigate to what extent these two by-laws were being applied.

Our audit revealed that By-law 13-023 was being applied in the boroughs, but only for certain provisions: that is, almost exclusively to control overwatering during the summer. *La Patrouille bleue*, which carried out awareness-raising activities related to sustainable water management in the boroughs and related cities, was also involved. Since 2013, in the course of its duties, *La Patrouille bleue* carried out awareness-raising and information activities in the boroughs, but almost exclusively with regard to the provisions related to overwatering. According to the documents and information we obtained from the Service de l'eau, it undertook no awareness-raising activities regarding the equipment covered by any of the by-laws.

For example, we did not find evidence of any application of this by-law concerning equipment for residential areas, despite the fact that the by-laws require that certain appliances be upgraded or replaced by January 1, 2016. However, according to the information obtained from the people we met in the Service de l'eau and in the

boroughs, leaflets produced by the Service de l'eau were provided to the boroughs and made available at Accès Montréal offices.

Regarding By-law RCG 13-011, we did not find evidence of inspection or intervention, and this applied to all boroughs. Thus, through our audit work, we were not able to find evidence of monitoring of the buildings covered by this by-law concerning the equipment mentioned above.

Based on the information we received from the Service de l'eau, inspections in ICIs regarding meter installation are carried out by the personnel of the Service de l'eau. An inventory of buildings possessing the equipment mentioned in the by-laws could have been done at the same time since 2013, because a great deal of this equipment that uses drinking water is installed in ICIs. Preparation of an inventory of ICI buildings possessing the equipment mentioned in By-law RCG 13-011 would facilitate the boroughs' work in enforcing the By-law.

However, to promote this by-law, the Service de l'eau carried out awareness-raising work by distributing information leaflets by mail, and also mailing out a letter concerning the installation of water meters. According to the 2014-2015 Report from the 2010-2015 Sustainable Development Plan of the Montréal community, 3,000 of these leaflets had been distributed to ICIs in 2015.

Although significant efforts had been made to apply the water regulations and to educate the public about these regulations, our work revealed that it was applied almost exclusively with regard to overwatering during the summer season. MAMOT requested that the drinking water use form provide information on application of the regulations, specifically education and regular inspections.

We believe that additional efforts must be made to ensure that the water use regulations are equally applied for the equipment specified in the regulations, both with respect to residential and non-residential building equipment.

In order to ensure the application of the regulations, it is important that reliable monitoring mechanisms be put in place. At this stage of our audit work, we wanted to investigate the existing mechanisms to ensure the follow-up of the application of the regulations governing the use of drinking water.

Our work has enabled us to note that the Service de l'eau has put in place a mechanism to ensure monitoring relating to the application of the regulations. The Service de l'eau also asked the boroughs to provide it with opinions that they had received. However, as described above, these opinions essentially concern application of the regulations related to overwatering.

As far as the boroughs are concerned, our audit work has enabled us to note the existence of mechanisms to ensure monitoring of the application of the regulations. For example, the computer application called *Gestion du territoire – Permis* enables the user to create follow-up files for requests or complaints from citizens or staff. However, this mechanism has been used almost exclusively in the application of regulations to control overwatering. Thus, despite the mechanisms in place, we found that the system is seldom used by the boroughs to ensure monitoring of the application of regulations with regard to equipment and appliances, both for residential and non-residential areas.

As part of our discussions with the boroughs, we noted that, for both By-law RCG 13-011 and By-law 13-023, the equipment is not always well known to borough employees. According to the information obtained, not all concerned staff in the boroughs received information on the application of these regulations or more detailed training.

However, at the time of our audit work, the Service de l'eau was working on the production of a detailed guide for boroughs concerning the regulations on the use of drinking water. In our view, this initiative should be continued and completed.

In sum, it must be noted that the monitoring mechanisms in place must be improved and that borough staff must be better informed about these regulations in order to facilitate their application.

RECOMMENDATIONS	
4.3.2.2.B.	We recommend that the 19 boroughs put in place appropriate mechanisms to ensure the application of regulations (13-023 and RCG 13-011), including all the provisions laid down therein for both residential and non-residential areas, in order to promote the use of good practices and, consequently, the conservation of drinking water.
4.3.2.2.C.	We recommend that the Service de l'eau continue its efforts to finalize the guide for the use of drinking water regulations (13-023 and RCG 13-011) in order to facilitate their application by all the boroughs.
BUSINESS UNITS' RESPONSES	
4.3.2.2.B.	<i>The 19 boroughs</i> [TRANSLATION] On May 12, 2017, our offices had not yet received the action plans of three boroughs (L'Île-Bizard–Sainte-Geneviève,

	<p>Montréal-Nord and Pierrefonds-Roxboro). Sixteen boroughs have sent us their action plans.</p> <p>Instead of presenting the individual responses of all business units to the recommendation, here is a summary or an excerpt from their action plans:</p> <p>Overall, the boroughs' action plans indicated that it was important to have regulations on the use of drinking water. Nearly all the action plans outlined the steps to be taken to implement the recommendation by 2017.</p> <p>These key corrective measures are:</p> <ul style="list-style-type: none"> · Implementation of a mechanism to remind applicants for drinking water permits of the existence and importance of regulations on the use of drinking water; · Raising public awareness of regulations on the use of drinking water. <p>Also, almost all the action plans received include the following:</p> <p><i>[TRANSLATION] "It is important that the corporate departments involved work with the boroughs to create an implementation plan that will clearly identify the resources [...] from the corporate department or boroughs who will ensure that these upgrading provisions are implemented. Prior to all this, the corporate departments will provide a qualitative and quantitative overview of the equipment to be upgraded."</i></p> <p style="text-align: center;">Auditor General's comments</p> <p>It is important to bear in mind that the powers to enforce the two regulations on the use of drinking water (13-023 and RCG 13-011) were delegated to the boroughs by city council in 2013.</p>
4.3.2.2.C.	<p><i>Service de l'eau</i></p> <p><i>[TRANSLATION] Send the boroughs the support guide for enforcing the regulations on water-cooled equipment. (Planned completion: April 2017)</i></p>

4.3.3. Measure 2 – Production of a Report

4.3.3.A. Background and Findings

Measure 2 requires the production of a water use report, measurement of production and distribution with calibrated flow meters and, if required, a leak detection and repair program. QSDWC specifies the following with regard to the requirements of Measure 2 concerning potential water losses:

Effective April 1, 2012, in order to submit an application for financial assistance, all municipal bodies must provide a water use report based on 2011 data and updated for subsequent years.

