PROVINCE OF SASKATCHEWAN

10-11

ANNUAL REPORT

MINISTRY OF ENVIRONMENT

State of Drinking Water Quality
in Saskatchewan

Table of Contents

Note: An electronic copy of this document is available online at: www.SaskH2O.ca/news.asp

Letters of Transmittal

The Honourable Dr. Gordon L. Barnhart
Lieutenant Governor of Saskatchewan

I respectfully submit the Annual Report on the State of Drinking Water Quality in Saskatchewan for the fiscal year ending March 31, 2011.

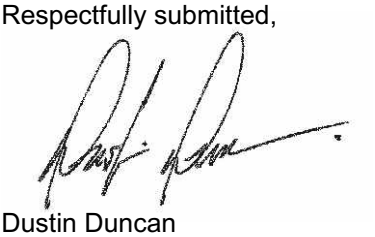
The Government of Saskatchewan carefully measures each commitment they make and carefully counts each commitment they have kept. This government is committed to delivering and building on their promises made to Saskatchewan people.

The initiatives pursued in 2010-11, and the results achieved, are communicated to the legislature and to the Saskatchewan people through this report. I wish to acknowledge that the work of protecting our drinking water is ongoing and this report helps to inform future planning and resource allocation for upcoming years.

The 2010-11 Annual Report demonstrates progress towards the commitments that relate to drinking water and source water protection activities of involved ministries and agencies as of March 31, 2011.

Government has defined its direction for ministries and agencies and has communicated this direction through a vision and goals released with the 2011-12 Budget. Ministries and agencies have aligned with this direction and look to the future with confidence to help deliver on government's plan to build on the economic momentum and the Saskatchewan advantage.

Respectfully submitted,



Dustin Duncan
Minister of Environment

Letters of Transmittal

To Minister Dustin Duncan
Ministry of Environment

I respectfully submit the Annual Report on the State of Drinking Water Quality in Saskatchewan for the fiscal year ending March 31, 2011. I acknowledge responsibility for this 2010-11 report and declare the information contained within this report is accurate, complete and reliable.

The 2010-11 report describes the drinking water related activities of ministries and agencies 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 Ministry of Environment, Ministry of Health, Regional Health Authorities, Saskatchewan Watershed Authority, SaskWater, the Ministry of Municipal Affairs and the Ministry of Agriculture.

On behalf of the key partners, the Ministry of Environment provides information on our collective accomplishments in the protection, conservation and sustainable development of drinking water and related source water resources during 2010-11.

The province is committed to ensuring that all stakeholders are engaged and supported as partners in the management of drinking water supplies and the groundwater and watersheds which supply them. The province will continue to prevent and reduce risks to the health of people and the environment and to ensure safe and sustainable drinking water and wastewater management.

People all across Saskatchewan need to be able to rely on access to safe and reliable water now and in the future. Fresh, clean water is essential for a high quality of life in our province and for ongoing economic development. Together, ministries and agencies continue to build a secure and prosperous Saskatchewan by working to improve the management of drinking water systems in the province.

Respectfully submitted,

Elizabeth Quarshie
Deputy Minister

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, 2011. It reports on public commitments made and other accomplishments of ministries and agencies engaged in drinking water management in Saskatchewan. This report also demonstrates progress made on Government commitments as stated in the Government Direction for 2010-11 and the 2010 Minister's Mandate letter to ensure Saskatchewan communities have access to safe and clean water supplies.

This is the ninth 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, 2010 to March 31, 2011 period. The report is a legislated requirement under The Environmental Management and Protection Act, 2002 and will be provided on an annual basis in future years.

The 2010-11 Annual Report follows a similar format to the 2009-10 Annual Report. The 2010-11 Annual Report on the Status of Drinking Water also sets the stage for the 2012-13 planning and budget process by providing an opportunity to assess the accomplishments, results and lessons learned, and identifying how to build on past successes for the benefit of Saskatchewan people.

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 and environmental issue in Saskatchewan at the present time and for the future.

The report outlines the roles, responsibilities and resources of ministries and agencies 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, source protection, information management systems and public education initiatives which are key actions and indicators of performance in improving drinking water quality in Saskatchewan. An update on progress made in improving the City of North Battleford's drinking water as a result of recommendations made in the "Report of the Commission of Inquiry" is available online at www.northbattlefordwaterinquiry.ca/inquiry/inquiry.htm.

The report includes contributions from Saskatchewan Ministries of Environment, Health, Municipal Affairs and Agriculture, as well as material provided by the Saskatchewan Watershed Authority and SaskWater. The Saskatchewan Ministry of Environment's Municipal Branch compiled the report.

Alignment with Government Direction

The actions undertaken to protect and sustain drinking water and source water in the future align with government's vision and three goals:

Our Government's Vision

A secure and prosperous Saskatchewan, leading the country in economic and population growth, while providing a high quality of life for all.

Government's Goals

- Sustain Economic Growth for the benefit of Saskatchewan people, ensuring the economy is ready for growth and positioning Saskatchewan to meet the challenges of economic and population growth and development.

- Secure Saskatchewan as a safe place to live and raise a family where people are confident in their future, ensuring the people of Saskatchewan benefit from the growing economy.

- Keep Government's Promises and fulfill the commitments of the election, operating with integrity and transparency, accountable to the people of Saskatchewan.

Together, all ministries and agencies support the achievement of government's three goals, and work towards a secure and prosperous Saskatchewan.

An Overview of Drinking Water Management 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 the water we drink is safe.

Several ministries and agencies are involved in the governance and protection of drinking water supplies and source waters in Saskatchewan including the Ministry of Environment, Ministry of Health, Regional Health Authorities, Saskatchewan Watershed Authority, SaskWater, Ministry of Municipal Affairs and the Ministry of Agriculture. 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.

Saskatchewan Ministry of Environment

- 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 567 licensed municipal waterworks, 64 permitted pipelines, 38 regional or provincial park waterworks, 24 industrial waterworks, 85 other permitted waterworks (such as trailer courts, institutions and Hutterite colonies), and 577 wastewater facilities under The Water Regulations, 2002;
- 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 Water Regulations, 2002*;*
- liaises with the Operator Certification Board (OCB);
- manages the Ministry of Environment's drinking water information system, Environmental Management System (EMS) that houses water quality and inspection data for all Ministry of Environment regulated waterworks and wastewater works in the province;
- monitors surface water quality at primary surface water quality stations across the province; and
- manages the www.SaskH2O.ca website that supplies a broad range of drinking water related information gathered from water management authorities within the province.

Saskatchewan Ministry of Municipal Affairs

- for 2010-11, provided financial assistance for water infrastructure under the Canada-Saskatchewan Municipal Rural Infrastructure Fund (MRIF), the Canada-Saskatchewan Building Canada Fund-Communities Component (BCF-CC), the Canada-Saskatchewan Building Canada Fund-Major Infrastructure Fund (BCF-MIC), the Canada-Saskatchewan Provincial/Territorial Base Fund (PT Base), the Canada-Saskatchewan Infrastructure Stimulus Fund (ISF), the Saskatchewan Infrastructure Growth Initiative (SIGI) and the Northern Water and Sewer Program;
- 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 Watershed Authority

- 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);
- allocates groundwater and surface water for use; and
- develops and provides State of Watershed Reporting.

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 Agreement).

SaskWater

- provides potable and non-potable water supply;
- provides wastewater treatment and management;
- provides certified operation and maintenance for customer-owned systems;
- provides project management services;
- offers water leak detection services;
- offers operator training; and
- offers remote monitoring services.

The Ministry of Environment, 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. During 2010-11, the Ministry of Environment's staff complement totalled 34.9 Full Time Equivalents (FTE) for delivery of all aspects of the Ministry's drinking water and wastewater management activities. An additional three FTEs are employed by the Ministry of Environment in the management of the EMS and the SaskH20 website that contribute to water related management to some degree.
The Ministry of Health's Saskatchewan Disease Control Laboratory has 17.5 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. inspection of semi-public water supplies, 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. One

additional full time position provides technical assistance to address environmental issues related to livestock development and abattoir waste management. Ministry of Agriculture staff continues to participate in the Aquifer/Watershed planning activities and technical committees. The Ministry also develops and distributes management and technology information for conservation and grazing and crop production that reduce and/or minimize impacts to water resources. The Ministry has three FTEs delivering pesticide regulatory services.

The Pest Control Products (Saskatchewan) Act and regulations require any individual who uses or applies a pesticide, as part of their duties or, for commercial gain to hold a valid pesticide applicator license. An applicant for a pesticide applicator license must pass a pesticide applicator course, This training is valid for five years, however, the applicator license is renewed on an annual basis.

Pesticide education and applicator training and certification are recognized as a key tool in risk reduction. Education helps mitigate the risks associated with pesticide application. Education and training produces a more sophisticated pesticide applicator and results in the more responsible use of pesticides. The responsible use of pesticides helps preserve the natural the environment while keeping it safe for the use and enjoyment of the general public.

In Saskatchewan, the Saskatchewan Institute of Applied Science and Technology (SIAST) offers pesticide applicator courses. There are currently 2,243 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 Ministry of Municipal Affairs' water-related programming 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, Federal Gas Tax program, Canada-Saskatchewan Municipal Rural Infrastructure Fund, participants in the Growing Forward 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 sections of the report that follow provide information on the status of drinking water in Saskatchewan during 2010-11. Further information on drinking water quality is available on the SaskH2O website www.SaskH20.ca, and on the Ministry of Environment's website www.environment.gov.sk.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 level of performance 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 2010-11

This section presents the key results, activities, accomplishments and outcomes in 2010-11, relating to the protection and status of drinking water in Saskatchewan. The results in this section support the achievement of government's goals as identified in the "Alignment with Government Direction" section and the more specific areas relating to drinking water that follow.

