Water Security Agency




Annual Report for 2015-16

State of Drinking Water Quality in Saskatchewan

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Government of Saskatchewan

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Letters of Transmittal

Herb Cox
Minister Responsible for
Water Security Agency

Her Honour the Honourable Vaughn Solomon Schofield,
Lieutenant Governor of Saskatchewan

May It Please Your Honour:

I respectfully submit the Annual Report on the State of Drinking Water Quality in Saskatchewan for the fiscal year ending March 31, 2016.

The Water Security Agency is the primary regulatory agency in the province responsible for ensuring the provision of safe drinking water. The Water Security Agency brings all core aspects of water management together in one agency and strengthens drinking water protection by bringing source to tap protection activities into a single agency.

The Government of Saskatchewan is committed to support communities and keeping our province as a safe place to live and work. Ensuring safe drinking water, effective wastewater treatment and protection of source waters remains a high priority for Saskatchewan. Our government will continue to deliver and build on our commitments to Saskatchewan people.

The initiatives pursued in 2015-16, and the results achieved in the areas of drinking water management, ensuring effective wastewater treatment and protection of source waters are communicated to the legislature and to the people of Saskatchewan through this report. The work of protecting our drinking water is important and this report helps to inform future planning and resource allocation for upcoming years.

The 2015-16 Annual Report demonstrates progress towards the commitments that relate to drinking water and source water protection activities of involved agencies and ministries as of March 31, 2016.

Respectfully submitted,

Letters of Transmittal

Wayne Dybvig
President
Water Security Agency

To Minister Herb Cox
Minister Responsible for
Water Security Agency

I respectfully submit the Annual Report on the State of Drinking Water Quality in Saskatchewan for the fiscal year ending March 31, 2016. I acknowledge responsibility for this 2015-16 report and declare the information contained within this report is accurate, complete and reliable.

The 2015-16 report describes the drinking water related activities of agencies and ministries involved in drinking water and source water protection activities in Saskatchewan. Key partners in protecting and improving Saskatchewan drinking water supplies and source waters include the Water Security Agency, Ministry of Environment, Ministry of Health, Regional Health Authorities, SaskWater, the Ministry of Government Relations and the Ministry of Agriculture.

On behalf of the key partners, the Water Security Agency provides information on our collective accomplishments in the protection, conservation and sustainable development of drinking water and related source water resources during 2015-16.

The management of drinking water, wastewater and source water supplies are a priority for the Water Security Agency and we remain committed to ensuring that all stakeholders are engaged and supported as partners in the management of drinking water supplies and the groundwater and watersheds that supply them. Through ongoing actions under the 25 year plan the Water Security Agency its partners will work to ensure safe and sustainable drinking water and wastewater management in the province.

Provision of safe drinking water is essential to sustaining growth, improving our quality of life, and making life more affordable in Saskatchewan. This annual report on the status of drinking water outlines the activities undertaken in 2015-16 to improve and maintain safe drinking water through responsive and responsible government.

Respectfully submitted,

Introduction

This annual report presents the activities and results of various agencies in managing drinking water in Saskatchewan for the fiscal year ending March 31, 2016. It reports to the public and elected officials on public commitments made and other key accomplishments of ministries and agencies engaged in drinking water management in Saskatchewan.

This is the 14th Annual Report on the Status of Drinking Water in Saskatchewan. This report is intended to inform residents and elected officials of Saskatchewan of the status of drinking water quality, waterworks infrastructure, source water protection and water-related items and measures in the province over the April 1, 2015 to March 31, 2016 period. The report is a legislated requirement under The Environmental Management and Protection Act 2010 and demonstrates the commitment of agencies and ministries engaged in drinking water management to effective public performance reporting, transparency and accountability to the public.

The 2015-16 Annual Report covers the same key measures related to the status of drinking water provided in previous years however the format has been change to reduce duplication with other reports on water. In June 1, 2015 The Environmental Management and Protection Act, 2010 and The Waterworks and Sewage Works Regulations came into effect, with some but limited changes in requirements in comparison with policy and law in comparison to the 2014-15 fiscal year.

Background on Drinking Water

Safe drinking water is a vital component in the protection of public health and disease prevention and therefore essential for the health and well-being of Saskatchewan's citizens. High quality water is important for maintaining natural ecosystems and the species that depend upon them, ensuring the productivity of industry, sustaining commerce and for sustaining growth in the province. The quality of drinking water, the condition of systems that produce it and the protection of source waters remains an important public health, environmental and growth related issue in Saskatchewan at the present time and for the future.

The report outlines the roles, responsibilities and resources of agencies and ministries involved in water management, as well as the regulatory framework and activities undertaken by the Government of Saskatchewan to manage drinking water. The report also discusses operator certification, drinking water quality monitoring, wastewater management, source protection, information management systems and public education initiatives, which are key actions and indicators of performance in improving drinking water quality in Saskatchewan. This report is completed annually in accordance with recommendation 26(d) of the "Report of the Commission of Inquiry into matters relating to the safety of the public drinking water supply in the City of North Battleford, March 28, 2002." Recommendation 26(d) noted "That The Environmental Management and Protection Act be amended to: (d) provide that the unit produce an annual report to the legislature on the state of drinking water quality in the province." The "Report of the Commission of Inquiry" is available from the Water Security Agency.

This report includes contributions from the Water Security Agency, Saskatchewan Ministries of Environment (MOE), Health, Government Relations (GR) and Agriculture (AG), as well as material provided by SaskWater. The Water Security Agency's Environmental and Municipal Management Services Division compiled the report.

An Overview of the Drinking Water Management System and Water Management Agency Roles in Saskatchewan

Since the waterborne disease outbreaks of May 2000, in Walkerton, Ontario and spring 2001 in North Battleford, Saskatchewan, the Government of Saskatchewan has heightened and focused efforts to improve drinking water supplies and protect source waters in the province. The intent of these efforts is to provide safe drinking water. These actions are also intended to reassure the citizens of the province that government is helping to ensure our drinking water is safe.

Several ministries and agencies are involved in the governance, protection and/or provision of drinking water supplies and source waters in Saskatchewan at various times over the 2015-16 fiscal year, including the Water Security Agency, the Ministries of Environment, Health, Government Relations and Agriculture, Regional Health Authorities, and SaskWater.

The Water Security Agency is a Treasury Board Crown Corporation that was created in October 2012 by bringing together: all programs of the former Saskatchewan Watershed Authority; drinking and waste water, aquatic habitat protection permitting, and water quality management programs of the Ministry of Environment; M1 Canal and East Side Pump Plant, and water pumping equipment rental program of the Ministry of Agriculture; and limited scope pipelines from Ministry of Health. The Water Security Agency is currently responsible for managing the water supply, protecting water quality, ensuring safe drinking water, managing dams and water supply channels, reducing flood and drought damage and providing information on water. The Agency works to integrate all aspects of provincial water management to ensure water supplies support economic growth, quality of life and environmental well-being.

The following is a summary of the major roles, priorities and actions of each of the government ministries and agencies involved in drinking water management and source water protection.

Water Security Agency

- ⇨ The Water Security Agency was formed in October 2012 and has assumed the primary role of the former Saskatchewan Watershed Authority and the Saskatchewan Ministry of Environment in water management.
- ⇨ The role of the Water Security Agency:
- ⇨ leads ongoing planning, implementation and reporting associated with drinking water governance and management to which all participating ministries and agencies contribute;
- ⇨ implements, inspects and regulates compliance for 576 licensed municipal waterworks, 73 permitted pipelines, 35 regional or provincial park waterworks, 125 other permitted waterworks (such as trailer courts, limited scope pipelines, institutions and Hutterite colonies), and 604 wastewater facilities under *The Waterworks and Sewage Works Regulations*. There are also 28 industrial waterworks bringing the total to 837 waterworks regulated under *The Waterworks and Sewage Works Regulations*;
- ⇨ issues permits for construction and operation of water and wastewater works;
- ⇨ develops policies, protocols, water quality standards and guidelines to support protection of drinking water and implementation of *The Waterworks and Sewage Works Regulations*;
- ⇨ liaises with the Operator Certification Board (OCB);
- ⇨ manages the Water Security Agency's / Ministry of Environment's drinking water information system, Environmental Management System (EMS) that houses water quality and inspection data for all agency/ministry regulated waterworks and wastewater works in the province;
- ⇨ monitors surface water quality at primary surface water quality stations across the province;
- ⇨ manages the www.SaskH2O.ca website that supplies a broad range of drinking water related information gathered from water management authorities within the province.
- ⇨ monitors source (surface/ground) water;
- ⇨ provides flood forecasting and identifies flood susceptible areas;
- ⇨ leads watershed and aquifer planning;
- ⇨ owns, operates and maintains water management infrastructure;
- ⇨ provides waterworks source water approval (except municipal); and
- ⇨ allocates ground and surface water for use.

Saskatchewan Ministry of Environment

- implements, inspects and regulates compliance for 28 industrial waterworks and two related sewage works facilities under *The Waterworks and Sewage Works Regulations*;
- issues permits for construction and operation of water and wastewater works at industrial facilities; and
- develops policies, protocols, and guidelines to support protection of drinking water and implementation of *The Waterworks and Sewage Works Regulations* at regulated industrial facilities.

Saskatchewan Ministry of Government Relations

- provides financial assistance for water infrastructure through the Canada-Saskatchewan Building Canada Fund-Communities Component (BCF-CC), New Building Canada Fund (NBCF), the Saskatchewan Infrastructure Growth Initiative (SIGI) and the Northern Water and Sewer Program for 2015-16;
- legislates and regulates pricing policies and capital investment strategies for municipal waterworks; and
- legislates and regulates municipal protection of water sources through planning bylaws.

Saskatchewan Ministry of Health/Health Regions

- inspects for compliance at semi-public waterworks and certain other waterworks as required by *The Health Hazard Regulations*;
- manages data systems for Public Health Inspectors and laboratory information;
- analyses water through the Saskatchewan Disease Control Laboratory; and
- provides advice and addresses waterborne illnesses.

Saskatchewan Ministry of Agriculture

- has responsibility under *The Agricultural Operations Act* for intensive livestock provisions;
- administers *The Irrigation Act, 1996* and provides water-related advice;
- provides pesticide (applicator) licenses under *The Pest Control Products (Saskatchewan) Act*;
- conducts research, demonstrations and technology transfer;
- provides advice on farm water supplies; and
- coordinates Environmental Farm Planning (Federal/Provincial Growing Forward 2 Agreement).

SaskWater

- a commercial Crown water utility, helping communities, First Nations and industry gain access to safe, reliable and sustainable water and wastewater services. SaskWater's core lines of business include:
  - potable water supply
  - non-potable water supply;
  - wastewater treatment and management;
  - certified operation and maintenance (COM) for customer-owned systems;
  - project management;
  - leak detection audits;
  - water and wastewater training; and
  - remote monitoring.

The Water Security Agency, the Ministry of Health and the individual Regional Health Authorities continue to deliver water and wastewater programming and governance through a system of centralized planning, protocol and standards development and regionalized inspection and compliance services.

At the end of the 2015-16 fiscal year, the Water Security Agency's staff complement totaled 31 full time equivalents (FTEs), including three FTEs devoted primarily to water information management, for delivery of all aspects of the agency's drinking water and wastewater management activities.

The Ministry of Health's Saskatchewan Disease Control Laboratory has 18 FTEs that are dedicated to water testing and the accreditation program in support of the Safe Drinking Water Strategy. Health Region Public Health Inspectors, Medical Health Officers and Public Health Nurses also play a role in water related activities (i.e. semi-public water supply inspection, issuance of Emergency Boil Water Orders (EBWO) and water borne disease investigations).

The Ministry of Agriculture has nine FTEs that deliver intensive livestock inspection and regulatory approval services to ensure protection of water resources from intensive livestock operations. Two additional full time positions provide technical assistance to address environmental issues related to livestock development. Ministry of Agriculture staff continue to participate in the Water Security Agency's Aquifer and Watershed Program planning activities. The Ministry also develops and distributes management and technology information for conservation, grazing and crop production practices that reduce and/or minimize impacts to water resources. Three FTEs deliver pesticide regulatory services.

The Ministry introduced several regulatory amendments to *The Pest Control Products Regulations, 1995*. The Ministry took steps to modernize the Regulations to reflect to current industry practices, enhance the protection of the environment and harmonize our Regulations with other Provincial jurisdictions and Federal regulations.

The amendments address emerging trends in pest control as well as product registration and streamline some of the Ministry's process to make them more efficient.

Saskatchewan Polytechnic offers pesticide applicator courses. There are currently 1,844 licensed pesticide applicators in the province.

The Ministry of Agriculture administers *The Irrigation Act, 1996.* The legislation ensures soils and water are suitable for sustainable irrigation. Irrigation soils, water quality and water tables are monitored for sustainability.

The water-related programming by the Ministry of Government Relations is mainly provided through centralized policy development and program delivery services.

Key partners outside the provincial government include the federal government through the Building Canada Fund, New Building Canada Fund, Federal Gas Tax Program, participants in the Growing Forward 2 Agreement, municipalities and other waterworks owners, the Saskatchewan Urban Municipalities Association (SUMA), the Saskatchewan Association of Rural Municipalities (SARM), the Saskatchewan Water and Wastewater Association (SWWA) and the Operator Certification Board (OCB). SWWA and the OCB have been instrumental in advancing waterworks operator certification in the province. The OCB is appointed by government, but operates at arm's length in considering the qualification and standing of water and wastewater works operators in the province. Key stakeholders are consulted on a periodic basis to aid in the ongoing development and delivery of drinking water and wastewater-related programming and activities of the Government of Saskatchewan.

The following sections of the report provide information on the status of drinking water in Saskatchewan during 2015-16. Further information on drinking water quality is available on the SaskH2O website www.SaskH20.ca, and on the Water Security Agency's website at: www.wsask.ca. Additional detailed background information regarding drinking water quality in Saskatchewan is available at www.SaskH2O.ca/news.asp, and www.SaskH2O.ca/MyDrinkingWater.asp. The following sections also report on the significant actions and the performance levels in achieving key indicators for the improvement in drinking water and related protection and enhancement measures.

Transparency regarding the status of drinking water is intended to improve trust in drinking water supplies and the waterworks systems that produce it. Public reporting is intended to further the accountability of the ministries and agencies that manage and govern drinking water in the province.

Progress in 2015-16

This section presents the key results, activities, accomplishments and outcomes in 2015-16, relating to the protection and status of drinking water in Saskatchewan.

Ministries and agencies engaged in drinking water management in Saskatchewan use performance information to assess overall progress towards improving the safety and management of drinking water in the province. In turn, reviews and assessments each year allow and direct the most effective adjustment of future plans and actions to address priority elements. Management affirms that all major external factors that could have an impact on performance results have been identified and explained. Additionally, significant efforts have been made to ensure performance data is valid through ongoing review and validation of data. In general, performance in addressing drinking water quality and source water protection management in Saskatchewan has paralleled or exceeded performance of other Canadian provinces where similar strategic initiatives are in place.

The results for key actions provided below are organized by common activities focusing on various components of drinking water and source water protection and a report on actual progress. The following is a summary of the most significant achievements related to drinking water and source water status and protection in Saskatchewan during 2015-16. Further information is available by contacting the Water Security Agency or viewing on the internet at www.SaskH2O.ca.

Assessment of the State of Drinking Water in Saskatchewan

The assessment of the state of drinking water in Saskatchewan is presented in a manner consistent with previous reports so that key measures provide a continuous and ongoing history.