Effective April 1, 2012, if the report shows a leakage rate in the distribution system greater than 20% of the volume of drinking water produced, or 15 m³/d/km, the municipal body must put in place a leak detection and leak repair program for its drinking water distribution system.¹⁶

In addition, MAMOT provided additional details on flow meter verification and the requirement that each flow meter be equipped with a data logger. MAMOT also stated in its *Rapport annuel de l'usage de l'eau potable* (for 2014), published in 2016, its requirements regarding the auscultation investigation of the system:

- *“Since 2015, the accuracy of any flow meter required to calculate the amount of water distributed must be checked annually. The accuracy of the flow meters required to calculate the amount of water distributed must be verified by September 1, 2016, and must be acceptable (maximum margin of error = 5%) by September 1, 2017.”*
- *“Since 2014, any flow meter and reservoir required to calculate the amount of water distributed must be equipped with a data logger.”*
- *“Since 2013, any system exceeding one of the potential water loss objectives (20% and 15 m³/d/km) must undergo a 100% auscultation investigation each year.”¹⁷*

4.3.3.1. Status Report and Action Plan for the Ministère des Affaires Municipales et de l'Occupation du Territoire

4.3.3.1.A. Background and Findings

Regarding production of the water use report, MAMOT also provides a digital form to standardize the presentation of data for all municipalities. This report is then included in the drinking water use form. It includes a profile of water consumption and a status report on potential water losses.

¹⁶ *Op. cit.*, p. 22.

¹⁷ *Op. cit.*, p. 5.

As previously mentioned, the drinking water use form, including this report, was sent to MAMOT for the years 2011 to 2015. The documents obtained show that the drinking water use form, including this report, was approved by MAMOT, for each of these years.

4.3.3.2. Measurement of Water Production and Distribution with Calibrated Flow Meters

4.3.3.2.A. Background and Findings

The city exports water to the municipality of Charlemagne, as well as to the related municipalities in the territory of the Montréal agglomeration. To determine these quantities of water, the city needs flow meters that measure the quantity of water produced and distributed; these must be located at the entry to the system of the related cities. According to information obtained from Service de l'eau personnel, a number of flow meters had already been installed for several years.

QSDWC requires that water be measured with calibrated flow meters. Put another way, these flow meters must provide a certain degree of accuracy in water measurement. In order to comply with this aspect of Measure 2, when the drinking water use form for 2013 was to be sent to MAMOT, the Service de l'eau attached an action plan to comply with the requirement for annual verification of flow meter accuracy. This verification then enabled the city to ensure that the water distribution data were valid.

Thus, MAMOT initially set a schedule for the annual verification of flow meters required for the amount of water distributed. In July 2016, it revised this schedule, stating that: *"the deadline of September 1, 2016 for verifying flow meter accuracy will be put back to a later date if a municipality completes at least five additional verifications per year as of 2016"*¹⁸.

The last drinkable water use form was in 2015 and, as a result of these revised schedules, no other documents related to flow meters were sent to MAMOT.

In our opinion, given these new requirements by MAMOT, the Service de l'eau should review its action plan for annual flow meter verification to meet the requirements and the revised schedules.

In addition, with regard to flow meters, MAMOT also requested within the framework of QSDWC that, as of 2014 *"any flow meter and reservoir required to calculate the quantity of water distributed must be equipped with a data logger"*¹⁹. Data loggers

¹⁸ MAMOT press release – *Révision des échéanciers*, July 18, 2016.

¹⁹ *Rapport annuel de l'usage de l'eau potable 2014*, p. 5.

permit recording of the amount of water distributed in the system and calculation of QSDWC's performance indicators.

According to the information obtained from Service de l'eau personnel, none of the flow meters that calculate the quantity of water distributed has a data logger. Thus, although some flow meters are connected to a telemetry system that has the ability to record data, others are not connected to this system and do not have an individual data logger.

Although the flow meter action plan sent to MAMOT with the drinking water use form for 2013 demonstrates that significant efforts were being made to ensure compliance with QSDWC, we believe that the action plan must also be reviewed to ensure that any flow meter used to calculate the amount of water distributed complies with the data logger requirement.

RECOMMENDATION

4.3.3.2.B. We recommend that the Service de l'eau revisit the action plan concerning flow meter verification and update it, in order to consider all of the requirements and schedules of the Ministère des Affaires municipales et de l'Occupation du territoire, and thus minimize the risk of jeopardizing the financial assistance granted by the Government of Québec, and above all to reduce the uncertainty associated with the reliability of the indicators.

BUSINESS UNIT'S RESPONSE

4.3.3.2.B. *Service de l'eau*
[TRANSLATION] The action plan for upgrading and calibrating the flow meter chambers in the system was updated in February 2017. The updated action plan was sent to the Auditor General for information. **(Planned completion: April 2017 – Completed)**

4.3.3.3. Implementation of the Leak Repair and Detection Program

4.3.3.3.A. Background and Findings

According to the last Annual Report (for 2014) on drinking water use published in 2016 by MAMOT, QSDWC's overall goal regarding potential water losses, namely to limit losses to a maximum of 20% of the total volume of water distributed and a maximum of 15 m³/d/km, had still not been achieved. As a result, the municipalities, including Montréal, must continue their efforts to reduce water losses. Specifically, with respect to the city, Table 2 (see page 160) indicates that estimates of potential water losses had

been relatively high in relation to the goals to be achieved for the entire province of Québec since 2011. As a result, the city needed to implement a leak detection and repair program across the system, as required by QSDWC.