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 followed by a report on actual progress. The following is a summary of the most significant achievements relating to drinking water and source water status and protection in Saskatchewan during 2010-11, by the various ministries and agencies engaged in water management in Saskatchewan. Further information is available by contacting the Ministry of Environment or viewing on the internet at www.SaskH2O.ca.

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 is a summary of activities conducted during 2010-11, and the related achievements in working to ensure that waterworks staff are capable and well-trained.

Results

- As of March 31, 2011, at total of 1,942 waterworks or sewage works operators had been certified by the Saskatchewan Operator Certification Board since that organization first formally commenced certifying operators in 2002. Of the 1,942 total certified operators to date, 1216 operators were certified as of March 31, 2011.

- The Ministry of Environment participated as a member of the Canadian Water and Wastewater Operators Certification Committee in conjunction with the Associated Boards of Certification (ABC) towards developing the Canadian Best Practices for operator certification. This committee is setting the groundwork for reciprocity across Canada within the Agreement in Trade for all certified water and wastewater operators.

- Operator certification and continuing education requirements are always reviewed and discussed during each waterworks and sewage works inspection to help ensure operators remain current with certification requirements.

- During 2010-11, approximately 82 per cent of operators receiving renewal notification from the OCB actually renewed their certification. This is a slight increase from 2009-10, when 80 per cent

of operators renewed their certification on notification by the OCB. This increase in renewal in comparison with the 2009-10 fiscal year is due in part by efforts by the OCB to inform operators well in advance of their renewal date and posting the dates of their review sittings a year in advance. There is still an issue with late applications for renewal by operators and a higher rate of retirements by operators.

- The Ministry of Environment (the ministry) directly supported training opportunities including aiding in the organization of the Northern Water Works Conference at La Ronge in April 2010. The Ministry also supported the Saskatchewan Water and Wastewater Association (SWWA) for their midterm membership meeting in June 2010 and annual convention in November 2010, by providing organizational aid and instruction to operators during training sessions. Ministry staff supported SWWA by providing instruction during dedicated operator training workshops hosted at locations across the province throughout the year. The ministry also contributed to the annual Saskatchewan Association of Rural Water Pipelines (SARWP) conference in December 2010, by providing instruction and workshop presentations.

- In terms of overall progress on operator certification, the OCB continued to certify water and wastewater works operators throughout 2010-11. As of March 31, 2011, there were 660 waterworks licensed by Ministry of Environment 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 of upgrading their certification levels and categories. Some facilities sought hygienic classification which does not require a certified operator. Ministry of Environment 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.

  Table 1 provides additional trend information on the number of waterworks with certified operators since 2000-11 for all waterworks regulated by Ministry of Environment.

Table 1: Summary of certification trends for water and wastewater works since 2000-11

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
Certified operators*	44	293	403	533	682	1107	1170	1223	1231	1229	1216
All Waterworks with certified operators**	24	116	217	219	326	532	614	638	675	659	660
Number of licensed works***	609	609	617	630	641	714	728	724	765	772	778
Number of Hygienic Works not Requiring Certified operators	N/A	N/A	N/R	N/R	N/R	92	101	107	114	113	118

* Operators working in Ministry of Environment regulated waterworks.
** Includes all waterworks with certified operators in the province.
***Licensed works includes municipal water treatment works, water distribution systems, wastewater treatment works and wastewater collection systems. These values include hygienic waterworks that do not require a certified operator
N/A: Not Applicable.
N/R: Not Recorded.

Source: Operator Certification Board database and Ministry of Environment hygienic waterworks listing

Table 2 provides information on the number of operators certified at various levels in all categories of the water and wastewater treatment industry in Saskatchewan during 2010-11.

Table 2: Distribution of certified operators at water and wastewater works - fiscal year 2010-11*

System Classification[1]	Water Treatment	Water Distribution	Wastewater Treatment	Wastewater Collection
Small System[2]	161	161	100	100
Class-1	422	513	526	487
Class-2	334	328	102	150
Class-3	68	23	21	7
Class-4	68	17	28	11
Total	1053	1042	777	755

[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 www.SaskH2O.ca/DWBinder/EPB139OperatorCertificationStandards2002.pdf).

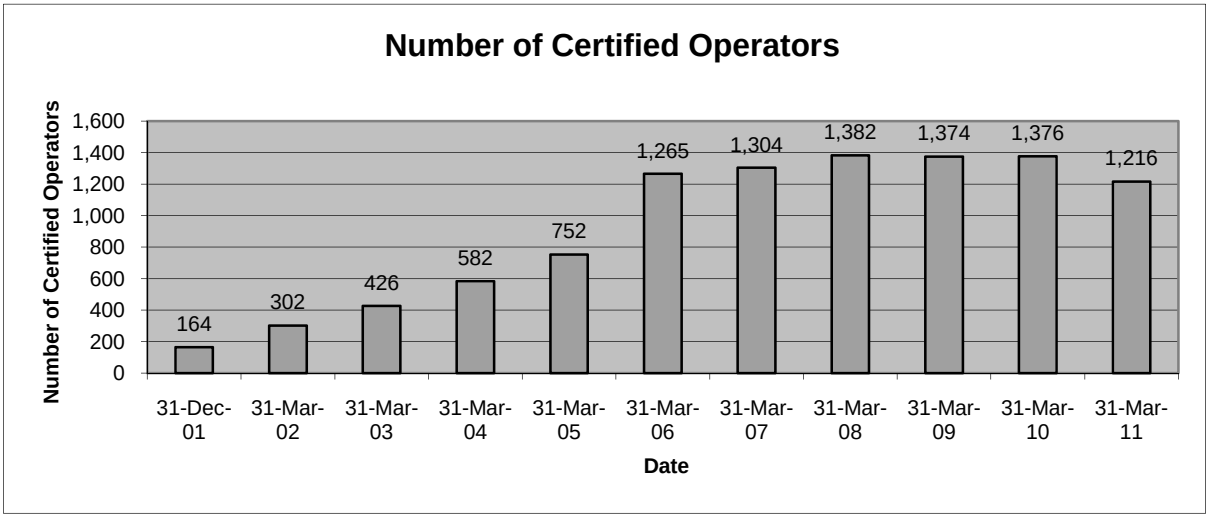
[2] There are several types of Small Systems. A Small Water System is defined as a Class-1 groundwater treatment and/or Class-1 distribution system, serving fewer than 500 people. Small treated drinking water pipelines serving fewer than 500 people can be classified as Small Systems and some of their 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 2 does not include operators that are overdue in certificate renewal as of Mar. 31, 2011.

Source: Operator Certification Board Database

Figure 1 provides a historical summary of the number of operators certified to date. During 2010-11, the number of all certified operators reported by the OCB is 1,216 as of March 31, 2011. These are all the certified operators, including those who do not operate waterworks regulated by Ministry of Environment. Indian and Northern Affairs Canada (INAC) required First Nation operators to become certified by the same criteria of education, experience and examination as operators mandated by Ministry of Environment. Since INAC did not have a certification program of its own, Ministry of Environment invited the First Nations operators to participate in its certification program and 112 were certified at the end of this fiscal year. In addition, there are seven operators working in federal facilities such as parks or correctional centers. In addition to these 1,216 operators, 156 are overdue for their certification renewal and are not on the list.

Figure 1: Summary of certified operator trends



Source: Operator Certification Board certification records database

The number of certified operators applying for initial certification during the 2010-11 fiscal year was 123, and there were 98 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). The number of certified operators as of March 31, 2011 does not include 156 re-certification requests which were overdue at that time. Operators are

responsible to ensure that their recertification requests are provided on time for consideration by the Operator Certification Board.

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

Table 3: Per cent of communities with human consumptive waterworks whose operators have received some level of certification

	Sept. 30, 2004	March 31, 2006	March 31, 2007	March 31, 2008	March 31, 2009	March 31, 2010	March 31, 2011	Annual Change (2010-11)
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	↓ 0.6

Source: Ministry of Environment – Environmental Management System

As of March 31, 2011, 98.3 per cent of communities with human consumptive waterworks requiring a certified operator have operators that have achieved some level of certification (Table 3). This represents no significant change from the previous year when the reported value was 98.9 per cent. In two of the affected communities, waterworks operators retired as of March 31, 2011, and the community had yet to find a replacement certified operator. Approximately 99.97 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 and therefore achievement of this measure 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 key to ensuring the delivery of safe drinking water and therefore a reason this measure was selected. As a point of comparison, Alberta's (population 3.2 million) mandatory certification program took effect on January 1, 1983, and its program currently has approximately 2,300 certified operators. Currently their certification examinations, certification applications and certificate renewals are free. Saskatchewan (population approximately 1.0 million) has 1,216 certified operators, examinations cost about $80 and certification and renewal fees (every two years) are $150. Saskatchewan's certification program has progressed very much 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" (see www.hc-sc.gc.ca/ewh-semt/alt_formats/hecs-sesc/pdf/pubs/water-eau/2010-sum_guide-res_recom/sum_guide-res_recom-eng.pdf), 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 is a summary of activities, which were conducted during 2010-11, and the related achievements in working to ensure that infrastructure produces water that meets national drinking water quality guidelines.

Results

- In 2010, SaskWater delivered 5.41 billion litres of safe, high quality drinking water to Saskatchewan communities and rural pipeline groups.

- In November 2010, the Ministry of Environment served as co-chair for the 14th Canadian National Drinking Water Conference and 5th Policy Forum on Drinking Water, which was held in Saskatoon, Saskatchewan. The event attracted over 350 delegates from Saskatchewan, Canada, United States and Europe, and served as a significant opportunity to focus on future infrastructure needs as related to achieving drinking water quality standards in the province and nationally.