Waterworks systems and operations provide safe, clean and sustainable drinking water

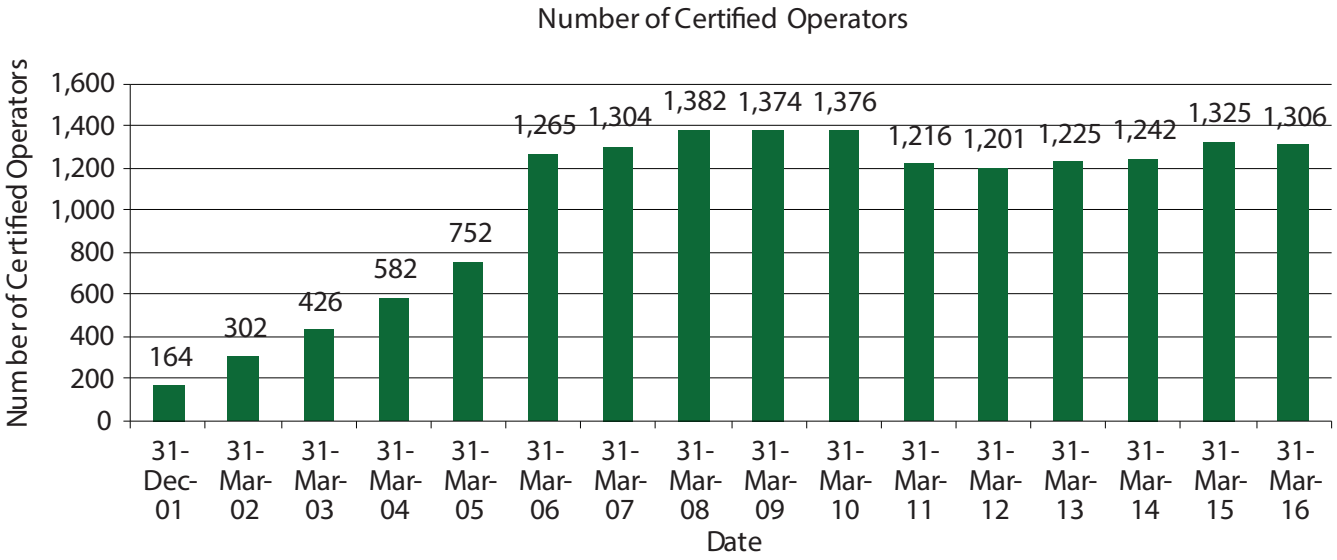
Waterworks staff are capable and well-trained

Provision of safe drinking water is highly reliant on the knowledge and capabilities of waterworks operators and the manner in which they apply their skills to produce and monitor the quality of drinking water. Along with source water protection, sound and capable infrastructure, water quality monitoring, and knowledgeable operators, are some of the elements of a "multi-barrier approach" to ensure safe drinking water. The following reports on statistics and a key measure related to ensuring waterworks operational staff are capable and well trained as of March 31, 2016.

State of Drinking Water Quality – Waterworks Staff are Capable and Well-Trained

Figure 1 provides a historical summary of the number of operators certified to date. As of March 31, 2016 the number of all active certified operators reported by the Saskatchewan Operator Certification Board (OCB) is 1,306. These are all the certified operators in Saskatchewan, including those who operate waterworks that are not regulated by the Water Security Agency. Indian and Northern Affairs Canada (INAC) requires First Nation operators to become certified by the same criteria of education, experience and examination as operators mandated by the Water Security Agency. There were 134 First Nation operators certified at the end of this fiscal year. In addition, there are 11 operators working in federal facilities such as parks or correctional centers. In addition to the 1,306 active/current operators, 160 are overdue for their certification renewal and are not on the list.

Figure 1: Certified Operator Statistics, December 2001 to March 31, 2016



Source: Operator Certification Board certification records database

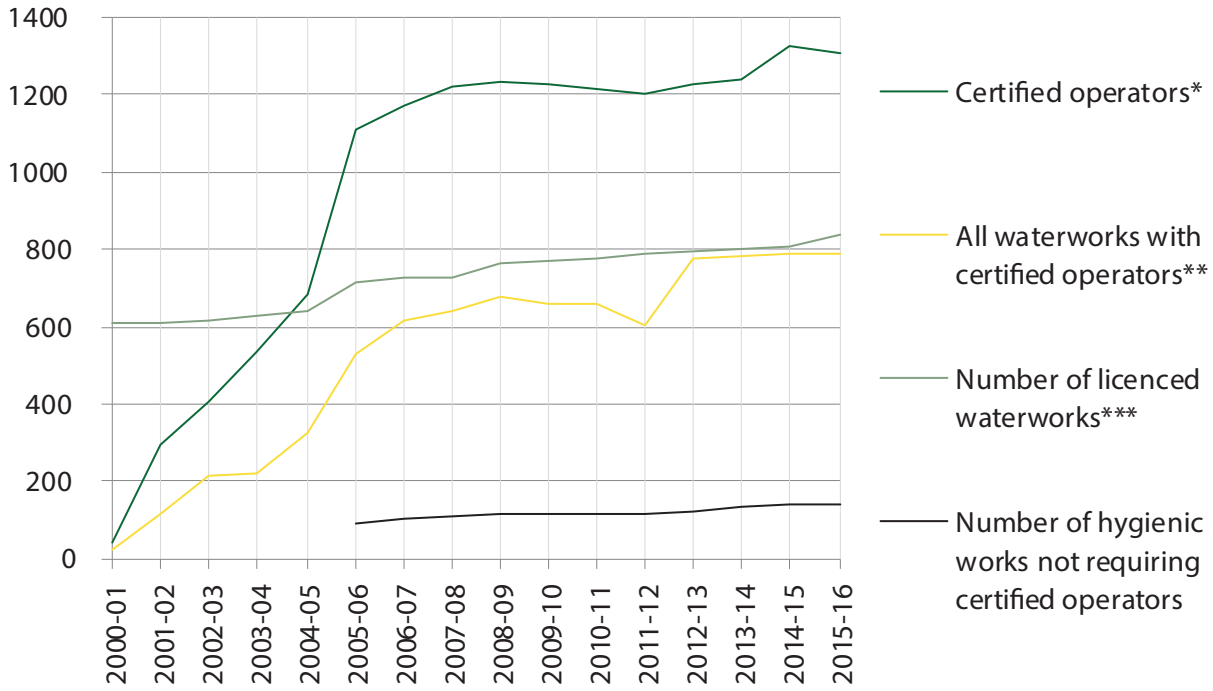
As of March 31, 2016, a total of 2,478 waterworks or sewage works operators had been certified by the Saskatchewan OCB Board since that organization began to formally certify operators in 2002. Of the 2,478 total certified operators to date, 1306 operators retained full active certification as of March 31, 2016.

During 2015-16, approximately 78 per cent of operators receiving renewal notification from the OCB actually renewed their certification. This is a decrease from 2014-15, when 89 per cent of operators renewed their certification on notification by the OCB. There is still an issue with late applications for renewal by operators and a higher rate of retirements by operators. The OCB is following up with operators and waterworks owners to resolve outstanding operator certification requirements.

The OCB continued to certify water and wastewater works operators throughout 2015-16. As of March 31, 2016, there were approximately 664 waterworks licensed by the Water Security Agency with at least one certified operator, regional operator or contract operator (see Table 1). Some operators continue to take exams and are in the process of obtaining certification, or upgrading their certification levels and categories. Some smaller municipal waterworks do not require a certified operator rather a trained operator is required by regulation. Some facilities sought hygienic classification, which does not require a certified operator. The Water Security Agency continues to work with municipalities, waterworks owners and others to maintain and to advance the implementation of operator certification and continuing education in the province. As of March 31, 2016 only one community, Beatty did not employ a certified operator or regional operator to oversee the operation of their waterworks. Thirty-five out of 604 permitted waste water facilities did not employ a certified operator. All 35 non-certified operators were operating lagoon systems.

Figure 2 provides additional trend information on the number of waterworks with certified operators since 2000-01, for all waterworks regulated by the Water Security Agency.

Figure 2: Certification trends for waterworks since 2000-01



** Operators working in all waterworks including Water Security Agency regulated facilities*
*** Includes all waterworks with certified operators in the province*
****Licensed works includes municipal water treatment works, municipal water distribution systems, pipelines and large privately or government owned waterworks regulated by the Water Security Agency. These values include hygienic waterworks that do not require a certified operator*

Source: Operator Certification Board database and Water Security Agency, Environmental Management System.

Table 1 provides information on the number of operators certified at various levels in all categories of the water and wastewater treatment industry in Saskatchewan during 2015-16.

Table 1: Distribution of certified operators at water and wastewater works - fiscal year 2015-16*

System Classification1	Water Treatment	Water Distribution	Wastewater Treatment	Wastewater Collection
Small System2	130	152	94	
Class-1	442	523	529	486
Class-2	346	397	126	189
Class-3	83	47	33	23
Class-4	59	17	33	15
Total	1060	1136	815	819

1 Waterworks system classification is defined by the complexity and size of the waterworks in accordance with standard parameters adopted from the Associated Boards of Certification (ABC). More information on waterworks system classification is available from the Operator Certification Standards EPB139 (see http://www.saskh2o.ca/DWBinder/EPB139OperatorCertificationStandards2002.pdf.

2 There are several types of Small Systems. A Small Water System is defined as a Class-1 groundwater treatment and/or Class-1 distribution system, serving fewer than 500 people. Small treated drinking water pipelines serving fewer than 500 people can be classified as Small Systems and some of their operators have become certified as Small System operators and are shown only under Water Distribution. A Small Wastewater System is a Class-1 wastewater treatment system (generally a lagoon system) and/or a Class-1 collection system serving fewer than 500 people.

**Note: Table 1 does not include operators that are overdue in certificate renewal as of March 31, 2016.*

Source: Operator Certification Board Database

The number of certified operators applying for initial certification during the 2015-16 fiscal year was 165, and there were 140 operators who applied to upgrade their certification by either increasing their level of certification or adding new categories of certification. A summary of communities with Certified Operators and Operator Classification, updated after each OCB meeting, is available on the internet (http://www.SaskH2O.ca/foroperators.asp).

Measurement Results

Per cent of communities with human consumptive waterworks whose operators have received some level of certification

Table 2: Per cent of communities with human consumptive waterworks whose operators have received some level of certification

	Sept 30, 2004	Mar 31, 2006	Mar 31, 2007	Mar 31, 2008	Mar 31, 2009	Mar 31, 2010	Mar 31, 2011	Mar 31, 2012	Mar 31, 2013	Mar 31, 2014	Mar 31, 2015	Mar 31, 2016	Annual Change (2014-15)
Per cent of communities with human consumptive waterworks whose operators have received some level of certification	54.3	96.8	98.9	99.2	99.2	98.9	98.3	99.6	99.4	99.8	99.8	99.8	0%

Source: Water Security Agency – Environmental Management System

As of March 31, 2015, 99.8 per cent of communities with human consumptive waterworks have operators that have achieved some level of certification (Table 2). This represents no change in compliance from the previous year when 99.8 per cent of community waterworks had an operator certified to some level. Over 99 per cent of the population served by a community (municipal) human consumptive waterworks have an operator that has received full certification or some level of training (completed any approved training courses). Knowledgeable, certified operators help to ensure safe drinking water.

Compliance with operator certification is primarily controlled by the owner of the waterworks, but also requires cooperation from the waterworks operator(s). Acceptance and uptake of operator certification is a key to ensuring the delivery of safe drinking water. As a point of comparison, Alberta's (population 4.1 million) mandatory certification program took effect on January 1, 1983 and its program currently has approximately 2863 certified operators. Currently, there is no cost for their certification examinations, applications and renewals. Saskatchewan (population approximately 1.1 million) has 1,306 certified operators. Examinations cost about $80, and certification and renewal fees (every two years) are $150. Compared with Alberta, Saskatchewan's certification program has progressed significantly since its inception in 2000.

Infrastructure produces water that meets the national guidelines

Infrastructure design, capability, condition and maintenance are critical in the production of safe drinking water. Standards, incentives, requirements, compliance measures and implementation plans are also important to ensure that waterworks are operated and monitored to achieve drinking water of a quality that protects human health. The "Guidelines for Canadian Drinking Water Quality – Summary Table" (see: http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/sum_guide-res_recom/index-eng.php), are used in Canada as the definitive measure of science-based safety criteria for drinking water. Saskatchewan has adopted the guidelines as standards (see: www.SaskH2O.ca/DWBinder/EPB207Drinking_Water_Standards_post.pdf). The following reports on key measures and statistics related to ensuring that infrastructure produces water that meets national drinking water quality guidelines.

State of Drinking Water Quality – Infrastructure Produces Water That Meets the National Guidelines

In terms of the status of drinking water in Saskatchewan, the bacteriological quality of water is a critical parameter because, when the related standards are exceeded, there is a possibility of rapid significant health effects for consumers. Saskatchewan uses coliform bacteria as an indicator of the quality of drinking water. The Saskatchewan Disease Control Laboratory and the Saskatchewan Research Council employed routine analysis for E. *coli* during the fiscal year to help improve the meaning and speed of monitoring results. Saskatchewan's standards for bacteriological drinking water quality are more stringent than the "Guidelines for Canadian Drinking Water Quality."

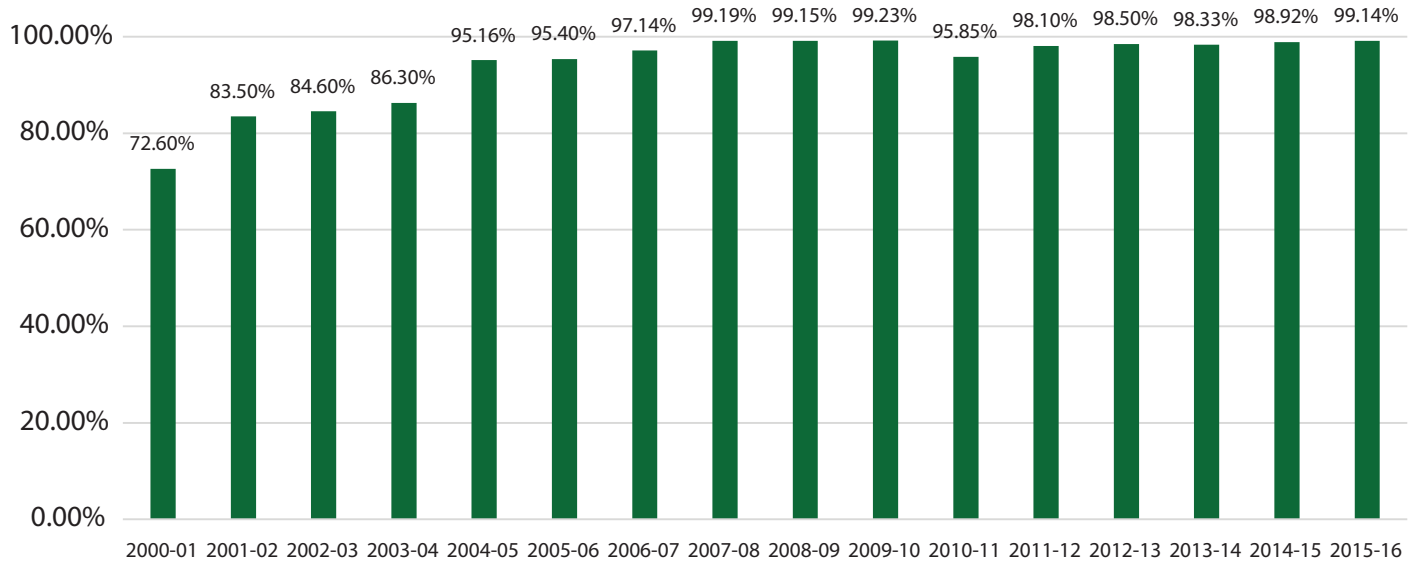
The number of samples required for bacteriological water quality monitoring of a waterworks is based on the number of people served by the system (see "Municipal Drinking Water Quality Monitoring Guidelines" at www.SaskH2O.ca/foroperators.asp), or go directly to http://www.saskh2o.ca/DWBinder/epb202.pdf. When a routine water sample shows the presence of bacteria, follow-up activities including repeat sampling are performed. The Water Security Agency issued two Precautionary Drinking Water Advisories (PDWA) and five Emergency Boil Water Orders (EBWOs) during 2015-16, when bacteriological related problems arose at waterworks.

During 2015-16, there were 22,368 valid Municipal Human Consumptive Use routine bacteriological water quality samples submitted of which 101 samples (0.451 per cent) exceeded the water quality standards of zero total coliforms, zero fecal coliforms or greater than 200 background bacteria per 100 millilitres of water. During 2015-16, more routine bacteriological water quality samples were submitted from municipal waterworks regulated by the Water Security Agency than were required by permit requirements. A total of 22,368 routine bacteriological samples were submitted, 3,228 more than the required number, equating to a sample submission rate of 116.87 per cent. During 2014-15, there were 21,930 valid routine bacteriological water quality samples submitted of which 108 samples (0.493 per cent) exceeded the water quality standards. For the same period, a total of 21,930 out of 19,222 (114.08 per cent) of the required regular samples for bacteriological water quality were submitted from municipal waterworks regulated by the Water Security Agency. The decrease in total "required" samples in 2015-16 is largely related to a reduction in monitoring requirements in a number of Municipal Human Consumptive Use Waterworks.