It is important to note that leakage data are based on estimates whose reliability remains questionable despite the fact that there is a recognized methodology for estimating losses in drinking water systems.²⁰ According to the Service de l'eau, this margin of uncertainty "*will be greatly reduced when the water consumption measurement program and the sectorization of the systems are sufficiently advanced*"²¹, or when more meters and flow meters are operational.

Since 2001, the maintenance of secondary water systems has been delegated to the boroughs. As Montréal is a related city, maintenance of the primary system, which falls under UAC's jurisdiction, has been sub-delegated to the boroughs since 2005.

For the period after 2011, which we have been examining, the Service de l'eau entered into partnership agreements with the boroughs concerning corrective maintenance activities, in particular for the repair of breakages and leaks in drinking water lines. Under these agreements, the boroughs had undertaken to participate in the detection of leaks and in the repair of breakages and leaks. In addition, according to the documents obtained, the Service de l'eau has also been participating in the systematic detection of leaks in the city's territory using a specialized team, 2013.²² As part of the water systems maintenance program, the Service de l'eau used a computer application in collaboration with the boroughs to log the number of localized leaks and the repairs carried out.

However, although several interventions have been carried out since 2011, there have been no specific directives issued by the Service de l'eau regarding oversight of the work carried out by the boroughs, in particular in assigning priorities to the types of repairs to be done and their related deadlines, taking into account the importance and scope of the tasks to be carried out.

QSDWC required that a leak detection and repair program be established. Such a program should specify certain important aspects of leak detection and repair to facilitate interventions with the boroughs and to better coordinate resources for carrying out the work, based on established priorities.

In addition, as previously mentioned, in accordance with MAMOT's requirements, since 2013 any system exceeding one or other of the potential water loss goals (20% or 15 m³/d/km) had to undergo a 100% auscultation investigation each year. Table 3

²⁰ American Water Works Association.

²¹ Ville de Montréal (Service de l'eau), *Bilan 2015 – Usage de l'eau potable*, Annual Report, June 2016, p. 9.

²² The *Analyse Réseau Soutien aux Opérations* team.

shows, for the years 2011 to 2015, the percentage of the system on which systematic leakage searches were made.

Table 3 – Percentage of Water System on Which Systematic Leakage Searches Made

2011	2012	2013	2014	2015
87%	90%	80%	72%	86%

Source : The city's annual reports on drinking water use.

In the Annual Reports filed with the authorities for 2011, 2012 and 2013, it was stated that the Service de l'eau was targeting an annual screening rate of 100%. Although this requirement had been in effect since 2013 and the Service de l'eau was targeting an annual screening rate of 100%,²³ this rate was not achieved for that year, as shown in Table 3.

In our opinion, since estimates of potential water losses are high, efforts must be made to ensure that 100% of the water system undergoes an auscultation investigation annually.

RECOMMENDATION	
4.3.3.3.B.	<p>We recommend that the Service de l'eau:</p> <ul style="list-style-type: none"> · issue appropriate directives on certain important aspects of the leak detection and repair program to facilitate interventions by the boroughs under the established frameworks; · ensure that the entire drinking water distribution system undergo a leak detection and repair program, in accordance with the requirements of the Québec Strategy for Drinking Water Conservation, with a view to minimizing water losses and reducing the risk of losing Government of Québec funding.
BUSINESS UNIT'S RESPONSE	
4.3.3.3.B.	<p><i>Service de l'eau</i></p> <p><i>[TRANSLATION] The Service de l'eau maintains that the drinking water system monitoring strategy must allow the system to be inspected at the appropriate frequency. This frequency must be based on the risk of a break in a given water line. Therefore, inspecting 100% of water</i></p>

²³ Ville de Montréal (Service de l'eau), *Bilan de l'usage de l'eau potable 2013*, Annual Report, August 2014, p. 2.

lines annually is not necessary because some of the lines in the system were installed recently and are unlikely to break. **(Planned completion: Ongoing efforts)**

The following actions are planned:

1. Issue a directive on leak repair times and follow up on the boroughs' compliance with these requirements in the annual status report on secondary water systems. **(Planned completion: October 2017)**
2. Make submissions to MAMOT to clarify water system monitoring frequency requirements. **(Planned completion: April 2017)**

4.3.4. Measure 3 – Installation of Meters

4.3.4.A. Background and Findings

As of April 1, 2014, if provincial targets of at least a 10% reduction in unit consumption and a leakage rate of less than 20% or 15 m³/d/km were not achieved compared to the base year, municipal bodies, in order to obtain all the financial assistance they could receive for water infrastructure projects, would have to install meters in targeted non-residential and mixed-use buildings, as well as assessing typical residential consumption.²⁴

This measure therefore applied when both goals were not met. As previously noted, for Québec as a whole, the goal for potential water losses was still not achieved compared to the base year. For example, the proportion of potential water losses relative to the amount of water distributed varied between 26% and 28% for the last four years covered in MAMOT's last Annual Report for all municipalities of Québec (see Table 2). However, QSDWC specified the following:

A municipal body will be exempt from cross-compliance related to the application of Measure 3 if it meets the two following conditions:

- *Its report indicates a unit consumption below the first Canadian quartile,²⁵*
- *Its leakage rate is less than 20% and than 15 m³/d/km.²⁶*

Since both goals (regarding leakage) were not met and the city did not fulfill the two conditions, it will have to implement this measure.

²⁴ Québec Strategy for Drinking Water Conservation, p. 25.

²⁵ The city was not in the first Canadian quartile.

²⁶ *Op. cit.*, p. 25.

4.3.4.1. Installation of Meters

4.3.4.1.A. Background and Findings

One of QSDWC's aims was the gradual installation of meters in non-residential buildings (ICI) and certain targeted mixed-use buildings. The mixed-use buildings concerned are those in which a portion is used for any commercial activity known for its heavier use of water (accommodation, beauty salon, food retail, laundry, cleaners). Any building housing this type of activity must have a water meter installed.