- During 2010-11, the Ministry of Environment provided technical advice to numerous small communities that aided in resolving upset situations such as failures of disinfection systems and system depressurizations as well as operational and water quality concerns, resulting in safer drinking water. These activities and interaction with municipalities and owners will continue in 2011-12, and are an ongoing service of the Ministry.

- The Ministry of Environment provided same day advice to engineering consultants and municipalities in dealing with water treatment plant and water distribution system construction and upgrades. This approach is intended to move projects to completion as fast as possible while still achieving the ministry's human and environmental protection goals.

- The Ministry of Environment continued to track, report and follow-up with waterworks owners on compliance with sample submission and water quality standards. During 2010-11, the ministry complimented its computer-based method of auditing compliance with sample submission requirements by adding general chemical and health and toxicity parameters to its disinfection residual requirements as a means to help assure compliance and accurate and transparent reporting.

- The Ministry of Environment continued to provide technical advice support to provincial agencies regarding applications for Saskatchewan-based infrastructure grants at individual projects. During 2010-11, the focus of this work was the 2009-10 Canada-Saskatchewan Building Canada Fund and comment was provided on 16 projects to help with project completion and tracking to ensure drinking water meets water quality standards and the overall goals of safe drinking water are advanced.

- In 2010-11, six water and wastewater projects were approved for $2.481M in federal-provincial funding under Canada-Saskatchewan Building Canada Fund - Communities Component (BCF-CC) and Infrastructure Stimulus Fund programs.

- To continue water and wastewater related funding in 2010-11, under the Canada-Saskatchewan Municipal Rural Infrastructure Fund (MRIF), $0.9 million in federal-provincial funding was approved for two existing water projects. Under the Saskatchewan Infrastructure Growth Initiative (SIGI) Program, 32 water and sewer projects with total approved borrowing of $74.3 million were approved to receive interest rate subsidies in 2010-11.

- Under the federal-provincial infrastructure programs (MRIF, BCF-CC, Canada-Saskatchewan Building Canada Fund – Major Infrastructure Component (BCF-MIC), PT Base, and ISF), $57.3 million was provided for 175 water and wastewater projects in 2010-11.

- In 2010-11, $2.3 million in interest-free subsidies were provided for 15 water and wastewater projects under SIGI.

- In 2010, the Northern Municipal Trust Account (NMTA) spent $6.1 million under the Northern Water and Sewer Program for 26 water and wastewater infrastructure projects. These projects were undertaken in 20 communities. For these projects, the NMTA received $1.7 million from the Department of Western Economic Diversification, $295,639 from the Building Canada Fund Infrastructure Program, and $17,324 from the Municipal Rural Infrastructure Fund.

- Under the Emergency Water and Sewer Program the NMTA spent $188,737 in five (5) communities. For all water and wastewater infrastructure projects, the NMTA has a contractual arrangement with Saskatchewan Water Corporation (SWC) for provision of project management services. These services consist of general engineering, infrastructure assessment and planning, managing, design, and the construction and commissioning of works including budget control and payment administration. Expenses to SWC totalled $575,854.

- In addition, the NMTA funded the Circuit Rider Program whereby all 31 communities received technical assistance to ensure their water and wastewater systems were run efficiently and adequately maintained. Total expenditures for the Circuit Rider Program were $336,223. The provision of services in the Circuit Rider Program was contracted to ATAP Infrastructure Management Ltd.

- SaskWater spent $24.4M in 2010, under its capital program, expanding industry clients, growing communities and renewing infrastructure.

- In total, SaskWater owns seven water treatment plants, three wastewater facilities, 38 water and wastewater pump stations and over 800 km of pipeline. Through this regional network, the crown corporation provided professional water and wastewater services to 57 communities, seven rural municipalities, 85 rural pipeline groups, 14 industrial and approximately 200 commercial and end user customers. In 2010, SaskWater changed its customer classification to include “commercial” customers. This classification transferred several customers from the “industrial” to the “commercial” category. Rural customers with more than one end user are now classified under “rural pipeline group.”

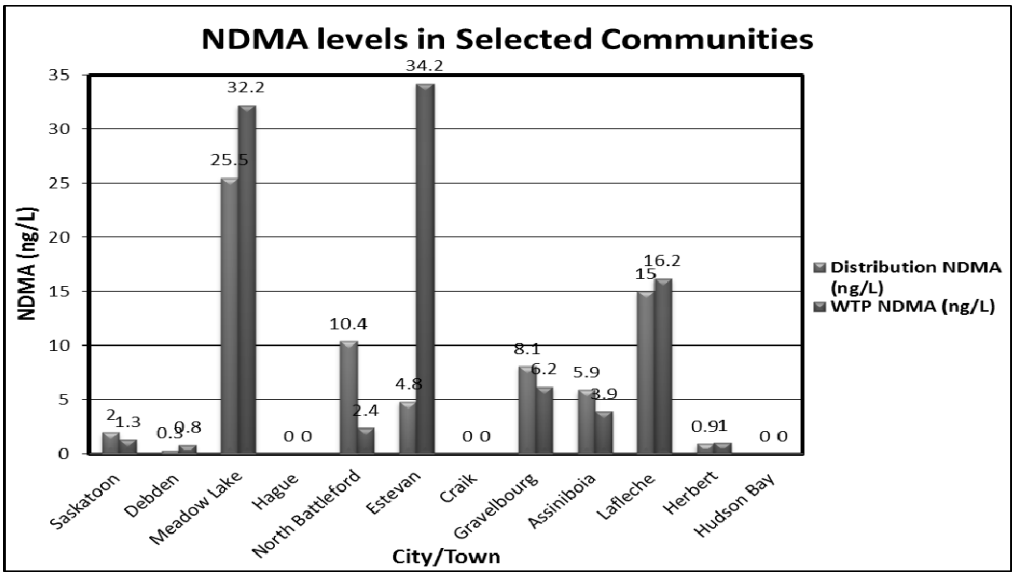
- In 2010, SaskWater signed its largest contract for certified operations and maintenance with Lac La Ronge Regional Water Corporation. The crown corporation now operates the regional water treatment plant and other distribution facilities serving the Town of La Ronge, the Village of Air Ronge and the Lac La Ronge First Nation. The project was funded by the three communities, the Northern Municipal Trust Account, Indian and Northern Affairs (INAC) and Infrastructure Canada.

- SaskWater also worked on behalf of Indian and Northern Affairs Canada (INAC) to provide Saskatchewan First Nations with operator training. In 2010, the company trained approximately 80 water and wastewater operators at 39 First Nations communities. The training program aims to facilitate delivery of safe water to residents and to protect their investment in water and wastewater infrastructure.

- In 2010, SaskWater signed a 20-year potable water supply agreement with the Town of Cupar. SaskWater will construct, own and operate the new treatment and supply system.

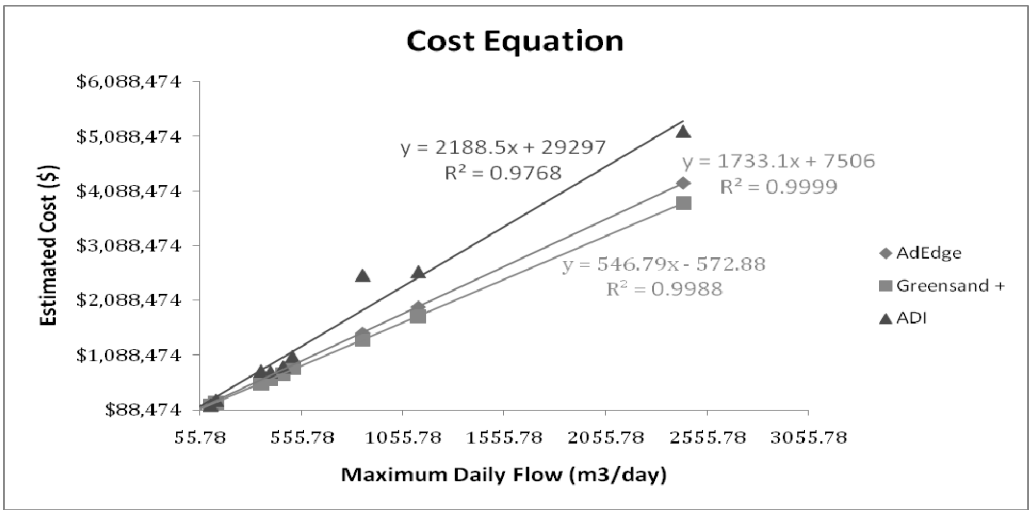
- During 2010-11, the Municipal Branch of the Ministry of Environment undertook a research study on the occurrence of N-Nitrosodimethylamine (NDMA) precursors, formation potential and their impacts in selected Saskatchewan water supplies. NDMA is considered a probable human carcinogen, which means that exposure to levels above the national guideline value of 40 ng/L in drinking water may increase the risk of cancer. NDMA is created when water, which contains ammonia or other forms of nitrogen, is disinfected. Figure 2 shows the NDMA levels at the outlet of water treatment plants and distribution system of Saskatchewan communities selected for evaluation. The study results showed that NDMA levels are present in Saskatchewan water supplies; however, the levels in select water supplies will have a minimal or little financial implications when the national drinking water quality guideline is adopted as a standard in Saskatchewan for this parameter.

Figure 2: NDMA Levels in Selected Saskatchewan Communities.