Measurement Results

Per cent of facilities that meet bacteriological guidelines 90 per cent of the time

Figure 3: Bacteriological standards compliance



Source: Water Security Agency - Environmental Management System

In 2015-16, there was a 0.22 per cent increase in compliance with bacteriological standards for municipal human consumptive waterworks (90 per cent of the time), when compared with the previous fiscal year. Water Security Agency staff will continue to work to ensure municipalities and the operators of the community water supplies recognize the importance of meeting bacteriological water quality standards as a means to protect consumer health in the future.

In terms of longer trends, there has been a net increase in compliance with bacteriological water quality standards (90 per cent of the time), over the past 16 fiscal years with a 26.54 per cent increase in compliance, from 72.6 per cent in 2000-01 to 99.14 per cent in 2015-16 (Figure 3). The longer term increase in compliance with standards is the result of increased inspection and follow-up on water quality sampling results by the Water Security Agency, as well as increased attention to water treatment and monitoring by waterworks owners and operators. In 2015-16 the Water Security Agency issued five Emergency Boil Water Orders and one Precautionary Drinking Water Advisory resulting from detection of E. coli contamination in routine water quality samples submitted by the waterworks.

The bacteriological quality of drinking water is important since contamination of this type can result in significant illness within a short period of time. Compliance with bacteriological water quality standards was selected as a reportable performance measure, since it provides a good indication of drinking water quality, which is important to consumers. Tracking compliance with bacteriological standards over several years indicates a positive trend. Compliance with this measure is primarily controlled by the owner of the waterworks, but also requires cooperation from the waterworks operator(s) in achieving bacteriological water quality compliance. Ongoing inspection and interaction with waterworks owners and operators is conducted to sustain good performance in achieving water that is safe from bacteriological threats.

There were 67 Municipal Human Consumptive Use waterworks in the province that exceeded the bacteriological standards at least one time during 2015-16. During the same period, there were four waterworks that had more than 10 per cent of their routine bacteriological water samples show the presence of bacteria (Delisle, Goodeve, Hoey, and Zenon Park). This is a decrease from 2014-15, when there were 85 Municipal Human Consumptive Use waterworks in the province that exceeded the bacteriological standards at least one time.

Turbidity describes water cloudiness and is an indirect measure of the number of suspended particles in water. Turbidity is a good indicator of the effectiveness of a water treatment system and is important because turbid water can harbor disease-causing organisms. If excessive turbidity is present, the effectiveness of disinfection of drinking water can be impaired. Waterworks regulated by the Water Security Agency are required to measure turbidity at least on a daily basis as a means to track water treatment system performance.

The Water Security Agency's turbidity standards are consistent with the "Guidelines for Canadian Drinking Water Quality, Seventh Edition." During phase-in of the turbidity standards, the Water Security Agency generally applied a turbidity standard of 1.0 Nephelometric Turbidity Units (NTU) for existing waterworks. The provincial turbidity standards presently in effect are: 0.1 NTU for membrane filtration systems; 0.3 NTU for conventional filtration systems, and 1.0 NTU for slow sand filtration and groundwater based systems. As in past years during the 2015-16 fiscal year, on-site monitoring for turbidity and record keeping continued to be a requirement and these records were checked during site inspections by Environmental Project Officers. Any turbidity related upsets were addressed through provision of advice on system repairs, reservoir cleaning, distribution system flushing and verification through water quality monitoring.

Water Security Agency staff continued to ensure that waterworks owners and operators track turbidity-monitoring results and manage turbidity related water quality problems. There were 19 PDWAs issued during 2015-16 when turbidity related problems arose at waterworks. Turbidity testing results continue to be reported in conjunction with information submitted with regular bacteriological samples.

The range of turbidity results tested by all agencies in 2015-16, (municipal, private, and government owners) is shown in Table 3.

Table 3: Range of turbidity testing results – 2015-16

Turbidity Range (NTU)	Samples	Per Cent Samples	Systems*
0 – 1	31077	94.87%	648
1 – 2	1019	3.11%	204
2 – 3	268	0.82%	89
3 – 4	174	0.53%	47
4 – 5	99	0.30%	39
5+	121	0.37%	50
Totals	32,758	100 %	N/A*

** The total number of systems is not applicable as some systems reported turbidity testing results in more than one range of turbidity values. There are a total of 837 waterworks systems regulated by the Water Security Agency.*
Source: Water Security Agency - Environmental Management System

Disinfection is widely used in Saskatchewan and Canada as one of the key methods to prevent the spread of waterborne disease. Most disinfection of drinking water in the province is performed using chlorine-based products. Unless otherwise permitted, waterworks regulated by the Water Security Agency are required to maintain:

a) a free chlorine residual of not less than 0.1 milligrams per Litre (mg/L) in the water entering a distribution system; and

b) a total chlorine residual of not less than 0.5 mg/L or a free chlorine residual of not less than 0.1 mg/L in the water throughout the distribution system; and

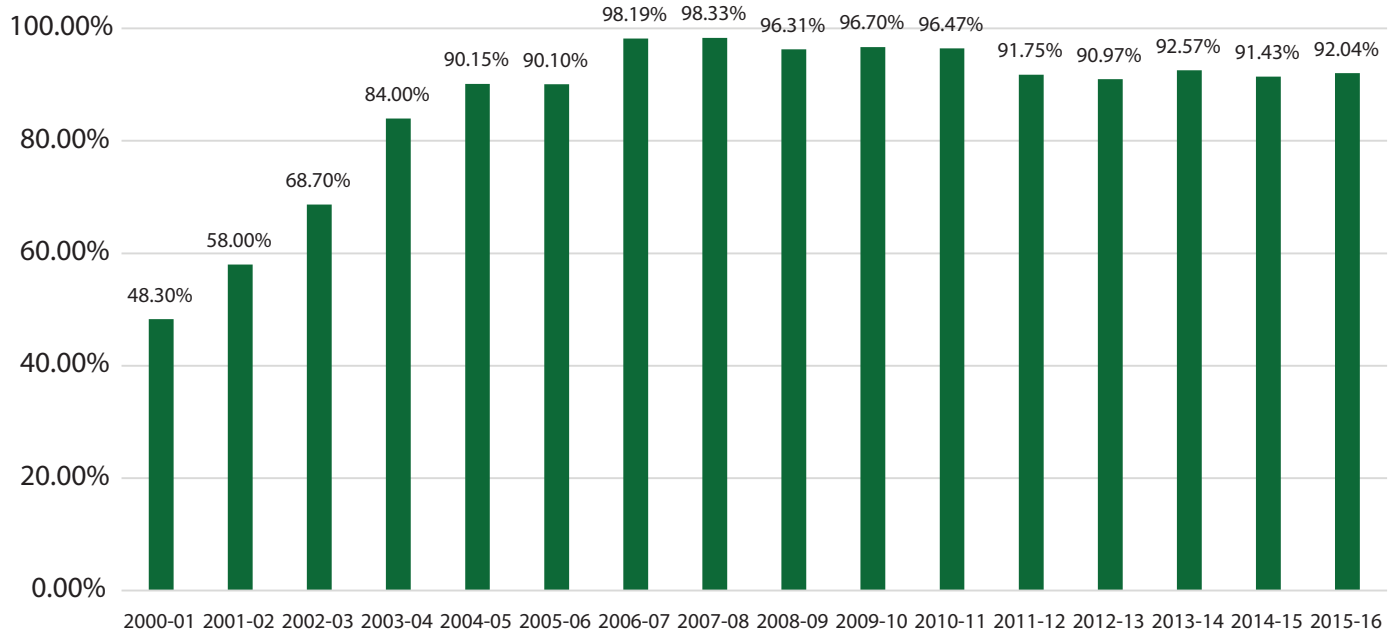
c) chlorine residuals are expected to be within regulatory limits 90 per cent of the time.

Chlorine disinfectant monitoring usually includes two tests: total chlorine residual and free chlorine residual, which are done from samples collected from the water distribution system. Free chlorine residual in drinking water is important in providing lasting protection in water distribution systems. Total chlorine residual is helpful for waterworks operators to understand the effectiveness of disinfection and to judge cleanliness of the water distribution system. On-site monitoring for chlorine residual and associated record keeping is required and these records are checked during site inspections by Water Security Agency's Environmental Project Officers. During 2015-16, the Water Security Agency issued 18 Precautionary Drinking Water Advisories as a result of chlorination related concerns or problems at water treatment plants or in drinking water distribution or pipeline systems.

Measurement Results

Per cent of waterworks [regulated by the Water Security Agency] that meet disinfection requirements 90 per cent of the time

Figure 4: Disinfection standard compliance



Source: Water Security Agency – Environmental Management System

There has been a slight increase in compliance with the disinfection standards over the past fiscal year to 92.04% per cent in 2015-16 compared to 91.43 per cent in 2014-15 (Figure 4). The increase from the 2014-15 results reflects an improvement in the number of submitted bacteriological sampling results that included chlorine residual information at the time of sampling. The compliance rate remains significantly above the 2000-01 compliance rates of 48.30 per cent of facilities meeting disinfection requirements. Communities that failed to consistently achieve disinfection compliance included Arran, Belle Plaine, Craik, Domremy, Drinkwater, Glen Ewen, Gull Lake, Hubbard, Kannata Valley, Kendal, Keystown, Kindersley, Love, Maidstone, Major, Mankota, Manor, McLean, Outlook, Pelican Narrows, Pelly, Riceton, Rock Ridge, Rouleau, Shellbrook, Smiley, Speers, St. Walburg, Stony Beach, Weyakwin, Wilcox, Wiseton, Wishart, and Wollaston Lake. In instances where low disinfectant levels were detected and reported, Water Security Agency staff followed up with the waterworks owners/operators to resolve the problems.

Proper disinfection of drinking water is one of the most important ways to ensure safe drinking water and prevent the outbreak of waterborne diseases. Compliance with chlorine residual requirements was selected as a measure since it provides a good indication of drinking water protection, which is important to consumers. Compliance with this measure is primarily controlled by the owner of the waterworks, but also requires cooperation from the waterworks operator(s) in achieving disinfection standards compliance. The ongoing inspection and interaction with waterworks owners and operators is necessary to ensure that water is safe from bacteriological threats and meets disinfection standards.

The Water Security Agency uses the "Guidelines for Canadian Drinking Water Quality" as the basis for the water quality standards found in *The Waterworks and Sewage Works Regulations*. These standards are included in each new or renewed waterworks permit. Permitting for municipal waterworks continued though the 2015-16 fiscal year. A total of 176 waterworks operational permits were issued or renewed. An additional 19 waterworks operational permits were amended during the reporting period. The drinking water quality standards for "chemical-health" included in *The Water Regulations, 2002* were mandatory as of December 2010, for existing waterworks and take effect upon the start-up of any new waterworks. Several new or updated drinking water quality standards were included in *The Waterworks and Sewage Works Regulation* and will take effect on July 1, 2020 as the revised regulations were implemented effective June 1, 2015. Another 244 wastewater works operational permits were also issued, renewed or amended during the reporting period.

During 2015-16 the Federal-Provincial-Territorial Committee on Drinking Water (CDW), on which the Water Security Agency participates, posted the final Guidelines for Canadian Drinking Water Quality for Tetrachloroethylene, Selenium, Toluene, Ethylbenzene and Xylene (TEX), and Guidance for Issuing and Rescinding Boil Water Advisories in Canadian Water Supplies. In 2015-16, CDW posted guidelines for Cyanobacterial toxins, Bromate and Chromium for public consultation. In 2015-16 the committee initiated or continued work on the review of drinking water quality guidelines for total coliforms, protozoa, viruses, enterococci anti-microbial resistance, Manganese, Lead, Perfluorooctanesulfonic Acid/Perfluorooctanoic Acid (PFOS/PFOA), Uranium, Strontium, Copper, Total Organic Carbon, Natural Organic Matter, 1,4-Dioxane, pesticides, pH, Aluminum, Iodo-Trihalomethane formulations and

other chemicals. Previous guidelines for Pentachlorophenol were withdrawn.

Drinking water health and toxicity parameters include a range of naturally occurring substances (arsenic, barium, boron, lead, nitrate, selenium, uranium, etc.), and other substances such as trihalomethanes, which may be produced during chlorine based disinfection processes. These substances represent a small potential for adverse health effects over longer time periods. While the safety gains associated with eliminating microbial threats far outweighs any possible adverse health risks associated with disinfection by-products, it is important to monitor to ensure they remain within safe levels. A complete list of the health and toxicity substances monitored at Water Security Agency regulated waterworks is available at www.SaskH2O.ca/foroperators.asp (see "Municipal Drinking Water Quality Monitoring Guidelines", or go directly to http://www.saskh2o.ca/DWBinder/epb202.pdf .

Water quality standards are achieved through permitting, inspection and follow-up on monitoring results. For existing waterworks, a regulatory phase-in period required that all works meet health and toxicity standards by December 2008, (population of 5,000 or more) or by December 2010, (population of less than 5,000). Table 4 depicts compliance with sample submission requirements and testing compliance for health and toxicity parameters during the 2015-16 to 2011-12 fiscal years based on routine samples submitted by Water Security Agency permitted waterworks.

Table 4: Health and toxicity sample submission and parameter result compliance 2015-16 to 2011-12 fiscal years*

Fiscal Year	Health and Toxicity Sample Submission Compliance Rate (Percentage)	Parameter Standards Compliance Rate (Percentage)
2015-16	84.29	87.55
2014-15	86.88	92.20
2013-14	84.27**	92.14
2012-13	71.65	90.93
2011-12	70.90	91.14

**Health and Toxicity parameters include: Aluminum, Arsenic, Barium, Boron, Cadmium, Chromium, Copper, Lead, Selenium, Uranium and Zinc*

*** Value restated from the 2013-14 annual report due to previously undetected calculation errors.*

Source: Water Security Agency – Environmental Management System

Municipal waterworks sample submission rates decreased by 2.59 per cent in 2015-16 to 86.18 in comparison to the 2014-15 fiscal year for heath and toxicity parameters. Parameter standards compliance also decreased by 4.65 per cent in 2015-16 from 92.20 per cent in 2014-15. Decreased parameter compliance rate is related to a reduction in the number of human consumptive waterworks with health and toxicity requirements with the remaining facilities with exceedances submitting more than the required number of samples with exceedances. The current drinking water quality standards for health and toxicity parameters took full effect in December, 2010. The Water Security Agency has and will continue to follow up to four times a year with waterworks owners who have not submitted the required samples as a means to help ensure compliance with monitoring and drinking water quality standards.

In 2015-16, there were 29 of 398 municipal human consumptive waterworks with sampling requirements that exceeded at least one health and toxicity related chemical standard resulting in a total of 37 exceedances from the regular required health and toxicity related testing. Periodically municipalities will submit additional voluntary samples beyond the monitoring requirements established in their permits to operate as a means to better define water quality conditions. In total there were another 14 of 391 municipal human consumptive waterworks with sampling requirements that exceeded at least one health and toxicity related chemical standard resulting in a total of 249 exceedances from additional voluntary health and toxicity related testing carried out during the reporting period. When exceedances for health and toxicity parameters, such as arsenic or uranium, were encountered and would represent a short-term health risk, waterworks owners are advised of the results and Precautionary Drinking Water Advisories in the form or do-not-drink or do-not-use advisories for the affected water supplies. Of all the testing for arsenic

resulting from regular required sampling, there were 24 instances of arsenic exceedances that occurred in samples from 20 human consumptive systems. Additional voluntary arsenic testing was conducted by another 13 human consumptive municipal systems resulting in 52 additional exceedances. The nine uranium exceedances occurred in six (6) human consumptive municipal systems from regular required sampling. Additional voluntary uranium testing was conducted by six human consumptive municipal systems resulting in an additional 13 exceedances. Table 6 provides a list of the parameters and number of excursions at all Water Security Agency regulated municipal waterworks.

Table 5: Health and toxicity parameter specific excursion totals for Water Security Agency regulated waterworks during 2015-16, 2014-15, 2013-14, 2012-13, 2011-12 and 2010-11.