MAMOT had set September 1, 2017, as the deadline for completing the installation of the water meters. However, a press release dated July 18, 2016, available on its website, states that this deadline was put back to September 1, 2018. It also states that if a municipality installs more than 1,000 meters per year from 2018, this deadline would be changed to September 1, 2018.²⁷

Although QSDWC does not provide for the installation of water meters in residential areas, it requires that municipalities determine typical residential consumption in order to more accurately estimate this component, which accounts for a significant proportion (40%) of drinking water consumption, according to the 2014 Annual Report filed with the authorities.²⁸ QSDWC's gradual approach, announced in 2011, also provides for the installation of meters in a sampling of residential buildings for the purpose of establishing a record. The installation must be completed by September 1, 2018.²⁹ According to MAMOT, the municipality can use a representative sampling of the residential area, but emphasizes that the estimate is essential to specify the leakage rate in drinking water distribution systems. This estimate also helps to better target the regulations to be put in place and makes it easier to establish a possible pricing scenario.³⁰

The city had been planning to install meters in ICIs for several years. In 2007, as part of an earlier project, the city planned to install 30,500 units. However, this project was abandoned. In 2011, the city planned to implement another project related to the installation of water meters. Montréal's Water Strategy, approved in June 2012, provided for the installation of 16,200 meters over a six-year period. The reduction in the number of meters to be installed was attributable to the fact that the program was mainly limited to ICIs that consume large quantities of drinking water and thus would contribute more significantly to lowering consumption.

²⁷ MAMOT press release – *Révision des échéanciers*, July 18, 2016.

²⁸ Consumption of drinking water by sector: ICI 58%, residential 40% and municipal 2%. Ville de Montréal (Service de l'eau), *Bilan 2014 – Usage de l'eau potable*, Annual Report, June 2015, p. 8.

²⁹ MAMOT, *Rapport annuel de l'usage de l'eau potable 2014*, 2016, p. 8.

³⁰ QSDWC, p. 24.

However, this 16,200 meter installation project originally planned in Montréal's Water Strategy has since been modified. It originally targeted ICIs in the city, but was revised to include ICIs in the reconstituted municipalities for a total of 23,500 buildings with meters installed throughout the agglomeration. The project was to be implemented over 10 years (July 2012 - July 2022). According to the 2015 Annual Report filed with the authorities, these 23,500 meters were expected to be installed by July 2022. In 2015, 2,309 meters were installed, for a total of 7,032 compliant operational meters.³¹

The use of meters is important in the preparation of a more accurate assessment of water use and is closely linked to user fees. The margin of error in estimates of leakage is still relatively high, and one way to reduce this would be to use a better method of measuring consumption. The city's preferred method is sectorization.

Unless there is a major change, and if the trend of the past two years continues, the city should not have too much difficulty in installing 1,000 water meters per year, thus fulfilling MAMOT's requirement. However, it might have difficulty installing 23,500 meters by July 2022. This goal is more ambitious and could even be revisited in light of decisions that will be needed to be made by the administration regarding the introduction of user fees, which could be applied with more precision if there is a better knowledge of water consumption in both the residential and non-residential sectors. Measure 4 also aims to introduce adequate user fees for 2018. This schedule is very tight when one considers the degree of unreliability that currently characterizes the data used to establish MAMOT's two performance indicators.

RECOMMENDATION

4.3.4.1.B.

We recommend that the Direction générale, having taken into account the user fee model preferred by the authorities, ensure:

- that the schedule for the installation of water meters by the city correlate with the schedule set by the Québec Strategy Drinking for Water Conservation to establish user fees;
- that the assessment of typical consumption in the residential sector be carried out in accordance with the established schedule, with a view to obtaining a better knowledge of drinking water consumption in this sector in anticipation of the user fee option being chosen.

Furthermore, these initiatives should be aimed at reducing drinking water consumption by the various users.

³¹ *Op. cit.*, p. 14.

BUSINESS UNIT'S RESPONSE

4.3.4.1.B.

Direction générale

[TRANSLATION] In the fall of 2016, the Direction générale mandated the Service des finances and the Service de l'eau to introduce user fees for drinking water. The city intends to introduce appropriate user fees for drinking water in ICIs in 2018 or 2019, which will lead to a significant reduction in water consumption in ICIs in accordance with the objectives of the QSDWC. It has been confirmed with the Service des affaires juridiques that user fees can be introduced as soon as water meters are installed, which may help speed up the installation process.

*The city has several thousand meters in the industrial area, essentially in the borough of Saint-Laurent. Our measurements confirm the average recommended by MAMOT for water budgets. Establishing pressure regulation areas will also allow water consumption to be metered in essentially residential areas. **(Planned completion: April 2017 – Completed)***

Auditor General's comments

However, we believe that it is premature to suggest at this stage that the recommendation has already been implemented (rather it is under way) because there are still several steps to be completed before user fees for ICIs are introduced throughout the city, despite the fact that user fees can be introduced as soon as water meters are installed.

For example, the following steps still need to be completed:

- **Installing (compliant and operational) meters in target ICIs throughout the city;**
- **Introducing user fees for all target ICIs throughout the city, which includes setting rates and adopting regulations.**

For this reason, we believe it is important to ensure that the timelines set out in the recommendation are adequate, particularly in view of the comments of the Direction générale in the action plan indicating that the city intends to introduce appropriate user fees for drinking water in ICIs in 2018 or 2019.

As far as completing the assessment of typical consumption in the residential area is concerned, we also

believe that it is premature at this stage to suggest that the recommendation has already been implemented (rather it is under way), because some steps still need to be completed, including:

- Developing and implementing a representative sampling of the city for the residential area;
- Establishing typical residential consumption.