- During 2010-11, Ministry of Environment Municipal Branch staff supervised a group of University of Regina engineering students who worked on a research project and developed cost equations that can be used by owners of Saskatchewan water supplies with high naturally occurring arsenic levels. Ten arsenic-affected Saskatchewan water supplies were considered in this study. Three different filter media (AdEdge, Greensand and ADI media) that are capable of removing arsenic levels below that of arsenic standard were used in this study, and based on available raw water quality data, cost analysis was conducted and cost equations developed. The cost equations (Figure 3) and user friendly interface model developed in this research study will be useful to arsenic-affected water supplies in the province as a 'decision making tool' and help them in selecting appropriate filter media to remove arsenic from drinking water.

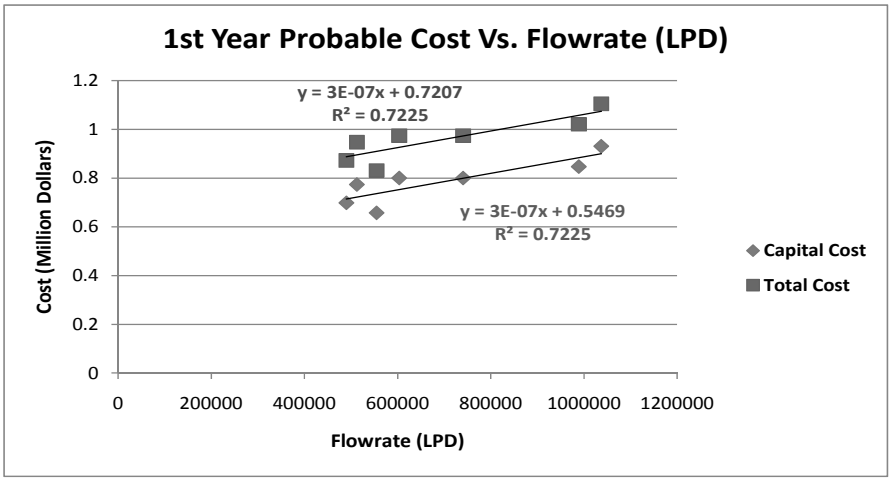
Figure 3: Cost Equation for Removal of Arsenic from Saskatchewan Water Supplies.



- Ministry of Environment Municipal Branch staff also supervised another group of University of Regina engineering students who did research on Disinfection by-products (DBPs), and developed cost equations for Granular Activated Carbon (GAC) filter treatment systems that can be useful to Saskatchewan water supplies with high levels of Trihalomethanes (THMs) and Haloacetic acid (HAA5). GAC filter treatment cost equation (Figure 4) was developed based on available water quality data and design considerations for the most economical and efficient application to meet

required regulation for affected water supplies in Saskatchewan. This work will prove valuable for waterworks owners and consultants in assessing the initial and operational cost estimates for removing or minimizing the levels of DBPs in drinking water.

Figure 4: Cost Equation for Removal of Disinfection By-products from Saskatchewan Water Supplies.



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".

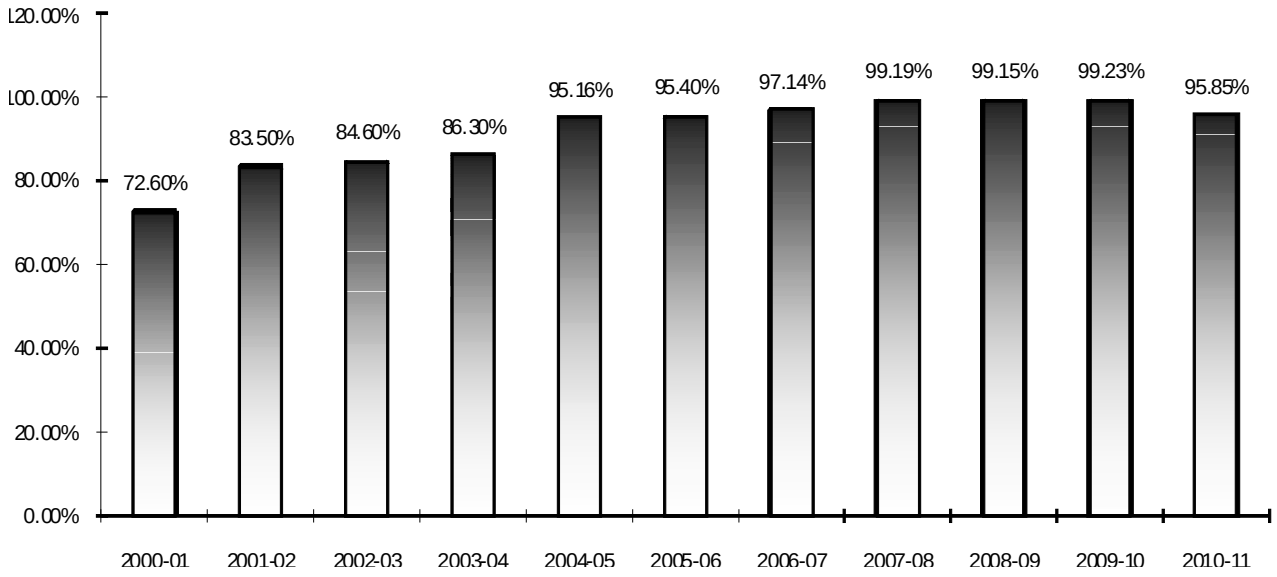
The number of samples required for bacteriological water quality monitoring of a waterworks is based on the number of people served by the system (see "Municipal Drinking Water Quality Monitoring Guidelines" at www.SaskH2O.ca/foroperators.asp) or directly to www.SaskH2O.ca/DWBinder/EPB202MunicipalDrinkingWaterQualityGuidelinesEdition3.pdf. When a routine water sample shows the presence of bacteria, follow-up activities including repeat sampling are performed. The Ministry of Environment issued five Precautionary Drinking Water Advisories (PDWAs) and six Emergency Boil Water Orders (EBWOs) during 2010-11, when bacteriological related problems arose at waterworks.

During 2010-11, there were 20,703 valid "Municipal Human Consumptive Use" routine bacteriological water quality samples submitted of which 267 samples (1.29 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 2010-11, a total of 20,703 out of 18,756 (110.38 per cent) of the required regular samples for bacteriological water quality were submitted from Municipal waterworks regulated by the Ministry of Environment. During 2009-10, there were 23,503 valid routine bacteriological water quality samples submitted of which 266 samples (1.13 per cent) exceeded the water quality standards. During 2009-10, a total of 23,503 out of 22,918 (102.55 per cent) of the required regular samples for bacteriological water quality were submitted from waterworks regulated by the Ministry of Environment. The decrease in total "required" and "submitted" samples in 2010-11 reflects 105 waterworks that have been granted hygienic use status and other corrections to water treatment facility classifications.

Measurement Results

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

Figure 5: Bacteriological standards compliance



Source: Ministry of Environment - Environmental Management System

In 2010-11 there was a 3.38 per cent reduction in compliance with bacteriological standards compliance for municipal waterworks (90 per cent of the time) when compared with the 2009-10 fiscal year. The reason for this decline is related to an increase in the number of small communities, which slightly failed to meet the 90 per cent compliance measure and, which also failed to submit all required samples. Ministry staff will re-emphasize the importance of meeting bacteriological water quality standards and submitting all required samples as a means to improve in 2011-12 and beyond.

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 10 fiscal years with a 23.25 per cent increase in compliance from 72.6 per cent in 2000-01 to 95.85 per cent in 2010-11 (Figure 5). The longer term increase in compliance with standards is the result of increased inspection and follow-up on water quality sampling results by Ministry of Environment staff, as well as increased attention to water treatment and monitoring by waterworks owners and operators.

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 planned to sustain good performance in achieving water that is safe from bacteriological threats.

There were 171 “Municipal Human Consumptive Use” waterworks in the province that exceeded the bacteriological standards at least one time during 2010-11. During the same period, there were twenty waterworks that had more than 10 per cent of their routine bacteriological water samples show the presence of bacteria (Admiral, Antler, Coderre, Crystal Lake, Duff, Garrick, Glen Ewen, Goodeve, Hazlet, Lake Alma, Langbank, Major, North Portal, Paddockwood, Pleasantdale, Radisson, Radville, Sleepy Hollow Beach, Storthoaks and Vawn).

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 Ministry of

Environment are required to measure turbidity at least on a daily basis as a means to track water treatment system performance.

The Ministry of Environment's turbidity standards are consistent with the "Guidelines for Canadian Drinking Water Quality, Seventh Edition". During phase-in of the turbidity standards, the Ministry 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.

During the 2010-11 fiscal year, on-site monitoring for turbidity and record keeping continued to be required and these records were checked during site inspections by EPOs.

Ministry of Environment staff continued to ensure that waterworks owners and operators track turbidity-monitoring results and manage turbidity related water quality problems. There were 20 PDWAs issued during 2010-11 when turbidity related problems arose at waterworks. Turbidity testing results are being reported in conjunction with information submitted with regular bacteriological samples.

The range of turbidity results tested by all agencies in 2010-11, (municipal, private and government owners) is shown in Table 4.