Parameter	Number of Excursions in 2010-11	Number of Excursions in 2011-12	Number of Excursions in 2012-13	Number of Excursions in 2013-14	Number of Excursions in 2014-15	Number of Excursions in 2015-16
Arsenic	11 (24*)	17 (25*)	23 (30*)	15 (59*)	29 (71*)	24 (52*)
Barium	0	0	0	0	0	0
Copper	0	0	0	0	1	1
Nitrate	0	0	0	0	0	0
Lead	2 (266*)	2 (290*)	3 (94*)	3 (98*)	0 (122*)	1(96*)
Selenium	2	1 (4*)	3 (4*)	5	2	2(1*)
Uranium	19 (22*)	1 (23*)	5 (34*)	9 (19*)	8(17*)	9(17*)

** Values in parenthesis represent exceedances from additional voluntary sampling performed by municipalities beyond permit based monitoring requirements.*

Source: Water Security Agency – Environmental Management System

During 2015-16 there were 1,633 fluoride samples submitted by 311 water treatment facilities. In 2015-16, two out of 476 human consumptive municipal waterworks exceeded the maximum acceptable concentration for fluoride on three sampling occasions based on routine health and toxicity sample submissions. Two of Kindersley's weekly fluoride monitoring resulted in two exceedances to 1.5 mg/L Maximum Acceptable Concentration (MAC). Kindersley artificially fluoridates their treated drinking water. Frontier had 1 out of 23 samples exceed the fluoride 1.5 mg/L MAC. Frontier has naturally occurring Fluoride in their ground water supply which is blended with treated water from a reverse osmosis treatment system to reduce levels below the MAC. The Resort Village of Tobin Lake was previously known to have elevated naturally occurring fluoride in its drinking water supply and a "Do Not Drink" Precautionary Drinking Water Advisory is in place for that community due to elevated fluoride concentrations. The Resort Village of Candle Lake waterworks was upgraded and now functions to adequately remove naturally occurring fluoride from the community water supply. The Water Security Agency monitors results from all human consumptive systems that artificially fluoridate or have high naturally occurring fluoride.

Implementation of the trihalomethane drinking water quality standard continues with the intent to assure full compliance with the requirements that took effect as of December 2010. The standard for trihalomethane is 100 parts per billion based on an average of four seasonal samples.

A total of 226 surface water treatment and delivery facilities were required to participate in the trihalomethane monitoring program during the 2015-16 fiscal year, which should result in 924 samples being submitted each year. The actual number of regulated waterworks that submitted samples was 204 (90.27 per cent). A total of 911 samples (98.59 per cent overall submission compliance) were submitted by the participating waterworks however the overall sample submission compliance was skewed somewhat as 30 communities submitted more than100 per cent of their required samples.

During 2015-16, 210 regulated waterworks (92.92 per cent) submitted 657 samples for analysis that met the maximum acceptable concentration for trihalomethanes in drinking water. During 2015-16, 141 of 226 regulated waterworks (62.39 per cent) produced water that met the trihalomethane objective of 100 µg/L based on the annual average of seasonal sampling. During 2014-15, 170 regulated waterworks (75.89 per cent) submitted 564 samples for analysis that met the maximum acceptable concentration for trihalomethanes in drinking water. During 2014-15, 154 of 224 regulated waterworks (68.75 per cent) produced water that met the trihalomethane objective of 100 µg/L based on the annual average of seasonal sampling. Table 6 presents the statistics for the last five years for Trihalomethane Individual Sample Submission Compliance Rate (Percentage) meeting <100 µg/L Objective and the Trihalomethane Annual Average < 100 µg/L Compliance Rate (Percentage). During the 2015 calendar year 12 communities failed to meet standards for Trihalomethanes due to elevated levels of these disinfection by-products being created at the Buffalo Pound Water Treatment Plant. This short term exceedance situation is expected to be improved in the near term.

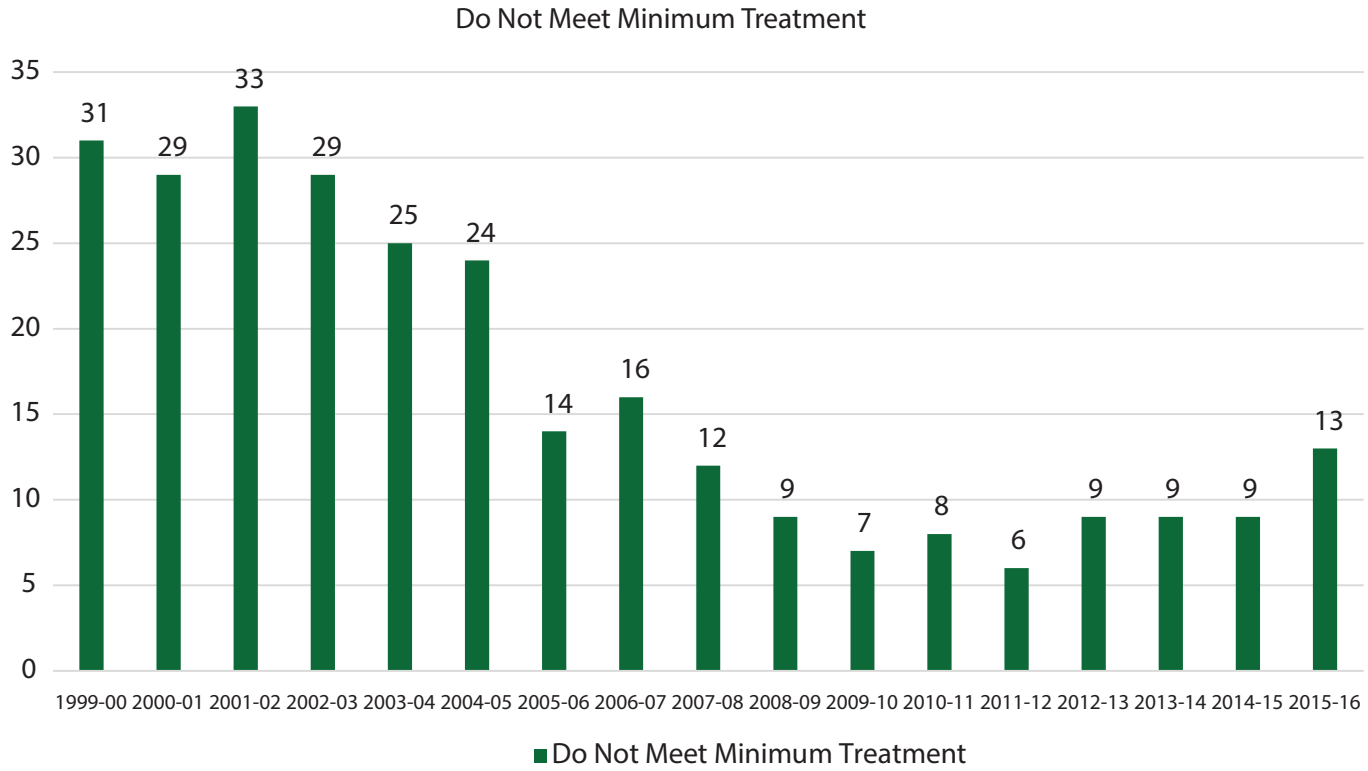
Table 6: Trihalomethane individual sample submission and annual average compliance 2015-16 to 2011-12 fiscal years*

Fiscal Year	Trihalomethane Individual Sample Submission Compliance Rate (Percentage) meeting <100 µg/L Objective	Trihalomethane Annual Average < 100 µg/L Compliance Rate (Percentage)
2015-16	92.92	62.39
2014-15	75.89	68.75
2013-14	90.65	70.18
2012-13	86.97	66.67
2011-12	84.33	71.05

Measurement Results

Number of waterworks that do not meet Water Security Agency's minimum treatment requirements

Figure 5: Number of waterworks regulated by Water Security Agency that do not meet minimum treatment requirements*



**Minimum treatment requirements include: an approved form of filtration and disinfection for waterworks reliant upon surface water or shallow groundwater sources; and disinfection alone for waterworks reliant on deep, well protected groundwater sources. The measure counts non-compliance with minimum treatment requirements for permitted waterworks.*

Source: Water Security Agency Advisory Tracking Spreadsheet

As of March 31, 2016, there were 13 permitted waterworks that did not meet Water Security Agency's minimum treatment requirements. This fiscal year the listing for two works were removed (Mainprize Regional Park and Martinson's Beach) and listings for six works were added (Abernethy, Copper Sands Trailer Court, Macnutt, Plunkett, Resort Village of Candle Lake, Silton) (Figure 5). Educational efforts and discussion on upgrading options and requirements continue; however, upgrading to meet minimum treatment requirements can be a costly venture and all infrastructure grant programs that may aid in upgrading waterworks are currently fully allocated. The Water Security Agency's educational and compliance activities will continue during 2016-17, in efforts to reduce the number of waterworks not meeting minimum treatment requirements. The owner of the waterworks primarily controls the achievement of this measure; however, the regulator has significant influence through a number of mechanisms such as permit requirements for upgrading, issuance of notices of violation and related compliance actions. Periodically, as newly or existing regulated waterworks are evaluated such as the case with Abernety and Plunkett, inadequacies in water treatment capability are discovered.

The number of waterworks that do not meet minimum treatment requirements is a direct indication of potential water quality concerns because of infrastructure inadequacies. As of March 31, 2016, human consumptive waterworks with a permanent population that did not meet minimum treatment requirements served approximately 1533 residents or 0.13 per cent of the provincial population (January 1, 2016 estimated provincial population of 1,142,570). Six of the waterworks that do not meet minimum treatment requirements are systems regulated since the passage of *The Water Regulations, 2002*. The remaining seven systems, which do not meet minimum requirements, were regulated prior to the regulatory changes of 2002. The Water Security Agency continues to place all regulated waterworks not meeting minimum treatment on Precautionary Drinking Water Advisories to protect consumers. The Water Security Agency also provides technical advice to communities not meeting minimum treatment requirements to assist waterworks owners to work towards system improvements. Cost of improvements is the main impediment to progress.

The New Building Canada Fund federal-provincial infrastructure funding program was introduced in 2014, and includes the Provincial Territorial Infrastructure Component (PTIC) which provides $10 billion in federal infrastructure funding. PTIC provides funding for projects of national, regional and local significance, with a focus on projects that support economic growth, a clean environment, stronger communities, growth in export and trade, and meeting the opportunities and challenges of growth. PTIC is divided into two sub-components: $9 billion for National Regional Projects; and $1 billion dedicated to projects located in communities of fewer than 100,000 residents through the Small Communities Fund (SCF). Federal PTIC funding is allocated to each of the provinces and territories over ten years. Saskatchewan is allocated $436.7 million; 90 per cent ($393.0 million) to the National Regional Projects and 10 per cent ($43.7 million) is dedicated to the SCF. By matching available federal funding, over $873.4 million in federal and provincial funding will be invested in priority infrastructure projects across the province. In 2015-16, 34 water and wastewater projects were announced with federal/provincial funding of $29.376 million under SCF.

The condition, capability and capacity of water treatment and distribution infrastructure is critical in providing drinking water that meets provincial standards and national guidelines. Infrastructure funding and grants are important to help upgrade and expand infrastructure to meet guidelines, standards and the pressure created by growth. In 2015-16, $0.844 million in interest rate subsidies were provided for 27 water and wastewater projects under SIGI. Under the federal-provincial BCF-CC program $2.532 million was provided for 13 water and wastewater projects in 2015-16. The federal-provincial SCF program provided $0.718 million to 18 water and wastewater projects in 2015-16, the first year of the 10-year program

In 2015, the Northern Municipal Trust Account (NMTA) spent $2.99 million under the Northern Water and Sewer program for 18 water and wastewater infrastructure projects in 15 northern communities, ensuring safe drinking water and enabling the communities to accommodate growth and development. Two projects were completed:

- ⇨ Denare Beach: Water Treatment Pumps Upgrade - $0.59 M; and
- ⇨ Patuanak: Wastewater Treatment Upgrades - $1.18 M.

Included in the $2.99 million are $187,315 of project costs from the Emergency Water and Sewer program: Reconstruction of sewage pump station #3 in La Loche and sewage lagoon repairs in St. George's Hill.

For all water and wastewater infrastructure projects, the NMTA has a contractual arrangement with Saskatchewan Water Corporation for provision of project management services. Services consist of general engineering, infrastructure assessment and planning, managing, design, budget control and payment administration, and the construction and commissioning of works. Contract expenditures in 2015 were $552,021, $278,985 of that total is integrated into the $2.99 million of Northern Water and Sewer program costs.

In 2005, SaskWater implemented an asset management program to document and catalogue knowledge of its existing assets and assist the corporation in its own project management services. As part of the asset management program, SaskWater initiated condition and criticality assessments to determine the state of assets and prioritize asset replacement as part of capital budgeting. From this, SaskWater developed a preventative maintenance program and asset protocols for future asset inputs and work order uploads. In 2015, SaskWater began to formally track the programs progress, which saw $8.8 million dollars in 2015 invested into asset renewals and replacements. Additionally, SaskWater invested $4.8 million of capital on new growth. The majority of this capital was put towards the development of new water and wastewater facilities in communities in need of safe and reliable water and wastewater services. These capital investments accommodate community growth and increased supply needs, and do so in a manner that meets and/or exceeds regulatory treatment requirements.

SaskWater tracks water quality (in accordance with provincial regulations) on all of its systems to ensure the water supplied is safe for human consumption. In order to ensure its services are also reliable, SaskWater tracks the reliability of the waterworks system through a Service Reliability Index, which is verified quarterly. This Index incorporates four equally weighted factors: unplanned service interruption, length of interruption, planned service interruption and water loss. SaskWater believes these factors provide a good indication of the reliability of their services to customers. In 2015, SaskWater achieved the target that was set corporately for this index, which can be found in SaskWater's 2015-16 annual report.

Waterworks systems and operations are financially sustainable

Ensuring the financial sustainability of waterworks is critical in the production of safe drinking water over the long term. Waterworks deteriorate over time and may need to be expanded or replaced. Therefore, municipalities will need to know the condition of their waterworks and put in place pricing and capital investment policies for these systems. Public transparency will aid in ensuring that waterworks systems are sustainable into the future. The following reports on a key measure related to ensuring financially sustainable waterworks systems and operations.

State of Drinking Water Quality – Waterworks Systems and Operations are Financially Sustainable

Waterworks rates that cover waterworks expenditures and debt payments are a direct indicator of waterworks financial sustainability. The public reporting regulations facilitate consumers' understanding of the need for, and possibly acceptance of, waterworks rates that cover costs.

Measurement Results

Percentage of municipalities that have reported waterworks information on the financial sustainability of their systems and percentage of municipal waterworks that have reported that have rates that cover waterworks expenditures and debt payments.

Based on an analysis of waterworks financial overviews (unaudited) submitted by 424 municipalities, 39% of the municipalities were operating their water utility at a sustainable level in 2014. This is a reduction of 7% from 2013, when the ratio was 46% (416 municipalities reporting). There were 69 municipalities that moved from sustainable to not-sustainable in 2014, while another 49 municipalities changed from not-sustainable to sustainable. From 2013 to 2014, 244 (59%) of municipalities showed a decrease in their sustainability ratio.

The drinking water regulatory system is clear and effective

Regulations are clear and ensure that health and drinking water quality will be protected

Providing safe drinking water requires clear regulations communicated to and understood by the waterworks owners and operators. Additionally, accepted standards and practices are required to ensure requirements are met. Program delivery and related policies are necessary to track and ensure regulatory requirements are being met. Collectively, these measures will help ensure that drinking water is safe and wastewater effluent discharges do not threaten the quality of source waters or adversely impact the environment. The following reports on key measures and statistics related to ensuring that health and drinking water quality will be protected.

State of Drinking Water Quality - Regulations are Clear and Ensure that Health and Drinking Water Quality will be Protected

Waterworks inspections are carried out by the Environmental Project Officers and are the most important point of contact and compliance mechanism to ensure proper management of drinking water. During a three-year cycle, at least one inspection will be unannounced. Water sources, such as wells or surface water intakes, are re-inspected every second year. The results of all waterworks Water Security Agency inspections can be found online at www.SaskH2O.ca/MyDrinkingWater.asp, and the results of wastewater system inspections can be found online at www.saskh2o.ca/wastewaterinfo.asp . Having inspection results online is intended to increase transparency and public trust in drinking water supplies and the associated processes. During 2015-16 a total of 964 waterworks inspections were conducted during the reporting period in accordance with the Water Security Agency's inspection protocol and targets. During the fiscal year, Health Region public health inspectors inspected 1,220 public water supplies that fall under The Health Hazard Regulations. Table 7 summarizes the findings of key elements for inspections conducted during 2015-16 by the Water Security Agency and Figure 6 presents trends in inspection findings over the past five years.