4.3.4.2. Assessment of Typical Residential Consumption

4.3.4.2.A. Background and Findings

In general, the residential sector has a relatively high level of drinking water consumption (40%), as previously seen. QSDWC provides that typical residential consumption should be assessed when water loss performance indicators are not met. According to information obtained from MAMOT, the due date is the same as for the installation of meters, i.e., September 1, 2018. Assessment of residential water use can be very useful in estimating the consumption of different types of residential users, in order to accurately determine the leakage rate of water supply systems and establish measures for conserving drinking water. A representative sampling must be performed to obtain reliable estimates.

Assessment of residential consumption requires the development of a methodology and the installation of a number of water meters or flow meters. Since January 26, 2017, MAMOT has authorized a new procedure for estimating residential consumption: sectorization using flow meters.³²

The 2010-2015 sustainable development plan included a method for identifying water consumption by sector of activity, and more specifically, by sampling. However, according to the report of the sustainable development plan, this commitment had not been met and the 2016-2020 sustainable development plan does not foresee any similar action.

In the drinking water use form for 2015 sent to MAMOT, the Service de l'eau had set the date for completing the estimation of residential consumption as December 2021, including the meter installation.

In consideration of the new option provided by MAMOT for assessing residential drinking water consumption using sectorization with the installation of meters or flow meters, and given that there are different schedules, we believe the Service de l'eau

³² MAMOT press release, January 26, 2017.

should review its schedule in light of its implementation strategy and QSDWC's requirements in this regard.

RECOMMENDATION

4.3.4.2.B. We recommend that the Service de l'eau review the schedule for assessing residential drinking water consumption planned for December 31, 2021, in light of the requirements of the Québec Strategy for Drinking Water Conservation, which has an earlier deadline, in order not to compromise financial assistance from the Government of Québec.

BUSINESS UNIT'S RESPONSE

4.3.4.2.B. ***Service de l'eau***

[TRANSLATION] We have several thousand residential meters in the borough of Saint-Laurent and some others outside Saint-Laurent. Our measurements are currently below the average recommended by MAMOT for water budgets. The Service de l'eau is working on two parallel tracks, while seeking to optimize its resources: sampling of the residential area and using system sectorization data. The current management approach has been to focus available resources on measuring the ICI sector and take advantage of opportunities to install residential meters in new buildings. There is constant dialogue with MAMOT regarding residential area estimation methods. The following actions are planned:

- 1. Use pressure regulation areas with few ICIs, with the night flow method, to complete sampling of the residential area;*
- 2. Use Réseau environnement to exchange measurement and sampling results from the residential area with other cities. A working committee is under way with MAMOT. (Planned completion: May 2018)*

4.3.5. Measure 4 – Establishing User Fees

4.3.5.A. Background and Findings

Establishing appropriate user fees was one of the measures provided for in QSDWC in the event that its overall goals were not achieved for Québec as a whole. It states that *"if the provincial targets for reducing unit consumption and a leakage rate of less than 20% or 15 m³/d/km are not met, the non-exempt municipal bodies, in order to benefit from all the financial assistance that could be promised for water infrastructure projects, must have established appropriate user fees for water services"*⁶³.

³³ *Op. cit.*, p. 26.

As previously noted, MAMOT indicated that, for Québec as a whole the goal for potential water losses had still not been achieved. In addition, in its *Rapport annuel de l'usage de l'eau potable* for 2014, MAMOT indicated that appropriate fees had to be put in place if objectives were not achieved by the time of the 2016 report, with the implementation expected as of 2018.³⁴ However, QSDWC specified the following:

A municipal body will be exempt from cross-compliance related to the application of Measure 4 if it meets the following two conditions:

- *Its report indicates a unit consumption lower than the first Canadian quartile;*
- *Its leakage rate is less than 20% and 15 m³/d/km.³⁵*

Since both goals (regarding leakage) were not achieved and the city did not fulfill the two conditions, it was obliged to implement this measure.

It should be added that QSDWC indicates that "*fees apply to users of non-residential buildings that receive water from municipal distribution systems*". It then adds the following: "*Appropriate user fees for water services contribute to achieving the goal of reducing drinking water consumption and waste*" and "*can effectively incentivize users to consume water more efficiently*".³⁶

Our audit work revealed that the 6,762 meters³⁷ installed in ICI buildings were used for billing. These meters mainly concerned buildings located in boroughs created from former suburban towns. Fees were applied in accordance with by-laws adopted by the boroughs. However, these fees differed among the boroughs. In boroughs created out of the former Ville de Montréal, there were no by-laws covering drinking water user fees. It should be noted that the regulations governing such fees in the city are not standardized.

In addition, there is also a by-law on taxes³⁸ that provides for a drinking water tax based on the municipal assessment for all boroughs. Thus, drinking water is subject to user fees and taxation.

As previously described, the new meter installation project involves installing a total of 23,500 meters throughout the agglomeration. Currently, 7,032 compliant and operational meters have been installed. The deadline for meter installation has been set for July 2022.

³⁴ *Op. cit.*, p. 5.

³⁵ *Op. cit.*, p. 26.

³⁶ *Op. cit.*, p. 25.

³⁷ Status report dated February 3, 2017.

³⁸ By-law Concerning Taxes (2017 fiscal year), no. 16-066, city council of the Ville de Montréal, adopted on December 14, 2016.

In addition, the drinking water use form sent to MAMOT included a section on water service costs. According to information obtained from city staff, there is a strong commitment to determine the full cost of water service.

We believe this is an important initiative, in order to ensure that the cost of water services to be determined as accurately as possible. We also believe it is important to have the answer quickly, since the setting up of user fees will need to be based on it.

In our view, there are still many steps that need to be taken before implementing user fees. A working committee to initiate discussion on such fees was only created in the fall of 2016, while QSDWC has scheduled the implementation of these fees for 2018. Meanwhile, the city's goal was to install 23,500 water meters by July 2022, an essential condition in precisely determining the amount of drinking water consumption in the non-residential sector. It also set an almost identical schedule for undertaking a consumption assessment through sectorizing of the residential sector. These aspects all contribute to the establishment of user fees. However, we are convinced that coordinated schedules for implementing water meters and user fees are necessary to bring these two processes to completion within the deadlines set by MAMOT and to achieve the goals of Montréal's Water Strategy, specifically regarding meter installation, since there are already regulations in place for water use fees in almost all boroughs created from the former suburban municipalities.