Table 4: Range of turbidity testing results – 2010-11

Turbidity Range (NTU)	Samples	Per Cent Samples	Systems*
0 – 1	24,161	92.49 %	633
1 – 2	1,142	4.37 %	233
2 – 3	339	1.30 %	103
3 – 4	199	0.76 %	57
4 – 5	100	0.38 %	36
5+	183	0.70%	77
Totals	25,750	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 778 waterworks systems regulated by the Ministry of Environment.
Source: Ministry of Environment - 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 Ministry of Environment are required to maintain:

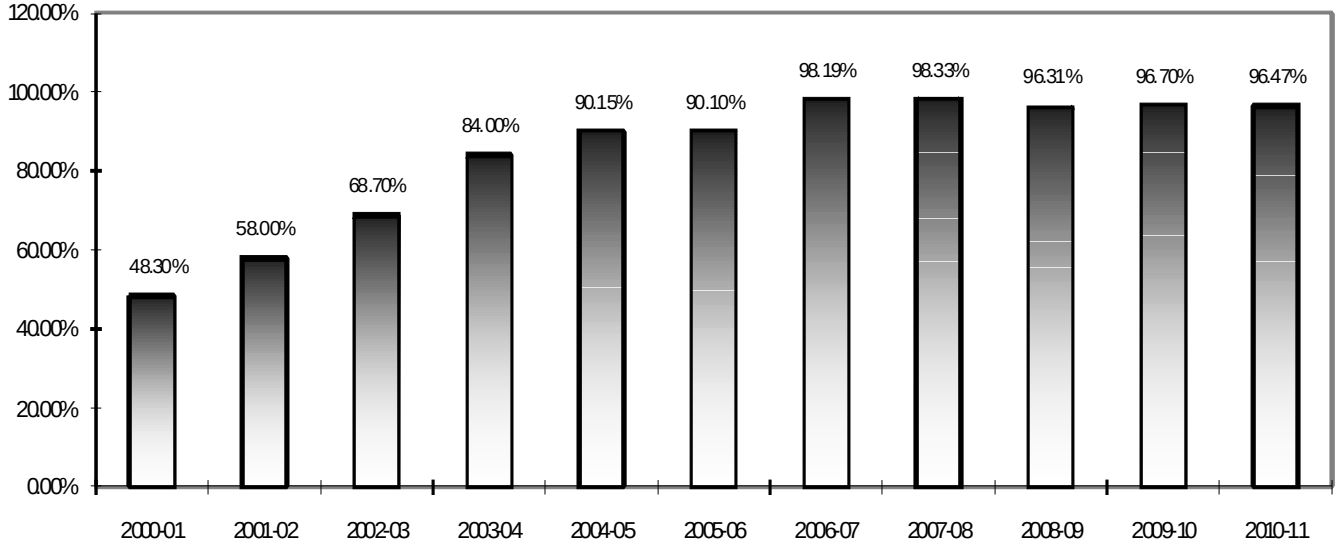
a) a free chlorine residual of not less than 0.1 milligrams per Litre (mg/L) in the water entering a distribution system; and
(b) a total chlorine residual of not less than 0.5 mg/L or a free chlorine residual of not less than 0.1 mg/L in the water throughout the distribution system; and
(c) chlorine 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 Ministry of Environment's Environmental Project Officers (EPOs). During 2010-11, the Ministry issued 12 Precautionary Drinking Water Advisories as a result of chlorination related concerns or problems at waterworks.

Measurement Results

Per cent of waterworks [regulated by Ministry of Environment] that meet disinfection requirements 90 per cent of the time

Figure 6: Disinfection standard compliance



Source: Ministry of Environment – Environmental Management System

There has been a slight decrease in compliance with the disinfection standards over the past fiscal year with a decrease to 96.47 per cent in 2010-11 from 96.70 per cent in 2009-10 (Figure 6). The slight decrease from the 2009-10 results is within the expected range given past performance. The compliance rate is significantly above the 2000-01 compliance rates of only 48.30 per cent of facilities meeting disinfection requirements.

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. Tracking compliance with chlorine residual standards over several years indicates a positive trend, which has leveled off to some degree from 2006-07 to 2010-11. 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. Ongoing inspection and interaction with waterworks owners and operators is planned to sustain good performance in achieving water that is safe from bacteriological threats and meets disinfection standards.

The Ministry of Environment uses the "Guidelines for Canadian Drinking Water Quality" as the basis for the water quality standards found in The Water Regulations, 2002. These standards are included in each new or renewed waterworks permit. Permitting for municipal waterworks continued though the 2010-11 fiscal year. A total of 201 waterworks operational permits were issued or renewed. The drinking water quality standards for "chemical- health" were phased-in by December 2010, for existing waterworks and take effect upon the start-up of any new waterworks. Another 262 wastewater works permits were also issued, renewed or amended during the reporting period.

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 Ministry of Environment regulated waterworks is available at www.SaskH2O.ca/foroperators.asp (see "Municipal Drinking Water Quality Monitoring Guidelines", or go directly to www.SaskH2O.ca/DWBinder/EPB202MunicipalDrinkingWaterQualityGuidelinesEdition3.pdf).

These water quality standards are achieved through permitting, inspection and follow-up on monitoring results. For existing waterworks, a regulatory phase-in period requires that all works meet heath and toxicity standards by December 2008, (population of 5,000 or more) or by December 2010, (population of less than 5,000). Table 5 depicts compliance with sample submission requirements and testing compliance for health and toxicity parameters during the 2010-11 and 2009-10 fiscal years.

Table 5: Health and toxicity sample submission and parameter result compliance – 2010-11 and 2009-10*

Fiscal Year	Health and Toxicity Sample Submission Compliance Rate (Percentage)	Parameter Standards Compliance Rate (Percentage)
2010-11	89	84
2009-10	86	88

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

Source: Ministry of Environment – Environmental Management System

Table 5 provides a representation of both sample submission compliance as well as compliance with health and toxicity water quality parameters based on routine samples submitted by Ministry of Environment permitted waterworks. Based on the available information from the 2010-11 fiscal year, 89 per cent of Ministry of Environment's permitted waterworks submitted the required heath and toxicity samples. Eighty-four per cent of these waterworks met the drinking water quality objectives for health and toxicity-related chemicals. Table 5 shows these results compared to the previous year. The increase in sample submissions is the result of increased monitoring by the majority of existing waterworks, to determine compliance with the health and toxicity standards that took effect in December 2010. The increase in samples is related to communities trying to verify high results and to aid communities in deciding on the need to proceed with upgrades to meet the 2010 standards. Ministry of Environment staff continues to work with waterworks owners to achieve compliance with the December 2010 requirement. The province follows up quarterly with waterworks owners who haven't submitted the required samples, which helps to ensure compliance.

In 2010-11, there were 61 of 659 human consumptive facilities that exceeded at least one health and toxicity related chemical standard resulting in a total of 114 exceedences. When exceedences for health and toxicity parameters, such as arsenic or uranium, were encountered and would represent a short-term health risk, waterworks owners were advised of the results and Precautionary Drinking Water Advisories were issued for the affected water supplies. The 46 arsenic exceedences occurred in 23 human consumptive systems. Additional arsenic testing was conducted by 7 human consumptive systems. The 60 uranium exceedences occurred in 27 human consumptive systems. Additional uranium testing was conducted by 10 human consumptive systems. Table 6 provides a list of the parameters and number of excursions at all Ministry of Environment regulated waterworks.

Table 6: Health and toxicity parameter specific excursion totals for Ministry of Environment regulated waterworks – 2010-11.

Parameter	Number of Excursions in 2009-10
Arsenic	46
Barium	0
Copper	2
Nitrate	0
Lead	3
Selenium	4
Uranium	60

Source: Ministry of Environment – Environmental Management System

During 2010-11, nine of 659 human consumptive facilities exceeded the maximum acceptable concentration for fluoride on 11 sampling occasions. Two of these facilities (Frontier and Spring Valley Hutterite Colony) have high, naturally occurring fluoride in their ground water supplies, which accounted for three of the 11 exceedences. The Ministry of Environment monitors results from all human consumptive systems that artificially fluoridate or have high naturally occurring fluoride.

Implementation of the new trihalomethane standard is underway with a compliance date of December 2010. It is being implemented at existing waterworks serving less than 5,000 persons. The standard for trihalomethane is 100 parts per billion based on an average of four seasonal samples.

A total of 183 surface water treatment and delivery facilities were required to participate in the trihalomethane monitoring program during the 2010-11 fiscal year, which should result in 754 samples being submitted each year. The actual number of regulated waterworks that submitted samples was 162 (88.52 per cent). A total of 667 samples (88.46 per cent overall submission compliance) were submitted by the facilities. During 2010-11, 141 regulated waterworks (77.05 per cent) submitted 502 samples for analysis that met the maximum acceptable concentration for trihalomethanes in drinking water. During 2010-11, 120 of 183 regulated waterworks (65.57 per cent) produced water that met the trihalomethane objective of 100 ug/L based on the annual average of seasonal sampling.

- SaskWater continues to work with engineering firms, suppliers and university researchers in developing and applying emerging technologies to ensure its customers are provided with quality drinking water. For the past four years, SaskWater has collaborated with Consulting Engineers of Saskatchewan (CES) to review technology, and exchange information and best practices. The next technical exchange workshop is scheduled in 2011.

- In 2010, SaskWater was involved in two innovative projects to improve water and wastewater services.

  SaskWater partnered with Communities of Tomorrow, Prairie Adaptation Research Collaborative (PARC), the Ministry of Agriculture, and the Agroforestry Development Centre (ADC) on an Effluent Irrigation Woodlot Project. This demonstration project will assist in the development of alternative disposal strategies to meet new stringent regulations. In 2010, land preparation and weed control management was undertaken, and a contract was awarded for supply and installation of the system.

  SaskWater continued to explore the use of chlorine dioxide as an alternative method for the disinfection of water and oxidation of organic matters and minerals present in the water. The company worked on an in-plant pilot test to see if it would meet Saskatchewan Ministry of Environment's regulations related to trihalomethanes and other disinfection bi-products.