Table 7: Waterworks inspection finding summary (2015-16)

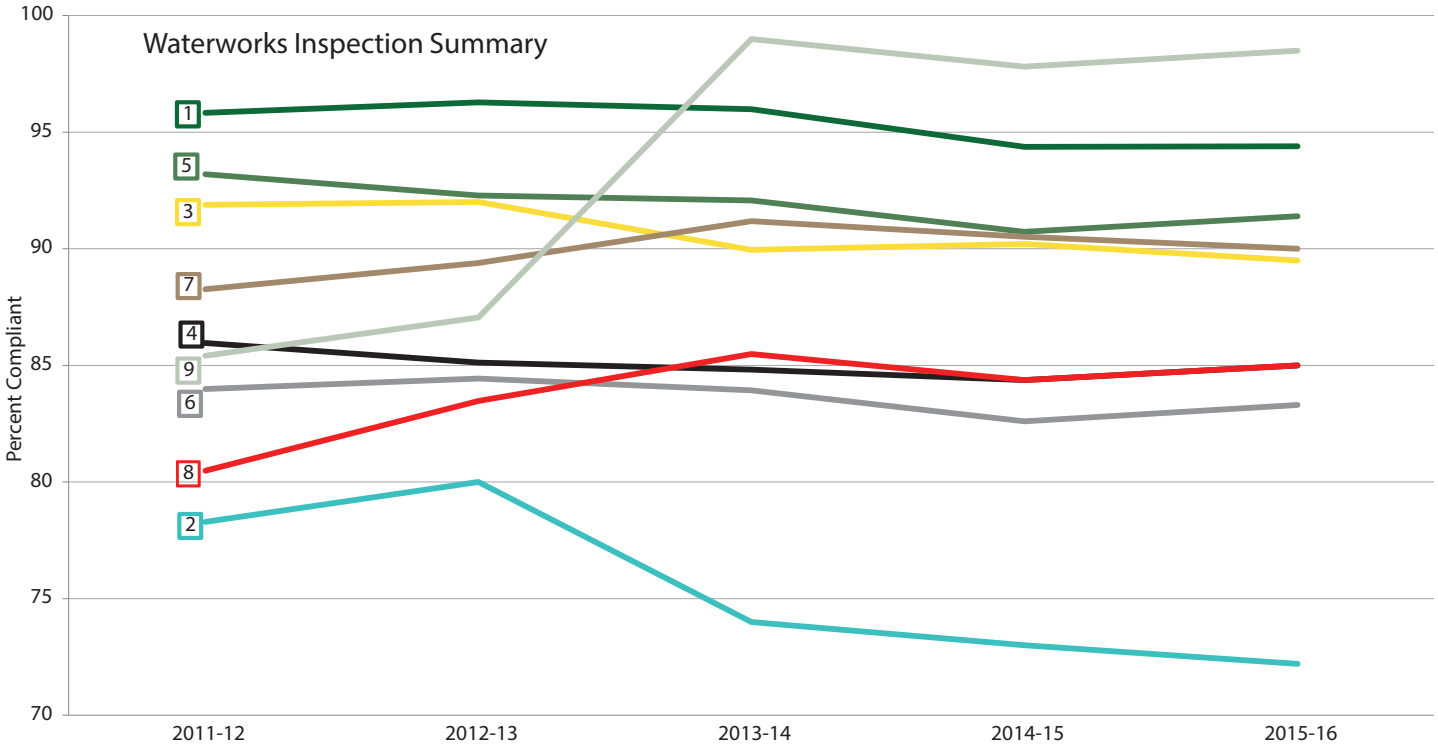
Inspection Element	Non-Compliant	N/A or No Response*	Compliant
Disinfection continuous at plant	31	19	914
Disinfection Free chlorine > or = 0.1 mg/L leaving the plant	137	131	696
Monitoring daily chlorine	74	27	863
Reservoirs in good repair	29	116	819
Water treatment plant in clean and orderly condition	26	57	881
A total chlorine residual not <0.5 mg/l or a free chlorine residual not <0.1 mg/l in the distribution system	118	43	803
Bacteriological testing after completion, alteration, extension or repair	10	86	868
Reporting of chlorine upsets	60	85	819
Record keeping	5	9	950

N/A = Non-applicable. Some waterworks inspected do not have a treatment plant such as pipeline systems.

These may be recorded as N/A or No response.

Source: Water Security Agency– Environmental Management System

Figure 6: Waterworks inspection summary finding trends 2011-12 to 2015-16



Legend:

1 Disinfection continuous at plant 2 Disinfection FCl > or = 0.1 mg/L leaving the plant 3 Monitoring daily chlorine 4 Reservoirs in good repair 5 Water treatment plant in clean and orderly condition	6 TCl residual not <0.5 mg/L or FCl residual not <0.1 mg/L 7 Bacteriological testing after completion, alteration, extension or repair 8 Reporting of chlorine upsets 9 Record keeping

The Bacteriological Follow-up Standard, EPB 505 (see: http://www.saskh2o.ca/pdf/epb505.pdf) provides guidance for the issuance of PDWAs by the Water Security Agency when there is a concern that problems (due to microbial or chemical contamination) may exist. Water Security Agency staff members also use a protocol for upset reporting and follow-up to protect consumer health and drinking water quality. Waterworks owners and operators continue to be advised of upset reporting requirements during inspections. Emergency Boil Water Orders (EBWO) are issued by Health Region officials to deal with confirmed public health threats such as microbial contamination of drinking water. Tables 8 and 9 outline statistics for PDWAs and EBWOs issued for Water Security Agency and Health Region regulated waterworks during the 2015-16 fiscal year.

Table 8: EBWO/PDWA Statistics for 2015-16 – Water Security Agency Regulated Waterworks

Time	EBWO	PDWA
In effect prior to reporting period	2	61
Added during the reporting period	6	562
In effect at end of reporting period	2	69

Source: Water Security Agency

Table 9: EBWO/PDWA Statistics for 2015-16 – Health Region Regulated Waterworks

Time	EBWO	PDWA
In effect prior to reporting period	81	139
Added during the reporting period	13	44
In effect at end of reporting period	74	129

Source: Information provided by the Health Regions in Saskatchewan

Tables 10 and 11 provide information regarding the reasons for PDWAs and EBWOs issued during the 2015-16 fiscal year for waterworks regulated by the Water Security Agency and Regional Health Authorities. Further information on the nature of a PDWA and EBWO issued by the Water Security Agency is available from the agency or on the Internet (http://www.SaskH2O.ca/advisories.asp).

Table 10: Reason for issuing PDWAs and EBWOs during 2015-16 – Water Security Agency

Summary of Reasons for Precautionary Drinking Water Advisories (PDWA) Issued by the Water Security Agency Between April 1, 2015 and March 31, 2016		
PDWAs by Reasons		
Water Quality Reasons	Number	Percentage
Line break or pressure loss in distribution system*	412	73.3
No applicable water quality reason	105	18.7
Suspected contamination*	8	1.4
Unacceptable turbidity or particle counts in treated water*	19	3.4
Significant deterioration of source water quality due to environmental conditions*	1	0.17
Exceeds Maximum Acceptable Concentration or drinking water standard*	11	1.9
E. coli detected in drinking water system*	1	0.17
Insufficient quantity	1	0.17
Cross connection with backflow suspected or confirmed*	1	0.17
Cryptosporidium or Giardia detected in drinking water system*	1	0.17
Intentional contamination of treated water supply suspected or confirmed*	2	0.36
Total	562	100**
Operational Reasons		
Planned system maintenance	193	34.3
Power outage resulting in system pressure loss or reduced storage of treated water	67	11.9
Treatment or distribution equipment failure or damage	118	21.0
Start-up of waterworks	42	7.5
No applicable operational reason	89	15.8
Treatment unable to cope with significant deterioration of source water quality	1	0.17
Inadequate disinfection residual in distribution system	16	2.8
Contamination during construction, repair or operation	5	0.9
Does not meet minimum treatment / design requirements	11	2.0
Does not meet monitoring requirements	5	0.9
Damaged well components	2	0.36
No or inadequate disinfection at treatment plant	2	0.36
Treatment/distribution system failure	4	0.7
Undetermined source of contamination	4	0.7
Damaged or inadequately maintained cistern or holding tank	1	0.17
No certified or adequately trained operator	2	0.36
Total	562	100.0**
EBWO's by Reasons		
Water Quality Reasons		
E. coli detected in drinking water system	5	83.3
Cross connection with backflow suspected of confirmed	1	16.7
Total	6	100.0**
Operational Reasons		
Undetermined source of contamination	4	66.7
No applicable operational reason	1	16.7
Planned system maintenance	1	16.7
Total	6	100.0**

regulated waterworks
**Unexpected events.*

***Rounded.*
Source: Canadian Network for Public Health Intelligence based on Water Security Agency PDWA and EBWO Tracking Records

During 2015-16, a total of 456 unexpected water quality reasons affecting waterworks regulated by the Water Security Agency were reported and addressed such as system depressurizations, water main breaks, or other failures or upsets, which resulted in Precautionary Drinking Water Advisories (PDWA). Unexpected upsets or events accounted for 81.1 per cent of all PDWA's issued in 2015-16 for water quality reasons, which was 3.0 per cent more than in 2014-15 when 78.1 per cent of the PDWA's issued were because of unexpected events. Line breaks or pressure loss was the most frequent water quality related reason (412 instances or 73.3 per cent) for issuance of a PDWA in 2015-16. From the operational reason category, planned system maintenance (193 instances or 34.3 per cent) or treatment /distribution equipment failure or damage (118 instances or 21 per cent) were the most frequent reasons for issuance of a PDWA of these reported events. A total of 235 (41.8 per cent) of all PDWA's during 2015-16, were issued due to anticipated operational reason events such as planned maintenance activities or startup of seasonal or new waterworks.

Table 11: Reason for issuing EBWOs and PDWAs during 2015-16 – Health Region regulated waterworks

Summary of reasons for Precautionary Drinking Water Advisories (PDWA) and Emergency Boil Water Orders (EBWO) Issued by Saskatchewan Regional Health Authorities between April 1, 2015 and March 31, 2016 Note: More than one reason can be identified per PDWA or EBWO		
Number of PDWAs by reasons		
Water Quality Reasons	Number	Percentage
E. coli detected in drinking water system	1	2.3
Total coliforms detected in drinking water system	27	61.4
Suspected contamination	2	4.5
No applicable water quality reason	9	20.5
Line break or pressure loss in distribution system	2	4.5
Excessive disinfection levels	1	2.3
Unacceptable turbidity or particle counts in treated water	2	4.5
Total	44	100
Operational Reasons		
Undetermined source of contamination	10	22.7
No applicable operational reason	8	18.2
Inadequate disinfection residual in distribution system	10	22.7
Does not meet minimum treatment / design requirements	3	6.8
Does not meet monitoring requirements	3	6.8
Start-up of water works	7	15.9
Treatment/distribution equipment failure or damage	1	2.3
Contamination during construction, repair or operation	2	4.6
Total	44	100
Number of EBWOs by reasons		
Water Quality Reasons		
E. coli detected in drinking water system	12	92.3
Line break or pressure loss in distribution system	1	7.7
Total	13	100
Operational Reasons		
Damaged or inadequately maintained cistern or holding tank	1	7.7
Does not meet minimum treatment/design requirements	1	7.7
Inadequate disinfection residual in distribution system	2	15.3
No or inadequate disinfection at the treatment plant	1	7.7
No applicable operational reason	4	30.8
Treatment/distribution equipment failure or damage	1	7.7
Undetermined source of contamination	3	23.1
Total	13	100

Source: Information provided by the Health Regions in Saskatchewan

In 2015-16 the Ministry of Health contracted work with KGS Group Consulting Engineers to assist in conducting risk assessment model to be used for prioritizing beaches at lakes for water quality monitoring. This information helps inform the Ministry's "Healthy Beach" program which samples and determines safe water quality at public swimming areas throughout the province.

The Water Security Agency's Drinking Water and Wastewater Compliance and Enforcement Protocol EPB 434 continues to provide direction and guidance for Environmental Project Officers to ensure that uniform and efficient compliance and enforcement practices are followed in dealing with non-compliance for drinking water and wastewater related violations. Protecting public health, safety of people and the environment is the overall purpose. The enforcement protocol requires that compliance be

obtained initially through the use of public education and prevention as initial priorities while enforcement is a tool of last resort. Compliance related actions might also be applied when an issue is causing, or has the potential to cause, a significant risk to public health and safety, or the environment.

The implementation of the enforcement and compliance protocol continued in 2015-16 and was integral in gaining compliance in problematic or difficult situations. Thirty-eight written warnings were issued for waterworks and sewage works related infractions. Two ministerial orders were issued for sewage works related offences. Four charges were laid for drinking water related infractions, while two charges were laid for wastewater related infractions. There were three convictions registered. The nature of water and wastewater related infractions encountered during the reporting period are summarized in Table 12.

Table 12: Enforcement and Compliance Activities-Drinking Water/Wastewater 2015-16

Infraction	Written Warnings Issued	Ministerial Orders issued	Charges Laid	Convictions	Alternative Measures
Failure to report upset condition at waterworks	5		2	1	
Failure to report upset condition at sewage works	2		1	1	
Failure to operate waterworks in accordance with permit to operate	3				
Failure to operate sewage works in accordance with permit to operate	1	1			
Construction on waterworks without permit	1				
Construction on sewage works without permit	2	1			
Failure to sample for constituents as required by permit (waterworks)	10		2		
Fail to perform required sampling after sewage line break	1		1	1	
Improper record keeping (waterworks)	4				
No certified operator at waterworks	1				
No certified operator at sewage works	1				
Fail to perform monthly review of records (waterworks)	1				
Fail to have a QA/QC policy in place (waterworks)	1				
Fail to have backflow prevention device (sewage works)	1				
Fail to have mechanically forced ventilation in sewage pumping station	1				
High turbidity values in supplied water	1				
Unlawful discharge of sewage	1				
Fail to submit water systems assessment	1				
Total	38	2	6	3	

Compliance Mechanisms

Compliance mechanisms consist of verbal warnings, written warnings, protection orders, and prosecution actions. Verbal warnings are issued for minor offences encountered during inspection duties. Verbal warnings are documented on inspection forms used by inspection staff to ensure proper follow-up. Written warnings consist of letters of non-compliance and notices of violation. They are issued for non-compliance detected during inspections, or when follow-up requirements identified through previous inspections or correspondence was not complied with. Waterworks and Sewage Works Protection Orders are issued to a person responsible for a system to protect human health or the environment. Table 12 provides a breakdown of infraction details during 2015-16.

As of March 31, 2016, approximately 38 community waterworks had yet to consistently achieve compliance with chemical, disinfection by-product or trace metal standards. Of the 38 affected communities water quality issues may be resolved through operational optimization at one community. Another 12 communities failed to meet standards for Trihalomethanes in the 2015 calendar year due to elevated levels of these disinfection by-products being created at the Buffalo Pound Water Treatment Plant. This short term exceedance situation is expected to be improved in the near term.

The Water Security Agency issued 176 new or renewed waterworks operational permits during 2015-16, as a means to ensure waterworks technology and requirements to keep pace with new developments and to help protect consumer health and drinking water quality. A total of 19 pre-existing waterworks permits were amended. Another 244 wastewater works operational permits were issued, renewed or amended during the fiscal year. A total of 179 permits to construct or upgrade waterworks (102) and sewage works (77) were issued or amended over the 2015-16 reporting period. In addition, as of June 1, 2015, water and sewer main extensions within municipalities with a population of at least 5,000 are now covered under Saskatchewan Environmental Code Chapters instead of the permit to construct process. A total of 60 projects proceeded under the new code notification process for sewage mains (29) and water mains (31). Of these 60 projects, 10 proceeded as an "Alternative Solution" and 50 proceeded as an "Acceptable Solution". Comparing the number of permits to construct and code notifications to the number of permits to construct from the previous fiscal year, this is a 15 percent decrease in the number of waterworks and wastewater works construction projects that were permitted or proceeded under the Code. Permit application materials are available online at www.SaskH2O.ca/foroperators.asp under the heading "Forms". The total estimated value of the construction work for all water and wastewater projects

approved by the Water Security Agency or that proceeded under the new Code notification process is estimated at $220 million ($84M for water and $136M for sewer), based on data from 79 per cent of projects reporting cost estimates. Compared to last year, this is a 20 percent decrease in the total estimated value of constructed works. Notable large projects permitted this year (>$5M) include the Saskatoon Spadina bypass lift station; the installation of UV disinfection equipment at the Buffalo Pound water treatment plant; and upgrades to Regina's wastewater treatment plant.