Furthermore, according to documents consulted and information obtained concerning the working committee set up by the city manager to examine user fees, no representative of the Service du développement économique sits on this committee. Also, implementing user fees will invariably have an economic impact on ICIs and residents. We believe that any discussion of user fees, and the issues related to the financing of water service costs, would involve some complex economic arguments. This committee must be able to draw on all the expertise necessary to submit an enlightened proposal that fulfills the city's needs and, ultimately, QSDWC's requirements. In our view, the possibility of including the Service du développement économique in this committee should be reconsidered, given the economic stakes involved.

RECOMMENDATIONS

4.3.5.B.

We recommend that the Direction générale, having taken into account the user fee model preferred by the authorities, ensure:

- that the schedule for the installation of water meters by the city correlate with the schedule set by the Québec Strategy Drinking for Water Conservation to establish user fees;
- that the assessment of typical consumption in the residential sector be carried out in accordance with the established schedule, with a view to obtaining a better knowledge of drinking water consumption in this sector in anticipation of the user fee option being chosen.

Furthermore, these initiatives should be aimed at reducing drinking water consumption by the various users.

4.3.5.C.

We recommend that the Direction générale examine the possibility of integrating the Service du développement économique into the committee responsible for analyzing the application of user fees, so that this committee may benefit from all the expertise necessary to develop a strategy for submission to the administration aimed at promoting better use of drinking water and equity among the various users.

BUSINESS UNIT'S RESPONSES

4.3.5.B.

Direction générale

[TRANSLATION] In the fall of 2016, the Direction générale mandated the Service des finances and the Service de l'eau to introduce user fees for drinking water. The city intends to introduce appropriate user fees for drinking water in ICIs in 2018 or 2019, which will lead to a significant reduction in water consumption in ICIs in accordance with the objectives of the QSDWC. It has been confirmed with the Service des affaires juridiques that user fees can be introduced as soon as water meters are installed, which may help speed up the installation process.

The city has several thousand meters in the industrial area, essentially in the borough of Saint-Laurent. Our measurements confirm the average recommended by MAMOT for water budgets. Establishing pressure regulation areas will also allow water

	<p>consumption to be metered in essentially residential areas. (Planned completion: April 2017 – Completed)</p> <p>Auditor General’s comments</p> <p>However, we believe that it is premature to suggest at this stage that the recommendation has already been implemented (rather it is under way) because there are still several steps to be completed before user fees for ICIs are introduced throughout the city, despite the fact that user fees can be introduced as soon as water meters are installed.</p> <p>For example, the following steps still need to be completed:</p> <ul style="list-style-type: none"> · Installing (compliant and operational) meters in target ICIs throughout the city; · Introducing user fees for all target ICIs throughout the city, which includes setting rates and adopting regulations. <p>For this reason, we believe it is important to ensure that the timelines set out in the recommendation are adequate, particularly in view of the comments of the Direction générale in the action plan indicating that the city intends to introduce appropriate user fees for drinking water in ICIs in 2018 or 2019.</p> <p>As far as completing the assessment of typical consumption in the residential area is concerned, we also believe that it is premature at this stage to suggest that the recommendation has already been implemented (rather it is under way) , because some steps still need to be completed, including:</p> <ul style="list-style-type: none"> · Developing and implementing a representative sampling of the city for the residential area; · Establishing typical residential consumption.
<p>4.3.5.C.</p>	<p>Direction générale</p> <p><i>[TRANSLATION] The Service du développement économique has been involved in the working group on objectives regarding user fees for drinking water in ICIs. (Planned completion: April 2017 – Completed)</i></p>

4.3.6. Measure 5 – Annual Report

4.3.6.A. Background and Findings

Measure 5 requires the submission of an Annual Report on water management to CC. It reads as follows:

Beginning in 2012 and for subsequent years, all municipal bodies will be required to submit an annual report on water management to a council meeting no later than April 1 each year, in order to be able to submit a request for financial assistance. This report should include a water use totals and an action plan update. For example, the 2011 report should be completed and adopted by April 1, 2012.³⁹

Since the adoption of QSDWC, the Service de l'eau has assumed responsibility for preparing documents to fulfill QSDWC's requirements, which entails the collection of all necessary information. Thus, this measure takes the form of an accountability statement addressed to the authorities. Its aim must be to foster informed decision-making that will guide the planning and allocation of necessary resources and thus ensure compliance with QSDWC.

For example, QSDWC prescribes a form of accountability to municipalities that is effectively compulsory as it is subject to environmental criteria; thus, to apply for financial assistance of water infrastructure projects, this measure must have been implemented by April 1, 2012.

Our audit work initially consisted of investigating the accountability mechanisms put in place to produce this report for the information of the authorities. We wanted to know if the existing mechanisms were sufficient for informing the authorities of all requirements and all QSDWC-related issues. With respect to reviewing documents produced for the purpose of compliance with QSDWC, our work focused mainly on the 2015 documents and, more generally, dealt with the process of filing the Annual Report for 2011 and subsequent years.

Our audit work has shown that real efforts have been made to respond to Measure 5. The Annual Reports for the years 2011 to 2015 were submitted to the authorities. However, we found that, for all Annual Reports, submissions to CC or UAC were made after the deadlines set by QSDWC, which requires that they be submitted by April 1 of

³⁹ Québec Strategy for Drinking Water Conservation, p. 27.

each year.⁴⁰ We also found that the 2011 and 2012 reports were submitted only to CC, while the 2013, 2014 and 2015 reports were submitted to both CC and UAC.