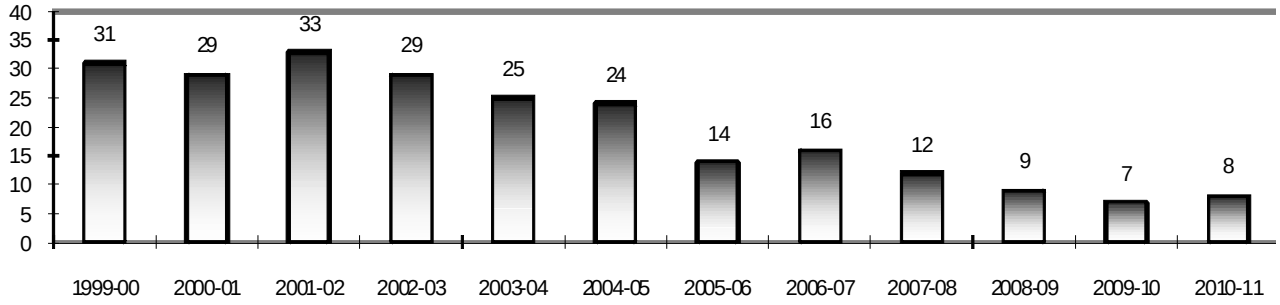
- In partnership with TransGas, SaskWater provides Supervisory Control and Data Acquisition (SCADA) remote monitoring services. The SCADA system monitors the crown corporation's owned and contracted systems 24 hours a day, 365 days a year. SCADA provides customers with a higher level of service by allowing staff to focus more time on preventative maintenance and facility improvements.

- SaskWater's water leak detection service strengthens its commitment to provide safe, quality drinking water to Saskatchewan communities. Leaks can damage infrastructure, contaminate water supply, reduce a community's water revenues and waste natural resources. In 2010, SaskWater provided services to several communities across the province including Ceylon, Muskeg Lake Cree Nation and Kenaston.

Measurement Results

Number of waterworks that do not meet Ministry of Environment's minimum treatment requirements

Figure 7: Number of waterworks regulated by Ministry of Environment 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.

Source: Ministry of Environment Advisory Tracking Spreadsheet

As of March 31, 2011, there were eight waterworks that did not meet Ministry of Environment's minimum treatment requirements, a net increase of one waterworks, or 12.5 per cent since the previous year when there were seven such works (Figure 7). The increase is the result of determination of two waterworks systems to be "Groundwater Under the Direct Influence (GUDI) of surface water" combined with ongoing improvements to other existing waterworks to correct deficiencies of the water treatment systems. Educational efforts are ongoing as is provision of funding through various funding programs such as the Canada-Saskatchewan Building Canada Fund, Municipal Rural Infrastructure Fund and Gas Tax fund to upgrade works. Ministry of Environment's educational and compliance efforts will continue during 2011-12, and beyond, as a means 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. Periodically, as newly regulated waterworks are permitted, 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, 2011, human consumptive waterworks that did not meet minimum treatment requirements served approximately 649 residents or 0.07 per cent of the provincial population (2006 census provincial population of 968,157). Two of the waterworks which do not treat to minimum requirements are seasonal systems and therefore year-round population figures are not included in the above noted totals. Five of the waterworks which do not meet minimum treatment requirements are systems which became regulated with the passage of The Water Regulations, 2002. The remaining three systems that do not meet minimum requirement were regulated prior to the regulatory changes of 2002.

The Ministry of Environment continues to place all regulated waterworks not meeting minimum treatment on Precautionary Drinking Water Advisories to protect consumers. The Ministry also provides technical advice to communities not meeting minimum treatment requirements to aid waterworks owners to work towards system improvements.

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. Municipalities will, therefore, 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 is a summary of activities conducted during 2010-11, and the related achievements in working to ensure waterworks systems and operations are financially sustainable.

Results

- By April 26, 2011, 43 per cent of municipalities submitted public information on the financial sustainability of their waterworks for 2009 to the Ministry of Municipal Affairs. Of these municipalities, 80 per cent indicated they had a waterworks rate policy and a capital investment strategy in place. This was the fifth year the applicable regulations, including The Municipalities Regulations, The Northern Municipalities Public Reporting on Municipal Waterworks Regulations and The Cities Regulations were in effect. The percentage of municipalities submitting public information on the financial sustainability of their waterworks has decreased by three percent since 2009-10 when 46 per cent of municipalities submitted information.

- SaskWater uses a Cost of Service Methodology to analyze current customer rates and set potential new customer rates. SaskWater is working on aligning its rates to ensure they are based on the full cost to provide water and are fair, equitable and transparent to SaskWater's customers.

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

Of the municipalities that submitted their public waterworks information to the Ministry of Municipal Affairs, 45 per cent reported waterworks revenues that covered the waterworks expenditures and debt payments. The percentage of municipalities submitting public information on the financial sustainability of their waterworks has decreased by one percent since 2009-10, when 46 per cent of municipalities submitted information.

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.

Municipalities must submit their long-term financial sustainability plan for their waterworks as part of their application for most infrastructure programs provided through Municipal Affairs.

Lack of municipal capacity will limit some smaller municipalities from establishing these waterworks policies and strategies.

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 achieved in the proper manner. 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 is a summary of activities conducted during 2010-11, and the related achievements in working to ensure that regulations are clear and ensure that health and drinking water quality will be protected.

Results

- The Ministry of Environment participated as a member of the Federal-Provincial Committee on Drinking Water in 2010-11. During that time, review of national guidelines on bacteria (total

coliform and *Escherichlia coli*), turbidity, protozoa and viruses was continued, given the ongoing significance of these parameters to human health. Guidelines or guidance documents were approved for viruses, carbon tetrachloride, fluoride, N-Nitrosodimethylamine and dichloromethane. Review of the national drinking water guidelines was initiated or ongoing for nitrate/nitrite, tetrachlorethylene, ammonia, dichloroethane, selenium and vinyl chloride. These national guidelines form the basis for drinking water quality standards in Saskatchewan and other jurisdictions across Canada.

- The Ministry of Environment continued to work towards implementation of chemical health, trace metal, and trace pesticide related water quality standards, which take effect for small waterworks in December 2010. As of March 31, 2011, approximately 89 waterworks had yet to achieve standards. Of the 89 affected communities in the province, 73 have upgrades underway and/or have received infrastructure upgrade funding to aid with improvements. Eight communities may be suitable for hygienic classification and nine may be resolved through operational optimization. Material has been provided to waterworks owners to provide clear direction on what needs to be upgraded and the reasons why. Two waterworks previously considering upgrades converted to hygienic waterworks classification in 2010-11.

- The Ministry of Environment implemented round two of waterworks system assessments for those systems still required to perform assessments to aid owners in understanding what will be required for round two of the assessments due by December 31, 2010. The current standards for waterworks system assessments are at www.SaskH2O.ca/DWBinder/EPB233WaterworksSystemAssessmentStandards.pdf.

- The Planning and Development Act, 2007 requires municipal land use policies on source water protection be included in new Official Community Plans (OCP). Also, statements of provincial interest being developed by the government will include source water protection measures and will apply to planning, development and subdivision decisions. Future provincial regulations regarding private or communal water wells may be implemented through local bylaws and incorporated into the statements of provincial interest.

- Guidance material about on-site wastewater systems for those seeking to subdivide land was prepared by an inter-Ministry working group (ministries of Municipal Affairs, Environment and Health and the Saskatchewan Watershed Authority) in 2009-10. This guidance is intended to increase water protection and improve wastewater management while streamlining the sub-division process.

- The Ministry of Environment continued to advocate the use of communal waterworks in municipal and subdivision settings through provision of comments on subdivision applications referred to the ministry in 2010-11.

- Ministries of Health, Environment, Municipal Affairs and the Saskatchewan Watershed Authority conducted stakeholder consultations on a consultant's review of the Saskatchewan's Interim Guidance Document for Assessing Subdivisions (where onsite waste water treatment and disposal systems are proposed). Actions will be taken to implement the guidance document in 2011-12.

- During the fiscal year, Health Region public health inspectors inspected 1,263 public water supplies that fall under The Health Hazard Regulations.

- During 2010-11, ongoing implementation of the Ministry of Environment's "Drinking Water and Wastewater Enforcement Protocol" resulted in 53 written warnings, four Ministerial Orders and nine charges laid under The Water Regulations, 2002, and The Environmental Management and Protection Act, 2002. In addition, there were four convictions for drinking water and wastewater related violations. One of the charges was handled via alternative measures and four charges are still before the courts.

- The Ministry of Environment continued to conduct waterworks inspections in accordance with the Ministry inspection protocol and targets. A total of 886 waterworks inspections were conducted during the reporting period. During waterworks inspections, the Environmental Project Officers (EPOs) stress the need for activities or upgrading to meet drinking water quality standards and

requirements. During 2010-11, added emphasis was placed on meeting the December 2010 chemical health standards for waterworks serving less than 5,000 consumers, updates on requirements for round two of waterworks system assessments and compliance with monitoring, record-keeping and upset reporting requirements.

- The results of all waterworks 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 regulatory processes.

- Waterworks inspections are carried out by the EPOs 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. Table 7 summarizes the findings of key elements for inspections conducted during 2010-11.

Table 7: Waterworks inspection finding summary (2010-11)

Inspection Element	Non-Compliant	N/A or No Response*	Compliant
Disinfection continuous at plant	10	33	843
Disinfection Free chlorine > or = 0.1 mg/L leaving the plant	76	76	734
Monitoring daily chlorine	59	19	808
Reservoirs in good repair	16	110	760
Water treatment plant in clean and orderly condition	16	48	822
A total chlorine residual not <0.5 mg/l or a free chlorine residual not <0.1 mg/l in the distribution system	120	25	741
Bacteriological testing after completion, alteration, extension or repair	12	105	769
Reporting of chlorine upsets	46	115	725
Record keeping	37	80	769

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: Ministry of Environment – Environmental Management System

The Bacteriological Follow-up Protocol for Waterworks Regulated by the Saskatchewan Ministry of Environment EPB 205 provides for the issuance of PDWAs by the Ministry when there is a concern that problems (due to microbial or chemical contamination) may exist. Ministry staff also uses 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 Ministry of Environment and Health Region regulated waterworks during the 2010-11 fiscal year.