For the period of this report, a total of 36,713 drinking water samples were processed at the Saskatchewan Disease Control Laboratory. A breakdown indicated that 74.8 per cent of the samples for water supplies were from Water Security Agency regulated waterworks. 14.4 per cent were from private customers and 10.8 per cent of the water samples were from Ministry of Health/Health Regions.

Laboratory accreditation was selected as a measure to help gauge results in ensuring safe drinking water for Saskatchewan residents. Laboratory accreditation shows that the facility has a recognized quality assurance and quality control system that assures representative analytical results.

Measurement Results

Number of accredited drinking water testing laboratories

Table 13: Number of accredited drinking water testing laboratories (March 31, noted year)

Mar 02	Mar 03	Mar 04	Mar 05	Mar 06	Mar 07	Mar 08	Mar 09	Mar 10	Mar 11	Mar 12	**Mar 13**	**Mar 14**	**Mar 15**	**Mar 16**	**Annual Change**
1	2	4	6*	6*	6*	6*	6*	6*	7*	7*	6*	8	9	10	1

** All labs performing or have performed analysis for waterworks regulated by the Water Security Agency*

Source: Canadian Association for Laboratory Accreditation web http://www.cala.ca/.

As of March 31, 2016, ten laboratories in Saskatchewan that perform analysis of drinking water samples retained accreditation to Standards Council of Canada standards by Canadian Association for Laboratory Accreditation (Table 13). Accredited laboratories include: Ministry of Health – Saskatchewan Disease Control Laboratory, Saskatchewan Research Council, ALS Environmental, Cameco Corporation, Areva Resources Canada Inc McClean Lake Analytical Laboratory, the City of Saskatoon Water Treatment Plant Laboratory, the City of Saskatoon Environmental Laboratory, AGAT Laboratories Ltd, Environment Canada – National Laboratory for Environmental Testing, and the Buffalo Pound Filtration Plant Laboratory. Three of these laboratories, including Cameco Corporation, Areva Resources Canada Inc. McClean Lake Analytical Laboratory, and Environment Canada – National Laboratory for Environmental Testing provide analytical services for internal clients only.

Professional regulatory staff has access to the tools necessary to ensure compliance

Providing safe drinking water requires accessible training and tools for staff. The tools take the form of working agreements, computerized information systems, rugged notebooks for data collection in the field, as well as examples, guidelines and educational information needed to deliver programming. Staff qualifications must also be assured and kept current with new or evolving water management and information gathering processes. Collectively, these tools help staff to ensure that drinking water is safe and that wastewater effluent discharges do not threaten the quality of source waters or adversely impact the environment. The following reports on a key measure and statistics related to ensuring that professional regulatory staff have access to the tools necessary to ensure compliance during 2014-15 and prior.

State of Drinking Water Quality – Professional Regulatory Staff has Access to the Tools Necessary to Ensure Compliance

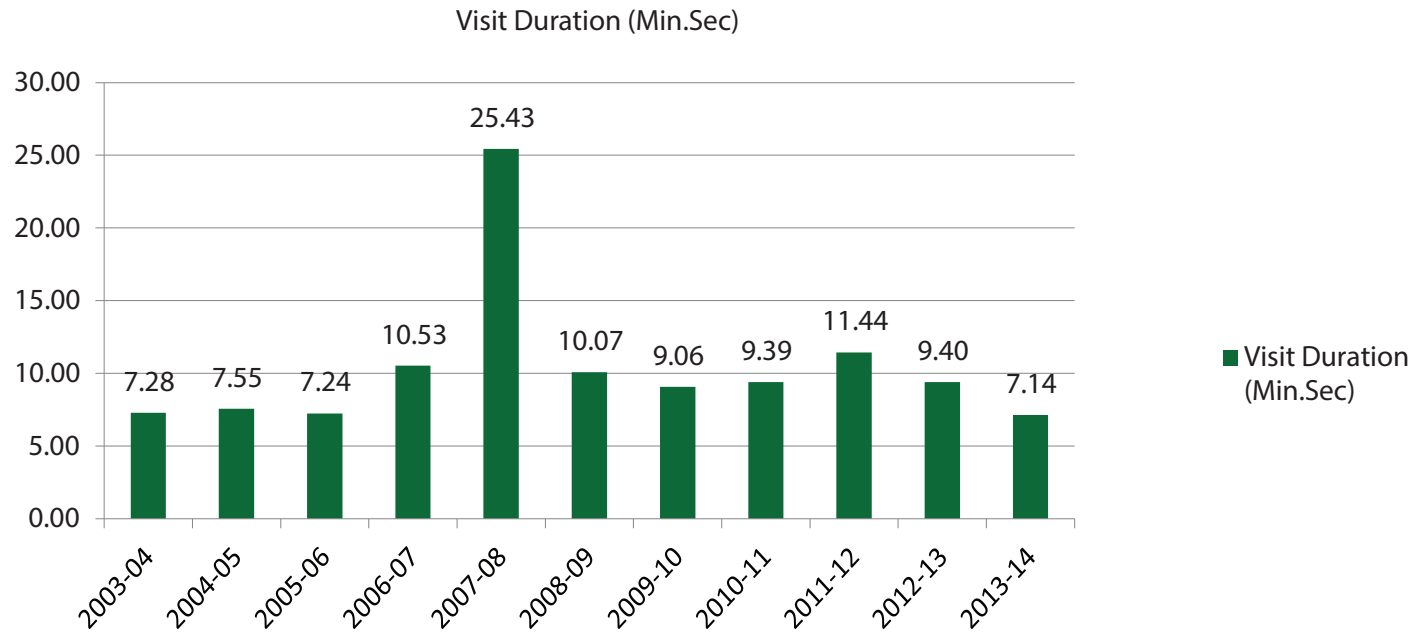
The number and average duration of visits to the SaskH2O.ca website is a good measure of the use of tools that help ensure the protection of drinking water. During 2015-16, there was a significant increase in the number of visits to the website (Figure 7). There was a slight increase in the duration of visits compared to the previous fiscal year (Figure 8).

Measurement Results

Number and average duration of visits to the www.SaskH2O.ca website

Figure 7: Number of visits to the www.SaskH2O.ca website

Figure 8: Average duration of visits to the www.SaskH2O.ca website (minutes.seconds)



**SaskH2O.ca website launched on June 21, 2003. 2003-04 is a partial year. Source: Webtrends information system*

During 2015-16, approximately 50,746 samples and 315,663 measurements were updated in the Water Security Agency's Environmental Management System (EMS). These samples/measurements include, but are not limited to surface water, ground water, distributed water, and effluent.

High quality source waters are protected now and into the future

Risks to source water quality are known

Protecting source water quality is a vital part of providing safe drinking water. Identifying risks to source water quality is the first step in developing actions and strategies to protecting it; thereby minimizing the cost of treating drinking water. Through the watershed planning actions, it is expected that other risks to source water quality will be identified. The following reports on a key measure and statistics related to ensuring that risks to surface water quality are known.

Inspection of wastewater systems is an important means to protect source water and drinking water. During the 2015-16, 601 inspections at wastewater works were completed by Water Security Agency staff. The results of all wastewater system inspections can be found online at www.saskh2o.ca/wastewaterinfo.asp. Information gained from comprehensive inspection results is useful in protecting source water and aquatic habitat. It will also be used to move towards compliance with the "Canada-Wide Strategy for Municipal Waste Water Effluents," thereby advancing wastewater management in the province. A total of 244 additional wastewater works operational permits were issued, renewed or amended in 2015-16. Table 14 summarizes the findings of key elements for facultative lagoon wastewater system inspections conducted during 2015-16 by the Water Security Agency. Table 15 summarizes the findings of mechanical wastewater system inspections carried out by the Water Security Agency during the 2015-16 fiscal year.

Table 14: Facultative lagoon wastewater works inspection finding summary (2015-16)

Inspection Element	Non-Compliant	N/A* or No Response	Compliant
Two basins in series	37	29	513
Immediate reporting of upset/bypass condition	13	128*	415
Maintenance work & failure of treatment components	46	32	501
Dates of discharge of sewage and volumes of discharge	44	197*	338
Locations from which samples are taken	16	191*	372
Results of any tests	9	190*	380
Approved system	10	4 **	565
Certified operator	64	56	459
Maintained in appropriate manner	110	31	438
Sampling done as required	36	167*	376

** N/A = Non-applicable. Some facultative lagoon wastewater works inspected do not discharge effluent and some works serve less than 50 people and therefore the compliance measures for those systems do not apply. These may be recorded as N/A or No Response in the inspection forms.*
*** These systems are mechanical plants which also have storage and treatment lagoons. Compliance with the "Approved System" criteria is included in the inspection summary for mechanical wastewater works as part of the overall treatment system (Table 15 below).*

Source: Water Security Agency – Environmental Management System

Table 15: Mechanical wastewater works inspection finding summary (2015-16)

Inspection Element	Non-Compliant	N/A* or No Response	Compliant
No interconnection between sanitary sewer and storm sewer	6	3	13
Pumping stations must have mechanically forced air ventilation	2	2	18
Effluent quality demonstrated to meet permit requirements for BOD5	3	4	15
Effluent quality demonstrated to meet permit requirements for TSS	6	4	12
Immediate reporting of upset/bypass condition	1	2	19
Disinfection performed as per permit	2	8	12
Immediate reporting of failure of disinfection equipment	2	9	11
Locations from which samples are taken	0	2	20
Results of any tests	4	2	16
Approved system	0	0	22
Certified operator	0	0	22
Reporting of exceedance	6	4	12
On-site testing completed as required	2	3	17
Sampling done as required	5	3	14

** N/A = Non-applicable.*
Results of three mechanical wastewater works inspection (aerated lagoon) are not included in Table 15 as they were recorded as a facultative lagoon inspection and included in Table 14. (Balcarres, Kindersely and Maple Creek) Regina was counted as two separate mechanical inspections (City of Regina and Epcor)

Source: Water Security Agency – Environmental Management System

Improperly designed or non-compliant landfills can pose a high level of risk to surface or groundwater. The Saskatchewan Ministry of Environment's compliance plan identifies landfills as one of the high risk areas activities regulated by the ministry. This information is also reflected in the findings of the recent Saskatchewan Provincial Auditor's report.

Improper application of pesticides may also represent a threat to source waters. Proper application of pesticides is an important means to protect drinking water and source water supplies. Under The Pest Control Products (Saskatchewan) Act, there have been 1844 pesticide applicator licenses, 525 service (businesses) licenses and 382 pesticide vendor licenses issued in 2015-16. Each vendor maintains an approved storage facility registered and approved by the industry and the Ministry of Environment. An applicant for a pesticide applicator license must pass a recognized pesticide applicator course. The applicator training is valid for a five-year period; however, the applicator license is renewed on an annual basis. Licensing of these operations is an important means in protecting water quality.

Permitting the application of pesticides for use in or near water is an important means to protect source waters. Fifty-six permits were issued in 2015-16 for chemical control of Aquatic Nuisances in and/or near surface water in accordance with regulatory requirements. These permits aid in protecting surface water from contamination with pesticides. During 2015-16, the Environmental and Municipal Management Services Division issued a support letter to the Pest Management Regulatory Agency of Health Canada to address the request of Saskatchewan Ministry of Agriculture, for emergency use registration of: 1.) Malathion 85E, Entrust SC, MAKO and Delegate WG for the management of Spotted Wing Drosophila (SWD) in berries and stone fruits; 2.) IntegoTM Solo Fungicide for use with closed transfer commercial seed treaters and on-farm treatment of field peas for the suppression of early-season root rot caused by Aphanomyces euteiches; and 3.) DECCO 070 EC (clove oil) as a sprout inhibitor for organic potatoes in Saskatchewan destined for export to the United States.

State of Drinking Water Quality - Risks to Source Water Quality are Known

The number of sewage effluent discharges that represent a risk to source waters is a direct indication of the potential for source water contamination due to poor wastewater treatment. This measure incorporates the need for future compliance with MWWE standards and pending WSER requirements. This measure was selected since it is the most direct measure of the number of potential significant contamination point sources. Work to resolve problematic wastewater systems will continue in the foreseeable future.

Measurement Results

Number of sewage effluent discharges that represent a risk to source waters

Table 16: Number of sewage effluent discharges that represent a risk to source waters (as of March 31, for noted year)

Mar 04	Mar 05	Mar 06	Mar 07	Mar 08	Mar 09	Mar 10	Mar 11	Mar 12	Mar 13	Mar 14	Mar 15	Mar 16	Annual Change
93	93	85	116	114	114	112	105	128	120	111	109	86	↓23

Source: Water Security Agency – File Information and Environmental Management System

As of March 31, 2016, approximately 86 wastewater systems have been identified as having a discharge that may reach a surface water body or ground water and represent a risk to source waters or the surrounding environment under certain conditions (Table 16). On an annual basis, Water Security Agency staff review the quality of effluent from each regulated sewage works. Growth in Saskatchewan communities continues to place additional pressure on sewage infrastructure as some communities were near, at or beyond treatment and/or storage capacity. Reduction of ammonia emissions within treated wastewater effluent, sewage works capacity or other treatment capability issues typically involve significant planning, investment and construction. Availability of project funding is cited by many communities as a major impediment to moving forward with improvements. Therefore, it can be expected that reductions in the number of works, which represent a risk to source waters, will be a time consuming process.

The Water Security Agency has evaluated wastewater systems in the province. As of March 31, 2016 approximately 82 systems may require compliance with pending Canada-wide Standards for Municipal Waste Water Effluent (MWWE) and 65 may need to comply with the Wastewater System Effluent Regulations (WSER) passed into law in July 2012 pursuant to the federal Fisheries Act. The final number of wastewater systems, which must be managed to the WSER standard, will be finalized once further work on the administrative agreement between the Water Security Agency and Environment Canada. That agreement was signed came into effect in July 2015. In accordance with sewage works permit to operate requirements significant progress on upgrading of the City of Regina sewage treatment system was completed in 2015-16. Upgrades to the system are expected to be completed by December 31, 2016 and are anticipated to result in significant improvements in effluent and downstream water quality while bringing the city into early compliance with the federal Wastewater System Effluent Regulations and preparing for future growth.

Watersheds are protected, natural purification and protection processes are maximized, and potential for contamination is minimized

Protection of source waters can reduce the cost of water treatment and improve water quality while helping to sustain the resource for other uses. Sound water resource management means the processes responsible for breaking down wastes must be protected, as must the land use practices responsible for protecting water from contamination. Actions in terms of both organizational structure and watershed/water management are improving source water protection in the province. The following reports on a number of key measures related to ensuring that watersheds are protected, natural purification and protection processes are maximized and potential for contamination is minimized.

State of Drinking Water Quality - Watersheds are Protected; Natural Purification and Protection Processes are Maximized, and Potential for Contamination is Minimized

Established water quality guidelines and effluent quality standards and implementation of such standards are an important means to manage and protect watershed and source water quality. The Water Security Agency represents the province on national

committees that establish guidelines, objective and standards for water quality, one example being the Canadian Council of Ministers of the Environment, Guidelines Project Team that oversees the development of science-based water quality, sediment, and tissue residue guidelines (Canadian Environmental Quality Guideline-CEQG) for the protection of aquatic life and other beneficial water uses in the province.

Monitoring of effluent quality is needed to understand the potential impacts on receiving streams and advance protection of watersheds and source water quality. The Environmental and Municipal Management Services Division continued modeling and mass balance studies for small category wastewater treatment plants in the province that are affected by the MWWE strategy using all previously collected toxicity data, receiving stream water quality data including data from fish-bearing waters. Based on this work determination of site-specific Effluent Discharge Objectives (EDOs) for selective wastewater parameters for the small category wastewater treatment plants continued. In future years further monitoring and modelling activities are planned as a means to support the development of site-specific EDOs for very small category wastewater treatment plants in the province that are affected by the MWWE strategy. Ultimately site specific requirements will be included in sewage works operational permits as a means to achieve requirements of the MWWE strategy and the *Waterworks and Sewage Works Regulation*s that came into effect on June 1, 2015.