In addition, according to the documents examined and the information obtained from Service de l'eau staff, other accountability mechanisms were put in place by the Service de l'eau to inform decision-makers about the progress of QSDWC and about Montréal's Water Strategy. These mechanisms include progress reports on specific topics such as water meters, meetings with management, PowerPoint presentations to committees, tracking tables, specific assessments and reports on *La Patrouille bleue*.

However, while the Annual Report and these documents do supply a great deal of information, our audit work has revealed that for certain QSDWC-related issues, including user fees and application of drinking water regulations, the mechanisms in place are not adequate for informing the decision-makers. For example, the 2015 Annual Report on water use filed with CC and UAC states, with respect to fees: "*maintenance of existing fee model until now*"⁴¹. We found that this Annual Report and the other documents reviewed did not include any other information regarding fees in order to be compliant with QSDWC. We noticed that, during the presentation of the Service de l'eau's 2017 budgetary forecasts to the Finance and Administration Committee on December 6, 2016, the managers who attended were not sufficiently informed.

Indeed, the managers who attended this meeting did not seem to be aware of QSDWC's Measure 4 regarding the implementation of a fee that would apply if the second indicator (leakage rate) described by MAMOT had not been achieved for Québec as a whole. The content of their responses showed that they were not familiar with any aspects of these fees, although the deadline for their implementation was approaching.⁴²

In our view, the accountability mechanisms in place did not adequately inform these decision makers on all QSDWC-related issues, particularly regarding the fees under Measure 4.

⁴⁰ 2011 Annual Report: filed with CC on June 18, 2012 (CM12 0440).
2012 Annual Report: filed with CC on August 26, 2013 (CM13 0685).
2013 Annual Report: filed with CC on August 18, 2014 (CM14 0666) and with UAC August 21, 2014 (CG14 0331).
2014 Annual Report: filed with CC on August 17, 2015 (CM15 0844) and with UAC on August 20, 2015 (CG15 0441).
2015 Annual Report: filed with CC on August 22, 2016 (CM16 0824) and with UAC on August 25, 2016 (CG16 0449).

⁴¹ 2015 Annual Report, p. 5.

⁴² The initial deadline was April 1, 2017, but it was changed to 2018, based on information obtained from MAMOT.

Since the Annual Report required under QSDWC has to be addressed to city authorities, it is important that the information contained therein be supported by a rigorous information collection process that permits the collection of all required information. In addition, in order for accountability to be optimal in terms of content quality, it must be subject to an information validation process.

First, we wanted to know if the information collection process permitted collection of all the relevant information needed to produce the Annual Report. Our audit work has revealed that, for certain actions to fulfill QSDWC's requirements, collection processes were put in place, thus permitting information collection. For example, for the search and repair of leaks, registers and tables were made with contributions from the boroughs. However, for other actions, the process in place did not permit collection of all the relevant information needed for useful accountability. As an example, in the application of the regulations, only data from three boroughs were considered, whereas we found that a total of 15 boroughs (including those three) carried out inspections or interventions to apply water use regulations. In addition, the Annual Report does not provide a status report on the application of RCG 13-011 as it relates to certain equipment in ICIs, including air conditioning and cooling units. Furthermore, information about sending leaflets to ICIs aimed at raising awareness about RCG 13-011 was not included in the 2015 Annual Report.

Second, we wanted to enquire about the existence of other mechanisms in place to ensure the reliability of information provided. A review of the documents obtained shows that a tracking chart was prepared in support of the declarations made in the 2015 drinking water use form sent to MAMOT. Information included in this form can also be found in the Annual Report. This tracking chart indicates the source of the evidence obtained. However, it has not been demonstrated to us that all the information in this chart was validated, particularly with regard to the degree of the file's progress. In our opinion, the process for ensuring reliability of the information obtained should be documented. In addition, we did not find a similar tracking chart in support of the information provided in the Annual Report. We believe that this information should also be subjected to a mechanism to ensure its reliability.

In order to ensure that the activities carried out contribute to compliance with QSDWC, evaluation mechanisms must be put in place. These would enable us to evaluate, first, whether the actions taken are achieving the necessary results aimed at fulfilling QSDWC's requirements and, second, would render it possible, where necessary, to make the adjustments needed to achieve the ultimate goals.

To this end, the Service de l'eau's annual accountability report provides an opportunity to evaluate periodically, through product indicators, the degree to which its actions are progressing toward the achievement of QSDWC's goals.

QSDWC was approved more than five years ago, in 2011. Since then, the city has carried out several activities to fulfill QSDWC's requirements. However, we have not found an overall performance assessment of these activities enabling us to be sure that the Service de l'eau has covered all the issues raised in QSDWC, including all of the recommended actions, compliance with schedules, and the adjustments needed to achieve the expected goals. This certainly raises questions about the need to develop an integrated action plan.

According to the information obtained from Service de l'eau staff, some of the actions carried out to address QSDWC's requirements were evaluated, but not all.

In addition, although the Service de l'eau often uses Montréal's Water Strategy as a reference for QSDWC's requirements, there is still no report containing a status report on the progress of the action plan of Montréal's Water Strategy for the period 2011-2015, whereas it was approved by UAC in June 2012.

We did obtain a summary progress report on the work, which refers to the five issues of Montréal's Water Strategy, to the detection and correction of leaks, and to meter installations in ICIs. However, this summary progress report does not cover all of the QSDWC issues, particularly those involving user fees.

Although developing and preparing a strategic progress report on Montréal's Water Strategy action plan is essential, it seems to us that it is equally important that an overall performance assessment of the implementation of measures to fulfill QSDWC's specific requirements be carried out periodically, before submitting the accountability report to the authorities.

RECOMMENDATIONS

4.3.6.B. We recommend that the Service de l'eau have mechanisms in place to ensure, on the one hand, that all the information is collected, and on the other, that it is reliable, in order to provide decision-makers with an accurate account of all the issues covered by the Québec Strategy for Drinking Water Conservation, thus enabling them to make an informed decision.