Table 8: EBWO/PDWA Statistics for 2010-11 – Ministry of Environment Regulated Waterworks

Time	EBWO	PDWA
In effect prior to reporting period	0	68
Added during the reporting period	7	355
In effect at end of reporting period	0	69

Source: Ministry of Environment

Table 9: EBWO/PDWA Statistics for 2010-11 – Health Region Regulated Waterworks*

Time	EBWO	PDWA
In effect prior to reporting period	42	140
Added during the reporting period	38	95
In effect at end of reporting period	69	140

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 2010-11 fiscal year for waterworks regulated by the Ministry of Environment and Regional Health Authorities, respectively. Further information on the nature of a PDWA and EBWO issued during 2010-11 by the Ministry of Environment is available from the Ministry or on the Internet (http://www.SaskH2O.ca/advisories.asp).

Table 10: Reason for issuing PDWAs and EBWOs during 2010-11 – Ministry of Environment regulated waterworks

Reason for issuance of PDWA	Number
Seasonal startup of waterworks	31
Startup of new or upgraded waterworks	10
Inadequate chlorine residual	11
Lack of disinfectant residual	1
Water line break and depressurization	57
Water treatment system upset	5
Unplanned depressurization of system	54
Scheduled power outage resulting in depressurization	3
System depressurization and nearby flood waters	1
Planned maintenance	100
No certified operator	1
Unplanned power outage resulting in system depressurization	21
Potential GUDI system and associated lack of minimum treatment	1
High turbidity	33
Sewer line leaks affecting distributed drinking water quality	2
Raw water source impacted	1
Equipment failure	11
E. Coli detected in water system	2
Total coliforms detected in water system	3
Flooded well supply or well housing	2
Flooded treated water reservoir	1
Untreated water entered treated water reservoir	2
Flooding of water treatment plant	1
Runoff entry causing high turbidities	1
Total PDWA	**355**
Reasons for issuance of EBWO during 2010-11	**Number**
E. Coli or total coliforms detected in water supply	4
E. Coli and high turbidity in a Hygienic water supply	1
Flooding of treated water reservoir and contamination by E. Coli	1
Flooding of treated water reservoir	1
Total EBWO	**7**

Source: Ministry of Environment PDWA and EBWO Tracking Records

During 2010-11, a total of 211 unexpected events or upsets affecting waterworks regulated by the Ministry of Environment were reported and addressed such as system depressurizations, water main

breaks, flooding related upsets, low chlorine residuals, excessive turbidity/operational problems, positive bacteriological monitoring results, or other failures and resulted in issuance of a Precautionary Drinking Water Advisories (PDWA). Unexpected upsets or events accounted for 59.4 per cent of all PDWA's issued in 2010-11, which was 1.8 per cent less than in 2009-10 when 61.2 per cent of the PDWA's issued were because of unexpected events. A total of 144 (40.6 per cent) of all PDWA's during 2010-11, were issued due to anticipated events such as planned maintenance activities or startup of seasonal or new waterworks.

Table 11: Reason for issuing EBWOs and PDWAs during 2010-11 – Health Region regulated waterworks

Reasons for issuance of EBWO during 2010-11	**Number**
No or inadequate disinfection	1
Positive *E. coli* results	37
Total EBWO	**38**
Reason for issuance of PDWA	**Number**
Does not meet monitoring or reporting requirements	11
Significant deterioration of source water quality	1
Source water contamination	1
Positive bacti results	77
Distribution system line break or pressure loss	2
Lack of minimum treatment	3
Total PDWA	**95**

Source: Information provided by the Health Regions in Saskatchewan

Ministry of Environment's Drinking Water and Wastewater Enforcement Protocol EPB 222 continues to provide direction and guidance for Environmental Project Officers to ensure uniform, effective 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 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.

During 2010-11, implementation of the enforcement and compliance protocol continued and was integral in gaining compliance in problematic or difficult situations. Fifty-three written warnings were issued for waterworks and sewage works related infractions. As well, four protection orders have been issued to non-compliant parties. Nine charges were laid for drinking water and wastewater related infractions. There were four convictions registered for these offences. One other charge was handled through post charge alternative measures. Alternative measures are an alternative to traditional prosecution and involves the offender to accept responsibility for their actions and enter a mediation/diversion process. Four charges are still before the courts. The nature of water and wastewater related infractions encountered during the reporting period are summarized in Table 12.

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. Written warnings 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 2010-11.

Table 12: Enforcement and Compliance Activities-Drinking Water/Wastewater 2010-11

Infraction	Written Warnings Issued	Ministerial Orders issued	Charges Laid	Convictions	Alternative Measures
Fail to report upset condition at waterworks	15				
Fail to comply with permit conditions	3		4		
Falsification of records			1		1
Fail to report upset condition at sewage works	1		1	1	
Fail to do required testing/sampling	12				
Chlorine residuals below minimums	1	1	1	1	
Fail to report low disinfection levels	1		1	1	
Improper sewage disposal	1	1			
Improper record keeping	3				
Construction on waterworks/sewage works without permit	5	1	1	1	
No certified operator	1				
No monthly review of records	2				
Exceed chemical standards in human consumptive water	1				
Fail to meet required turbidity standards	2				
Disorderly and unclean water treatment plant	1				
Fail to prevent contamination of water	1				
Operate waterworks without permit	2	1			
Fail to have QA/QC policy in place	1				
Total	53	4	9	4	1

- The Ministry of Environment issued 201 new or renewed waterworks operational permits during 2010-11, as a means to ensure waterworks technology and requirements keep pace with new developments and in order to help protect consumer health and drinking water quality. A total of 10 pre-existing waterworks permits were amended. Another 262 wastewater works operational permits were also issued, renewed or amended during the 2010-11 fiscal year. A total of 356 permits to construct or upgrade waterworks (209) and sewage works (147) were issued or amended over the 2010-11 reporting period. Compared with last year this is a 24 per cent increase in the number of permits issued. 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 is estimated at $343 million ($215M for water and $128M for sewer), based on data from about 70 per cent of projects reporting cost estimates. Compared to last year, this is a 32 per cent increase in the total estimated value of constructed works. Notable large projects permitted this year (>$10M) include the Kindersley water treatment plant upgrade, Pilot Butte water treatment plant and distribution system and Prince Albert water treatment plant upgrade.

- For the period of this report (April 1, 2010 to March 31, 2011), a total of 35,742 drinking water samples were processed. A breakdown indicated that 70.8 per cent of the samples for water supplies were from Ministry of Environment regulated waterworks, 16.4 per cent were from private customers and 12.8 per cent of the water samples were from Ministry of Health/Health Regions.

Measurement Results

Number of accredited drinking water testing laboratories

Table 13: Number of accredited drinking water testing laboratories

March 2002	March 2003	March 2004	March 2005	March 2006	March 2007	March 2008	March 2009	March 2010	March 2011	Annual Change
1	2	4	6*	6*	6*	6*	6*	6*	7*	↑1

* All labs performing or which have performed analysis for waterworks regulated by the Ministry of Environment

Source: Standards Council of Canada web (http://www.scc.ca/en/news_events/notices/lab.shtml)

Laboratory accreditation shows that the facility has a recognized quality assurance and quality control system that assures representative analytical results. Laboratory accreditation was selected as a measure to help gauge results in ensuring safe drinking water for Saskatchewan residents. As of March 31, 2011, all seven laboratories located in Saskatchewan that perform analysis of drinking water samples retained accreditation by the Standards Council of Canada or the Canadian Association for Laboratory Accreditation in accordance with regulatory requirements (Table 13). Accredited laboratories include: Ministry of Health – Saskatchewan Disease Control Laboratory, Saskatchewan Research Council, ALS Laboratory Group, the City of Regina Wastewater Laboratory, BDS Laboratories, the City of Saskatoon Laboratory and the Buffalo Pound Filtration Plant Laboratory.

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 is a summary of activities conducted during 2010-11 and the related achievements in working to ensure that professional regulatory staff have access to the tools necessary to ensure compliance.

Results

- In conjunction with the Ministry of Environment's Compliance and Field Services Branch, the Municipal Branch revised its approach to compliance and enforcement to align with a new ministry organizational structure, which took effect in April 2010.

- Further enhancements were added to the Ministry of Environment's digitized (Remote Inspection) forms to support waterworks, wastewater works and landfill compliance activities.

- A "Quarterly Bacti Report" was added to the www.SaskH2O.ca website in order to provide further information on drinking water quality to the public.

- During 2010-11, over 42,000 samples and 254,000 measurements were updated in the Ministry of Environment's Environmental Management System (EMS). These samples/measurements include, but are not limited to, surface water, distributed water, effluent and precipitation.

- Ministry of Environment program delivery staff and managers held several formal meetings with Health Region representatives in 2010-11 to discuss drinking water and wastewater related programming, progress and waterworks specific concerns in their particular service regions.

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

Table 14: Number and average duration of visits to the www.SaskH2O.ca website

Time Period	June 21, 2003 to March 31, 2004*	April 1, 2004 to March 31, 2005	April 1, 2005 to March 31, 2006	April 1, 2006 to March 31, 2007	April 1, 2007 to March 31, 2008	April 1, 2008 to March 31, 2009	April 1, 2009 to March 31, 2010	April 1, 2010 to March 31, 2011
Number of Visits to SaskH2O Website	27,015	49,862	58,837	68,834	91,418	109,399	130,228	164,566
Duration of Website Visit (Minutes:Seconds)	7 : 28	7 : 55	7 : 24	10 : 53	25 : 43	10 : 00	09:06	09:39

*SaskH2O.ca website launched on June 21, 2003.