Selection and application of alternative wastewater disposal techniques are important means of protecting watersheds. SaskWater completed four years of its woodlot effluent irrigation research project and is currently exploring its potential as a commercial application. In 2011, the corporation completed construction of a scalable effluent irrigation system to be used as an example for full-sized community projects. The project uses the City of Moose Jaw's wastewater effluent to irrigate various tree plots, and the results have demonstrated a disposal solution that is significantly lower in both capital and operating costs, with zero discharge into surface water bodies. Several tree varieties and irrigation rates were studied and evaluated to determine the most effective method. Efforts are currently being made to develop material for the public based on SaskWater's research results. This project is a joint partnership between SaskWater, the City of Moose Jaw, Communities of Tomorrow (former), Prairie Adaptation Research Collaborative (PARC), the Ministry of Agriculture, the University of Regina, and the Agroforestry Development Centre (ADC).

The Statements of Provincial Interest Regulations (SPI) were adopted on March 29, 2012. The SPI contains an interest specifically for source water protection of resources used for human hygienic use and further addresses the importance of water under interests relating to public works, sand and gravel, biodiversity and natural ecosystems, shorelands and water bodies and public safety.

The SPI require the water interests of the province be reflected in local and regional planning documents such as official community plans and zoning bylaws. The SPI are implemented through the local development permit approval process and the subdivision review process. The Ministry of Government Relations, Community Planning Branch, has developed training material to assist municipal administrators, municipal councillors and professional planners when preparing official community plans. As well, the Community Planning Branch reviews municipal planning bylaws and subdivision applications for compliance with the SPI.

Intensive livestock operation design review and the inspection of these works aid in protecting watersheds and source water. The Ministry of Agriculture requires intensive livestock operations to develop waste storage and management plans that will not contaminate water resources. In 2015-2016, there were thirteen plan approvals issued for intensive operations. Some approvals were for expansions and/or modifications to existing operations. Approximately 192 site inspections were completed.

Planning, research and development associated with agricultural operations is another important means to protect watersheds and source water. The Ministry of Agriculture provides funding through the Agriculture Development Fund (ADF) to support research and development, including agricultural technologies for improved management and/or reduced environmental risks of pesticides, fertilizers and livestock manure. There are nine ongoing water-related projects funded under the Agriculture Demonstration of Practices and Technologies (ADOPT) and ADF, with a total funding allocation of $396,683. Projects are in irrigation agronomy and technology, water conservation and water quality.

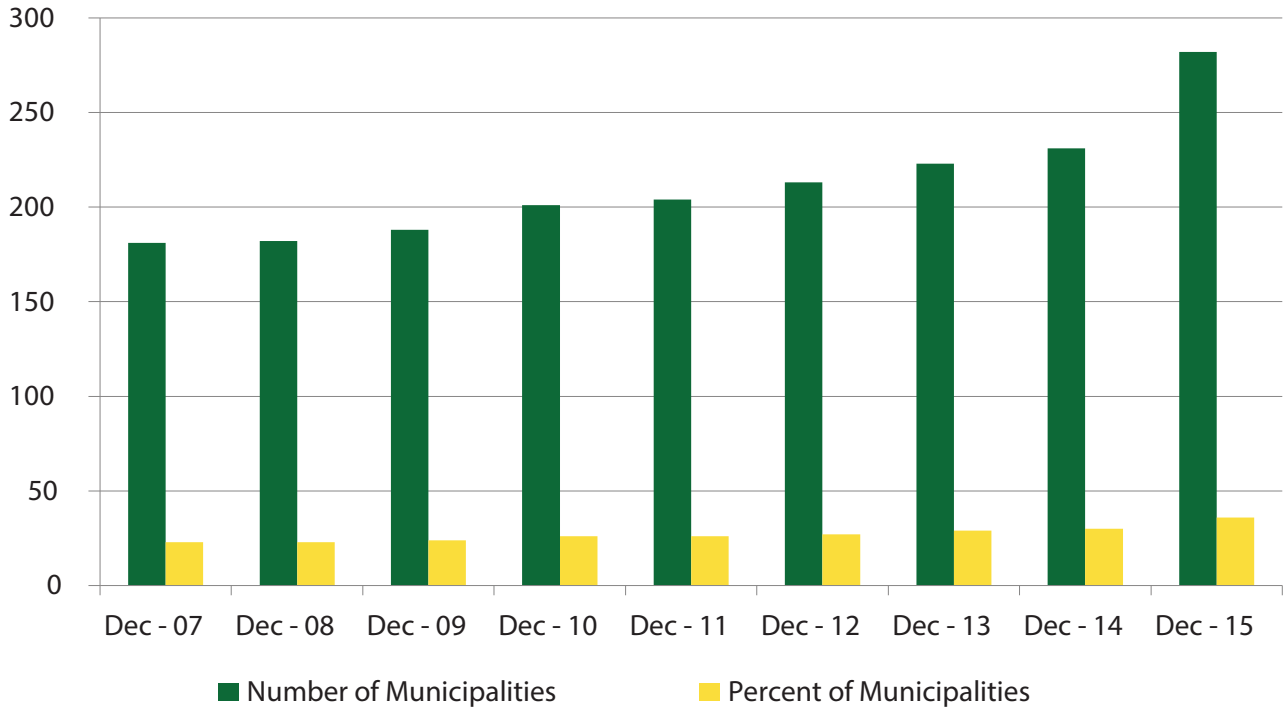
The Ministry of Agriculture is responsible for the delivery of the environment component of Growing Forward 2. It consists of Environmental Farm Planning (EFP), Agri-Environmental Group Planning and the Farm Stewardship Program. In April of 2015 the Ministry of Agriculture launched online EFP. This web-based application allows producers to create an EFP at their convenience online and replaces the classroom sessions. Farm Stewardship is delivered through the Ministry of Agriculture. Agri-Environmental Group Planning is delivered on a watershed basis and provides extension and producer targeted agri-environmental programming. The education and planning on the control and eradication of invasive plant species is handled through the SARM-administered Comprehensive Plant and Animal Pest Control Program. In the 2015-16 fiscal year, $892,200 was spent on the delivery of the Group plan and $1,500,028 was spent on the Farm Stewardship Program. The number of new, endorsed environmental farm plans in 2015-16 was 33, with 12,103 plans produced since 2005.

The number of municipalities with bylaws in place to protect their drinking water supplies is a direct indication of the level of municipal protection of water sources.

Measurement Results

Number and percentage of municipalities with bylaws in place to protect their drinking water supplies

Figure 9: Number and percentage of municipalities with bylaws in place to protect their drinking water supplies



Source: Ministry of Government Relations

The portion of urban and rural municipalities with some form of water management policy contained in their community planning bylaws increased to 36 percent. In addition, 76 percent of the population living in municipalities reside in a municipality with source water protection provisions. Municipalities are becoming increasingly aware of their responsibilities for source water protection.

The Water Quality Index (WQI) (Table 17) is a measure of the quality of ground and surface water for specific uses, such as the protection of aquatic life, livestock watering, recreation, etc., that may not otherwise be apparent through individual water quality test results. The levels of chemicals and organisms in the samples are compared with the WQI levels for the safety and health of the people.

The WQI is a composite measure of different chemicals and organisms in the water and whether the water quality is safe for particular uses. The WQI incorporates three elements:

- ⇨ scope - the number of variables that do not meet the water quality objectives;
- ⇨ frequency - the number of times that variables do not meet the objectives; and
- ⇨ amplitude - the amount by which the objectives are not being met.

From these elements, the WQI produces a score between zero and 100. The government has limited direct control over the results of this broad measure of water quality. While the government regulates point source pollution, many human and natural factors can influence water quality.

The following descriptive categories are used to further explain the WQI results:

- ⇨ Excellent: (value 95-100) - water quality is protected with a virtual absence of threat or impairment; conditions very close to desirable levels. These index values can only be obtained if all measurements are within objectives virtually all of the time.
- ⇨ Good: (value 80-94) - water quality is protected with only a minor degree of threat or impairment; conditions rarely depart from desirable levels.
- ⇨ Fair: (value 60-79) - water quality is usually protected, but occasionally threatened or impaired; conditions sometimes depart from desirable levels.
- ⇨ Marginal: (value 45-59) - water quality is frequently threatened or impaired; conditions often depart from desirable levels.
- ⇨ Poor: (value 0-44) - water quality is almost always threatened or impaired; conditions usually depart from desirable levels.

Water Quality Index ratings for rivers

Table 17: Water quality index ratings for rivers (three-year average water quality index values and ratings for rivers)

Location	2009-11	2009-11 Rating	2010-12	2010-12 Rating	2011-13	2011-13 Rating	2012-14	2012-14 Rating
Assiniboine River (Highway #8)	82.9	Good	75.2	Fair	73.7	Fair	78.2	Fair
Battle River (Battle Rapids)	78.3	Fair	76.2	Fair	74.7	Fair	73.9	Fair
Beaver River (Beauval)	91.3	Good	84.1	Good	81.1	Good	80.6	Good
Beaver River – (Dorintosh)	82.0	Good	76.9	Fair	79.4	Fair	80.0	Good
Churchill River (Otter Rapids)	100	Excellent	95.2	Excellent	95.4	Excellent	100	Excellent
Clearwater River (Highway #955)	-	-	-	-	95.1	Excellent	90.8	Good
North Saskatchewan River (Upstream Highway #16 Bridge)	91.4	Good	89.7	Good	86.2	Good	90.4	Good
North Saskatchewan River (Borden Bridge)	91.2	Good	84.6	Good	84.5	Good	95.0	Excellent
North Saskatchewan River (Prince Albert)	91.7	Good	92.6	Good	90.2	Good	87.7	Good
North Saskatchewan River (Cecil Ferry North Bank)	91.7	Good	91.5	Good	87.8	Good	90.4	Good
North Saskatchewan River (Cecil Ferry – South Bank)	91.7	Good	92.5	Good	91.7	Good	90.1	Good
Qu'Appelle River (below Qu'Appelle Dam)	100.0	Excellent	95.2	Excellent	86.3	Good	95.4	Excellent
Qu'Appelle River (at Highway # 2)	83	Good	80.3	Good	81.6	Good	82.9	Good
Qu'Appelle River (above Wascana Creek)	74.5	Fair	72.1	Fair	69.8	Fair	75.9	Fair
Qu'Appelle River (Highway #11 at Lumsden at rock dyke)	74.7	Fair	59.1	Marginal	53.4	Marginal	61.5	Marginal
Qu'Appelle River (Highway #56)	91.5	Good	72.6	Fair	67.5	Fair	75.8	Fair
South Saskatchewan River (Leader)	74.6	Fair	84.5	Good	68.1	Fair	75.7	Fair
South Saskatchewan River (near Outlook)	83.2	Good	95.2	Excellent	91.1	Good	90.6	Good
South Saskatchewan River (near Queen Elizabeth power station)	91.5	Good	85.3	Good	85.6	Good	100	Excellent
South Saskatchewan River (west Clarkboro)	91.7	Good	84.8	Good	81.8	Good	100	Excellent
South Saskatchewan River (near Muskoday)	83.4	Good	89.8	Good	86.0	Good	100	Excellent
Saskatchewan River (Highway #6)	100.0	Excellent	95	Excellent	95.3	Excellent	88.2	Good
Souris River (Highway #39)	74.3	Fair	68.1	Fair	65.0	Fair	77	Fair
Tobin Lake (at E.B. Campbell Dam)	85.5	Good	92.3	Good	89.5	Good	86.8	Good

Source: Water Security Agency surface water quality monitoring results

The WQI ratings provide a measure of the quality of water in Saskatchewan's rivers and allow a comparison of results over time. However, a limited number of samples are taken in any year and this, as well as changes in water levels and river flow from year to year, can produce significant annual changes in the index. To provide a more meaningful picture of longer term change that is still sensitive to underlying changes, the WQI for rivers has been presented as a three-year mean. The latest WQI values were provided for 2012-2014. Six stations showed modest increases in water quality index readings for the 2012-2014 time period while two stations showed a modest decline in water quality based on the index calculations.

Citizens and consumers trust and value their drinking water and the operations which produce it

Consumers value quality water and are willing to pay for it

The following reports on a number of key measures related to ensuring consumers value quality water and recognize the need to pay for it.

State of Drinking Water Quality – Consumers Value Quality Water And Are Willing To Pay For It

Consumer willingness to pay for drinking water is an important measure of how safe drinking water is valued. Awareness campaigns and consumer polling are tools used to improve and understand how consumer value water.

While SaskWater has no plans to run its "The Value is Clear" campaign in 2016/17, material created in previous campaigns and the slogan The value is clear, are often used in SaskWater's external communications (advertising, customer communication, promotion materials, etc.). These materials continue to create higher awareness of the value of water and of the value of SaskWater as a water and wastewater service provider.

On a biennial basis, SaskWater polls customers on key customer satisfaction measures including water quality, the importance of water services, and perceptions about cost. In 2014, SaskWater conducted its customer satisfaction survey and found that the overall satisfaction with SaskWater is strong, with an average satisfaction score of 8.57 out of 10. Respondents stated that SaskWater is successful in the areas of service reliability, water safety and customer service. The overall average satisfaction rating increased from 8.54 in 2012. The next customer satisfaction survey will occur in fall of 2016.

Measurement of Results

Per cent of survey respondents indicating that they are willing to pay more for their drinking water

Table 18: Per cent of survey respondents indicating that they are willing to pay more for their drinking water

Dec 2001	May 2003	Mar 2005	Mar 2006	May 2007	Feb 2008	May 2009	Mar 2010	May 2011	May 2012	May 2013	May 2014	April 2015	May 2016	Change
61	61.9	68	70.8	67.8	68.8	66.5	65.5	65.8	71.3	66.4	62.4	62.8	64.6	↑1.8

Source: Water Security Agency Polling Results – May 2016

Based on a poll conducted by the Water Security Agency in May 2016, 64.6 per cent of people polled are willing to pay more to improve their drinking water (strongly agree or agree) (Table 18). This value is 1.8 per cent more than the previous poll in April May 2015, and is 3.6 per cent greater than the December 2001 poll results. This increase is not considered to be a significant change since April 2015. May 2016 polling results continue to show ongoing public recognition of the value of water and some related willingness to pay for it. The May 2016 polling results indicate that the majority of those that somewhat or strongly disagreed with willingness to pay more for their drinking water believed that there was no concern with their community drinking water (42.2 per cent), it would be a stress on their financial situation 42.2 per cent), their community drinking water was reported as safe (32.3 per cent), they use bottled water (19.9 per cent), or improvements have been or are being made to their community drinking water system (15.1 per cent). Relatively few respondents to the May 2016 poll noted they are served by a private well (9.6 per cent) or have a water purification system installed in their residence (8.0 per cent).

Table 19: Summary of regional polling results on survey respondents indicating that they are willing to pay more for their drinking water

% Somewhat Agree or Strongly Agreeing	April 2015				May 2016			
	North	Regina	Saskatoon	South	North	Regina	Saskatoon	South
I am willing to pay more to improve the safety or the quality of my drinking water.	52.8%	54.2%	64.8%	68.1%	57.3%	66.2%	65.9%	66.7%

Source: Water Security Agency Polling Results – May 2016

In terms of regional differences (Table 19), Regina and Saskatoon show an increase in somewhat or strong agreement since April 2015, in terms of willingness to pay more for improved water quality and safety.

Citizens and consumers trust the quality and reliability of their drinking water systems and are confident in the regulatory system

Consumers trust in drinking water and in the regulatory systems that govern water-related activities is vital to ensuring the long-term sustainability of waterworks. Consumers who trust the quality and reliability of their water supplies are more willing to support the production of safe drinking water in the future. Release of polling results also bolsters transparency and public trust. The following reports on a number of key measures related to citizen and consumer trust in the quality and reliability of their drinking water systems and confidence in the regulatory system.

State of Drinking Water Quality - Citizens and consumers trust the quality and reliability of their drinking water systems and are confident in the regulatory system

Each year the Water Security Agency conducts polling to determine public opinion associated with drinking water safety. The polling results for May 2016 show the latest measurement of polling results. Since public polling was initiated in the wake of the North Battleford water crisis in 2001 it has remained as an important mechanism in determining the level of success in attaining government's safe drinking water goals.