4.3.6.C. We recommend that the Service de l'eau carry out an overall performance assessment of the implementation of measures, in order to fulfill all the requirements of the Québec Strategy for Drinking Water Conservation and to enable decision-makers to make appropriate decisions that would ensure obtaining financial assistance from the Ministère des Affaires municipales et de l'Occupation du territoire.

BUSINESS UNIT'S RESPONSES	
4.3.6.B.	<p>Service de l'eau</p> <p>[TRANSLATION] A table of sources of information will be appended to the 2016 water budget. (Planned completion: June 2017)</p>
4.3.6.C.	<p>Service de l'eau</p> <p>[TRANSLATION] A summary table of requirements, results and planning will be set up for the next reporting period. (Planned completion: June 2017)</p>

5. Conclusion

Since the issues raised by the question of sustainable water management are central to some of our major concerns in the 21st century, both locally and globally, the Government of Québec, through its Québec Strategy for Drinking Water Conservation (QSDWC), has set two goals supported by five measures aimed at incentivizing municipalities to achieve significant savings in drinking water consumption and costs.

The Government of Québec has sent a clear message to the municipalities by making the allocation of financial assistance conditional on achieving these two objectives.

For the city, this assistance amounted to \$157.4 million for investment projects related to drinking water infrastructure from 2011 to 2015.

In the wake of sustainable water management, Montréal's Water Strategy, approved in 2012, included aspects that would fulfill the requirements of QSDWC, which was adopted in 2011.

Our audit, with regard to the actions that the Service de l'eau has put in place, confirms that major efforts have made it possible to reduce the total production and average distribution of drinking water per person per day, by 20% and 26% respectively in 2015 across the agglomeration, compared with 2001. It should be noted, however, that additional efforts will have to be made as the Canadian average for drinking water distribution has declined significantly over the years. Indeed, it dropped from 622 litres per person per day in 2001 to 466 litres per person per day in 2013. The same indicator for the Montréal agglomeration shows a decrease in average production from 1,120 litres per person per day in 2001 to 823 litres per person per day in 2015. There is therefore a significant gap to be closed in these two results.

QSDWC's second goal comprises two components. For the first component, the 2015 Drinking Water Use Report indicates that the potential water loss rate obtained in 2015 is estimated at 31%, whereas QSDWC's goal was to achieve less than 20% of the

water volume distributed. For the second component, the leakage rate is estimated at 98 cubic metres per day per kilometre of water line, considerably exceeding the targeted leakage rate under QSDWC of 15 cubic metres per day per kilometre of water line. As a result of these high numbers, all of the measures provided for in QSDWC will be applied to the city.

Moreover, with regard to these figures, our audit work has highlighted the fact that the city did not include a specific action plan concerning QSDWC in the general action plan of Montréal's Water Strategy. As a result, the planning tool does not reflect all of the choices the city needs to make to fulfill the requirements of all the measures, and is accompanied by schedules that do not always accord with those set out in QSDWC. In addition, some shortcomings have been observed with respect to compliance with regulations concerning equipment in industries, companies and institutions (ICI). Also, there is the city's ambiguity in its approach to, and the extent of, water meter installation, which would have made it possible to measure with greater reliability water consumption and losses across the system. Another factor is the city's confusion regarding Measure 4 with respect to user fees.

Our work reveals that a review of the accountability reporting process is necessary, especially as it relies on information that has not been entirely documented. In addition, the issue of Measure 4 on user rates has not been sufficiently clarified in the accountability report regarding QSDWC's requirements. As a result, this accountability report has not properly explained to decision-makers from the outset how this measure would be dealt with. Finally, we did not find an overall performance assessment concerning the implementation of all the measures fulfilling QSDWC's requirements so as to allow discussion on a possible repositioning of the city.

Regarding drinking and water conservation practices in Canada's largest cities, QSDWC states the Montréal had a meter installation rate in ICIs of 23% compared to 100% in Toronto, Vancouver, Ottawa, Edmonton and Winnipeg. According to data from the 2015 Annual Report produced by the Service de l'eau, the installation rate in ICIs was 30% for the Montréal agglomeration. There continues to be a wide gap and much needs to be done to reach the Canadian average in terms of water consumption per person. Studies and data available on this subject indicate an abnormally high level of consumption in Québec, which places it among the heaviest water consuming societies, invariably resulting in high operating costs.

Much work remains to be done to begin fulfilling QSDWC's second goal and to put the required measures in place. This will depend on the will of the administration, as many of the measures require significant investments, including replacement of the primary and secondary systems, the leak detection and repair program, and water meter installation in ICIs.

It is in the city's interest to fulfill QSDWC's requirements if it wishes to avail itself of this significant financial assistance. However, there is still a risk that they will not be met, even though the Ministère des Affaires municipales et de l'Occupation du territoire decided to postpone until now the deadline for certain measures.

But beyond this matter of compliance, it is the responsible management of assets and our environmental responsibility regarding drinking water that should be of greatest concern. The administration must ensure that it makes the right choices and prioritizes the directions that are most appropriate for all Montrealers.

6. Appendix

6.1. Purposes and Evaluation Criteria

Purposes

The purpose of this audit was to ensure that the action plan adopted within the framework of Montréal's Water Strategy would enable the city to meet the goals and measures set out by MAMOT as part of the implementation of QSDWC in relation to the *Québec Water Policy*.

This audit was also aimed at ensuring the application of the current regulations concerning the use of drinking water by the boroughs.

Evaluation Criteria

- The action plan supporting Montréal's Water Strategy includes all the elements necessary to fulfill the government's requirements.
- Reliable mechanisms are in place to assess actions taken to ensure compliance with the QSDWC requirements.
- Reliable mechanisms are in place to ensure follow-up related to the application of the regulations adopted in 2013 (2 regulations: 1 UAC regulation and 1 CC regulation).
- An overall assessment of the performance of the implementation of the action plan is carried out regularly.
- Regular accountability reports, primarily to fulfill QSDWC's requirements, are made to appropriate officials and authorities.