Measurement Results

Per cent of survey respondents indicating that they are very or somewhat confident in the quality of their tap water

Table 20: Per cent of survey respondents indicating that they are very or somewhat confident in the quality of their tap water (month of year noted

Dec 01	May 03	Mar 05	Mar 06	May 07	Feb 08	May 09	Mar 10	May 11	May 12	May 13	May 14	April 15	May 16	Change
72	87	86	87.3	82.6	86.6	89.9	88.7	85.5	89.7	88.1	88.3	89.3	83.6	↓5.7

Source: Water Security Agency Polling Results – May 2016

Based on a poll conducted by the Water Security Agency in May 2016, 83.6 per cent of people polled strongly agreed or agreed they are confident in the safety of their own drinking water (Table 20). These polling results continue to show a high level of confidence but indicate a 5.7 per cent decrease since the previous year. The results are 11.6 per cent greater than December 2001, when 72 per cent of people surveyed were very or somewhat confident in the quality of their tap water. Announcements regarding the quality of water supplied by the Buffalo Pound Water Treatment Plant in April 2016 may have influenced polling results this year. Actions such as waterworks inspections, implementation of water quality standards, water related workshops, consumer education efforts, media coverage of water contamination events affecting larger centres, and consumer notification help maintain confidence in the safety of drinking water at a relatively high level, in the mid to high 80 per cent range since 2003. Ongoing attention to these elements of drinking water protection will help to maintain the high level of public confidence in safety of drinking water in the future. The measure is important since it provides an indication of how efforts to ensure safe drinking water are progressing.

Table 21: Summary of regional polling results on survey respondents indicating that they are very or somewhat confident in the quality of their tap water

% Somewhat and Strongly Agreeing	April 2015				May 2016			
	North	Regina	Saskatoon	South	North	Regina	Saskatoon	South
Saskatchewan residents have safe drinking water.	88.8%	85.2%	90.4%	83.9%	78.3%	84.7%	83.8%	81.7%
I am confident that my drinking water is safe.	87.5%	90.3%	93.7%	87.3%	79.6%	84.1%	90.5%	81.4%

Source: Water Security Agency Polling Results – May 2016

In terms of regional differences (Table 21) in May 2016, Regina and Saskatoon residents are more likely to somewhat agree or strongly agree that Saskatchewan residents have safe drinking water than residents of southerly or northerly regions. Further, in May 2016, Saskatoon and Regina region residents are also more likely to somewhat agree or strongly agree that they are confident in the safety of their drinking water, compared to residents of northerly and southerly regions. Confidence in the safety of individual resident drinking water was relatively high across the province with polling results ranging from 79.6 per cent in northerly regions to 90.5 per cent in Saskatoon. Polling results did not provide any direct indication as to why confidence levels changed from 2015 to 2016.

Citizens have meaningful access to information about their water quality

Information on water quality is important in building public trust in water systems. It must be understandable, current and readily accessible. To build full trust, information needs to be available both from the waterworks owner and the regulator. The following reports on key measures related to ensuring citizens have meaningful access to information about the quality of their drinking water.

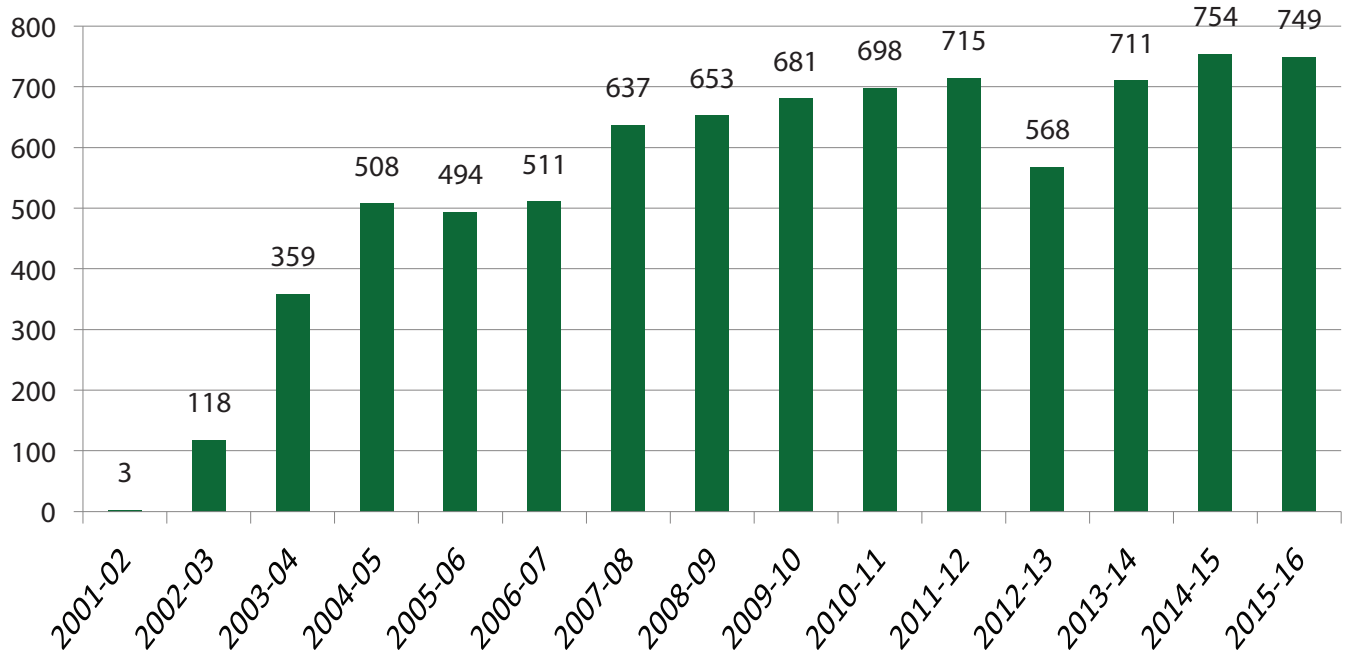
State of Drinking Water Quality – Citizens Have Meaningful Access to Information About Their Drinking Water Quality

The number of system owners that publicly release water quality results is a good way to determine if consumers have direct meaningful access to information about the quality of their water.

Measurement Results

Number of system owners that publicly release water quality results

Figure 10: Number of system owners that publicly release water quality results



Source: Water Security Agency - Environmental Management System

As of March 31, 2016, 749 of 837 Water Security Agency regulated waterworks owners publicly released water quality results to the consumers that they serve (Figure 10). This value represents a decrease of 6 since the 2014-15 fiscal year and represents 89.5 per cent of waterworks regulated by the Water Security Agency in 2015-16. Notification to consumers is required on an annual basis for waterworks regulated by the Water Security Agency. The Water Security Agency will continue to pursue further progress on attainment of public reporting requirements during 2016-17, and beyond. The number of system owners that publicly release water quality results is a good way to determine if consumers have direct meaningful access to information about the quality of their water. Additional waterworks specific information on drinking water quality is also available at: http://www.saskh2o.ca/MyDrinkingWater.asp .

Reduced consumption of water

Reduced consumption of water is important in minimizing costs and thereby, properly valuing water. Water conservation is also necessary to protect water source quality and abundance, particularly in time of increased demand. The following reports on key measures related to consumption of water.

State of Drinking Water Quality – Reduced Consumption of Water.

Measuring the municipal per capita water consumption provides for total annual urban water use (in-home, business and municipal irrigation) within communities (Table 22). The annual consumption is affected by summer irrigation demands, which vary between wet and dry years causing the performance measure to vary between years. The Water Security Agency does not have direct control over this measure but, through water conservation programs, does influence the measure.

Measurement Results

Average per capita consumption [litres per capita per day]

Table 22: Average per capita consumption [litres per capita per day]

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Annual Change
346	368	348	367	331	323	338	333	328	332*	299*	280	280	279	291	283	↓8

A complete dataset for 2015 is not available at the time this report was prepared. The database source of the performance results for this measure has a time lag of about six months; January 1 to December 31, 2015 data and will be available in July 2016.
Note: Commencing with the 2009 year, water consumption values are reported in metric units. Water use for previous years have also been converted to metric units using a more precise conversion factor that accounts for slight differences reported for 2008-09, and previously.
**Average per capita consumption is restated from 335 to 332 in 2009 and from 325 to 299 in 2010 based on a revised dataset and calculation performed in May 2013.*
Source: Saskatchewan Community Water Use records for 2015, published May, 2016.

This measure is computed by summing the Litres per Capita per Day (LCD) for each community and dividing by the number of communities. The weighted LCD is computed by summing the yearly water consumption for each community and dividing by the total population and 365 days. The Saskatchewan Community Water Use Records maintained by the Water Security Agency is the dataset used in this determination. The change in the water consumption rate is attributed to the natural annual variability found in water consumption records and climatic, technological and behavioural influences on water use.

The reported value of 283 litres/capita/day is based on the data available on May 4, 2016. A complete dataset for 2015 is not available at the time this report was prepared. The database source of the performance results for this measure has a time lag of about six months; January 1 to December 31, 2015 data and will be available in July 2016.

Over the 2005 to 2015 period, the Water Security Agency has promoted responsible water use through a variety of public education, partnerships and programs. Although now completed the previous Provincial Toilet Replacement Rebate Program is one example of how water conservation has been promoted within the province.

2015-16 Financial Overview

Actual expenditures relating to drinking water management in 2015-16 were $26.083 million, which was $9.451 million lower than the budgeted expenditures of $33.534 million.

The Ministry of Health FTE utilization for the Saskatchewan Disease Control Laboratory was at the full level of 18 FTEs during the reporting period. In addition to the FTEs within the Ministry of Health, funding is provided to Regional Health Authorities for water related programs and surveillance. It is not possible to state the actual number of Regional Health Authority FTEs that are dedicated to water as a number of different disciplines (i.e. Medical Health Officers, Public Health Inspectors and Public Health Nurses) can become involved in water and/or water related disease surveillance, and issue-specific time is not tracked.

Under the Canada-Saskatchewan Building Canada Fund - Communities Component (BCF-CC), the New Building Canada Fund – Small Communities Fund (SCF), and Saskatchewan Infrastructure Growth Initiative (SIGI), the Ministry of Government Relations provides financial support to municipalities for priority drinking water and wastewater infrastructure improvements. In 2015-16 $2.532 million in federal-provincial funding was paid under BCF-CC; $0.718 million in federal-provincial funding was paid under SCF; and $0.844 million in provincial funding was paid out under SIGI for water and wastewater projects.

Expenditures

The following table outlines information on the budgeted and actual expenditures based on original 2015-16, and revised estimates relating to water management. Funding for water management activities comes from various government ministries and agencies and is contained in their respective budgets. Explanations have been provided for all variances greater than $5,000.

Ministry or Agency	Estimates Budget ($000s)	Actual Expenditure ($000s)	Variance Over (Under) ($000s)
Ministry of Environment*	-	-	-
Water Security Agency**	20,477	20,477	0
Ministry of Government Relations ***			
BCF-CC	3,803	2,532	(1.271)
SCF	8,422	718	(7,704)
SIGI	1,247	844	(403)
Ministry of Government Relations - Total	13,472	4,094	(9,378)[1]
Regional Health Services			
- Regional Health Authorities (Health Regions) Base Operating Funding	476****	476	0
- Regional Targeted Programs and Services	30	7	(23)[2]
Saskatchewan Disease Control Laboratory – Environmental Services	1,079	4,094	(50)[3]
Ministry of Health – Total	1,585	1,512	(73)
Total	33,534	26,083	(9,451)

**The Ministry of Environment performs some water-related work but does not have a dedicated budget for this activity and does not track drinking water specific expenditures separately as this work is typically undertaken in conjunction with other industrial compliance assurance activities.*
*** Expenditures shown are grants from the General Revenue Fund to the Water Security Agency for all water programs.*
**** The Ministry of Government Relations budget is determined by program, not by infrastructure category (e.g. water and wastewater). The budget estimate is based on a ratio of the water and wastewater expenses compared to total program expenses multiplied by the total program budget for 2015-16.*
***** This amount does not include additional funding provided to Health Regions to offset increases to salaries and benefits through collective bargaining agreements.*
Note: As SaskWater is a Crown Investments Corporation subsidiary, its financial budgeting process, including timing and approvals, is separate from that of the ministries and/or agencies. Its activities are not related to water management, but rather the provision of water services to its customers. For full financial information, see SaskWater's annual report at www.saskwater.com .

Explanations of Major Variances

[1] The federally-proposed PTIC funding program originally had features to be bilaterally negotiated and modified to serve the unique needs of Saskatchewan. The province completed its due diligence to ensure that Saskatchewan maximizes the investment benefit from the funds that are available in the 10-year PTIC program. Projects selected under part of the PTIC funding program must meet the added federal requirement of creating and submitting a more detailed Business Case, which adds to the final announcement date for funding of approved larger projects.

[2] 23,000 under expenditure was due to deferral of some activities in the recreational water quality program.
[3] 50,000 under expenditure was due to drop in water samples analyzed.

Revenues

There are no revenues that arise specifically in relation to delivery of drinking water activities for the Ministries of Government Relations and Agriculture. Any revenues that arise from government commitments and activities relating to drinking water and source water protection within the Ministry of Health or SaskWater are reported within their respective annual reports.

For More Information

For an electronic copy of this report or more information on the status of drinking water in Saskatchewan visit:

https://www.wsask.ca/About-WSA/Annual-Reports/Drinking-Water-Annual-Report/ or www.SaskH2O.ca/WaterInformationFactSheet_Drinking_AnnualReports.asp

Or contact:

Drinking Water and Wastewater Management Division
Water Security Agency
111 Fairford Street East
MOOSE JAW, SK S6H 7X9
Telephone: (306) 694-3900

Feedback on the key actions and results may also be provided to the Water Security Agency through the contact information immediately above.

Next year's annual report will address status of drinking water for the 2016-17 fiscal year.

Appendix A: List of Acronyms Contained in this Document

ABC	Association of Boards of Certification
ADF	Agriculture Development Fund
ATAP	Advanced Technologies Applications
ADOPT	Agriculture Demonstration of Practices and Technologies
BCF-CC	Canada-Saskatchewan Building Canada Fund - Communities Component
BMP	Beneficial Management Practices
CAC	Certification Advisory Committee
CCME	Canadian Council of Ministers of the Environment
CDW	Committee on Drinking Water
CES	Consulting Engineers of Saskatchewan
CESI	Canadian Environmental Sustainability Indicator
CEU	Continuing Education Units
COM	Certified Operations and Maintenance
CSIP	Canada-Saskatchewan Infrastructure Program
DWQI	Drinking Water Quality Index
EBWO	Emergency Boil Water Order
EFP	Environmental Farm Plans
EMS	Environmental Management System
EPO	Environmental Project Officer
FSIN	Federation of Saskatchewan Indian Nations
FTE	Full Time Equivalent
GUDI	Groundwater Under Direct Influence
INAC	Indian and Northern Affairs Canada
ISF	Infrastructure Stimulus Fund
LCD	Litres per Capita per Day
MCPA	2-Methyl-4-Chlorophenoxy Acetic Acid
MWWE	Canada-wide Strategy for Municipal Waste Water Effluent
NBCF	New Building Canada Fund
NTU	Nephelometric Turbidity Units
OCB	Operator Certification Board
OCP	Official Community Plans
PCAP	Prairie Conservation Action Plan
PDWA	Precautionary Drinking Water Advisory
PFOS/PFOA	Perfluorooctanesulfonic Acid/Perfluorooctanoic Acid (PFOS/PFOA),
PPWB	Prairie Provinces Water Board
PTIC	Provincial Territorial Infrastructure Component
RHA	Regional Health Authority
RWQP	Rural Water Quality Program
SARM	Saskatchewan Association of Rural Municipalities
SARWP	Saskatchewan Association of Rural Water Pipelines
SCADA	Supervisory Control and Data Acquisition
SCF	Small Communities Fund
SIGI	Saskatchewan Infrastructure Growth Initiative
SPI	The Statement of Provincial Interest Regulation
SUMA	Saskatchewan Urban Municipalities Association
SWWA	Saskatchewan Water and Wastewater Association
WEBs	Watershed Evaluation of Beneficial Management Practices sites
WQI	Water Quality Index