Source: Webtrends information system

The number and average duration of visits to the SaskH2O website is a good measure of the use of tools that help ensure the protection of drinking water. During 2010-11, there was a significant increase in the number of visits to the website and a measurable decrease in the duration of visits. The reason for the increase in the number of visits to the website cannot be determined from the "Web Trends" data set which is collected.

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 is a summary of activities conducted during 2010-11, and the related achievements in working to ensure that risks to surface water quality are known.

Results

- Saskatchewan's second State of the Watershed Report was released on March 29th, 2010. The report provides a benchmark tool for assessing watershed health to ensure source water protection and sufficient water supplies in Saskatchewan. It uses indicators to assess the current health of Saskatchewan's watersheds, provide information about human activities that impact the environment within watersheds, and evaluate the effectiveness of the management activities.

- The Saskatchewan Watershed Authority (the authority) collected water quality data and assessed from critical sites related to the authority's activities, including Fishing Lake, Lake Lenore, Qu'Appelle River and Qu'Appelle chain lakes, in order to determine ecosystem health status and trends and to support informed decision making. The water quality data collected from Fishing Lake was used in the development of a water quality monitoring agreement with Manitoba in relation to the operation of the conveyance channel. The data collected from the Qu'Appelle will be used to develop site specific surface water quality objectives as part of the water management agreement for the area. The data collected from Lake Lenore and the surrounding lakes is being used to assess the impacts of saline flow on aquatic habitat.

- The Saskatchewan Watershed Authority continued a Watershed Evaluation of Beneficial Management Practices (WEBs) study initiated in 2009-10, to evaluate on a watershed level the

impacts of beneficial management practices on water quality parameters such as nutrients, pathogens, and sediments. The WEBs project, funded by Agriculture and Agri-food Canada, is one of a number of similar projects across Canada intended to measure the impacts of agricultural beneficial management practices (BMPs). The second year of this study involves the application of selected beneficial management practices at all sites as well as continuing with data collection.

- The Ministry of Environment implemented wastewater effluent characterization monitoring at approximately 93 municipal wastewater systems across Saskatchewan late in the 2010-11 fiscal year. Effluent toxicity testing was planned and initiated for 20 communities across the province.

- The ministry also provided technical guidance to large effluent emitters on monitoring that are necessary to achieve compliance with the wastewater effluent characterization in accordance with the "Canada Wide Strategy on Municipal Waste Water Effluents". This monitoring is intended to aid small Saskatchewan communities, which release treated wastewater effluent to fish-bearing waters, in achieving the first stage of compliance with the "Canada Wide Strategy for Municipal Waste Water Effluents", which must be achieved in 2011 (see www.ccme.ca/assets/pdf/cda_wide_strategy_mwwe_final_e.pdf). Saskatchewan previously led the development and is a signatory of this national strategy developed through the Canadian Council of Ministers of the Environment.

- Ministry staff also review the results of routine wastewater effluent discharge testing on an annual basis and address any complaints that arise due to wastewater effluent releases.

- A total of 527 inspections at wastewater works were completed by Ministry of Environment staff during the 2010-11 reporting period. Information gained from the comprehensive inspection results is useful in protecting source water, aquatic habitat and will also continue to be used to move towards compliance with the pending "Canada-Wide Strategy for Municipal Waste Water Effluents", thereby advancing wastewater management in the province. A total of 262 additional wastewater works operational permits were issued, renewed or amended in 2010-11.

- Under The Pest Control Products (Saskatchewan) Act, there were 2,243 pesticide applicator licenses issued, 566 service (businesses) licenses and 433 pesticide vendor licenses. Each vendor maintains an approved storage facility registered and approved by the industry and 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.

Measurement Results

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

Table 15: Number of sewage effluent discharges that represent a risk to source waters

March 2004	March 2005	March 2006	March 2007	March 2008	March 2009	March 2010	March 2011	Annual Change
93	93	85	116	114	114	112	105	↓7

Source: Ministry of Environment – Environmental Management System

As of March 31, 2011, approximately 105 wastewater systems have been identified as having a discharge that may reach a surface water body and represent a risk to source waters under certain conditions (Table 15). Of these 105 systems, approximately 93 may require compliance with pending Canada-wide Standards for Municipal Waste Water Effluent (MWWE) and the Wastewater System Effluent Regulations (WSER) being developed pursuant to the federal Fisheries Act. The final number of wastewater systems, which must be managed to the MWWE and WSER standard, will be finalized once an administrative agreement is developed between the Ministry of Environment and Environment Canada. On an annual basis, Ministry staff review the quality of effluent from each regulated sewage works. Reduction of ammonia and chlorine residual emissions within treated wastewater effluent, sewage works capacity or other treatment capability issues typically involve significant planning, investment and construction. 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 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 now incorporates the need for future compliance with MWWE standards. 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 for the foreseeable future.

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 is a summary of activities conducted during 2010-11, and the related achievements in working to ensure that watersheds are protected, natural purification and protection processes are maximized and potential for contamination is minimized.

Results

- The Ministry of Environment actively participated in the CCME Municipal Waste Water Effluent Coordinating Committee as a means to help assure consistent implementation of national performance standards across Canada as well as to improve source water protection and water quality management in the rivers and lakes of Saskatchewan. The ministry is also a member of the CCME-Environmental Effects Monitoring (EEM) working group. Environmental monitoring at a watershed level is an important part of the Canada-wide strategy for the management of municipal wastewater effluent in Saskatchewan as the results provide confirmation that the environment is protected. The EEM working group will develop an environment monitoring program to aid jurisdictions including Saskatchewan when assessing risk.

- During 2010-11, Ministry of Environment continued to participate in Biosolids Task Group (BTG), formed under the Canadian Council of Ministers of Environment (CCME), to develop national guidance/practices on the management of residual solid materials (biosolids), which arise through treatment processes. Saskatchewan was a national lead in two initiatives under the BTG that include investigating the levels of emerging substances of concern in Canadian biosolids and treatment efficiency. The first round of public consultation with key stakeholders on a Canada-wide approach on biosolids management was completed in autumn 2010, and the final round of web-based public consultation is scheduled to take place during spring 2011. Once completed, the work of BTG will complement the national strategy for Municipal Wastewater Effluent by providing various options, guidance, and best management practices in regard to treatment, reuse and land application of biosolids in Canada. Saskatchewan also served as a leader in establishing a nation-wide Science Research Coordination Body for improved science, research and coordination among regulators, researchers and municipalities during implementation of Canada-wide Strategy for the Management of Municipal Wastewater Effluent.

- The Municipal Branch worked to review and approve the first Submerged Growth Attached Reactor wastewater treatment system in the province in 2010-11. This fiscal year also marked the introduction of small mechanical sewage treatment plants as a means to provide enhanced sewage treatment at small communities in the province.

- In 2006-07, the Saskatchewan Watershed Authority (the authority) began work on developing a bio-monitoring network for the province that would provide an accurate assessment of the ecological health of surface water bodies in southern Saskatchewan, as well as a means for diagnosing impairment to ecological health. By 2008-09, over 200 monitoring sites were established across southern Saskatchewan, covering existing Ministry of Environment primary sites, Prairie Provinces Water Board sites, long-term Ministry of Agriculture water quality sites, and Saskatchewan Watershed Authority sites. Of the sites that were least impacted by human activity, 104 were

chosen to represent the healthiest "reference" sites, and the macroinvertebrate assemblages at these sites were established as the reference against which other sites could be compared. Since different species of macroinvertebrates respond differently to particular types of disturbance, such as pollutants, the absence of expected macroinvertebrates can be used to diagnose potential stressors to the aquatic ecosystem and potential mitigation strategies can be developed. In 2009-10, macroinvertebrate samples were collected at an additional 100 baseline sites across southern Saskatchewan. Data from all 300 baseline sites were assessed to determine the health of the aquatic ecosystem at those sites and how the macroinvertebrate community composition changes from relatively healthy to unhealthy sites. The ecological health assessment of the initial 200 monitoring sites was presented in the 2010 State of the Watershed Report.

- In 2010-11, the authority continued work to update the surface water quality objectives at the 11 Prairie Provinces Water Board sites, located on the borders between Alberta, Saskatchewan, and Manitoba, with a priority on drafting nutrient objectives. It is expected that the new objectives will be established in 2011.

- The authority has focused its drinking water protection, Communities at Risk Program, on high-risk communities primarily served by private ground water wells. These communities were identified as candidates for the program by the Ministry of Health and various health regions. The objective is to provide assistance to communities and private well owners in identifying the nature, cause and implications of their specific water quality concerns and the most appropriate means to correct them. Saskatchewan Watershed Authority staff conducts water quality investigations and gather well-management and demographic information; subsequently developing supplies and what can be done to improve safety of the water. In many cases, community infrastructure upgrades are recommended (and have been implemented). The authority operates the program in partnership with a high risk community, the associated health region and the Ministry of Health. In 2010, as a result of high levels of precipitation which resulted in flooding in many areas in Saskatchewan (Maple Creek, Yorkton, and North Battleford) the Communities at Risk Program added a flood testing component. This new component, called the Provincial Flood Testing Program provided free source water sampling of private wells (used as potable sources) that had been impacted by flooding. Approximately 400 wells were tested. The Communities at Risk program will resume in the spring of 2011, with Cowessess First Nations being the candidate community.

- Ministry of Agriculture provides funding through the Agriculture Development Fund to support research and development, including agricultural technologies for improved management and/or reduced environmental risks of pesticides, fertilizers and livestock manure. There are ten ongoing water related projects with a total funding allocation of $936,394. Of those, three projects ($11,619) are funded under Growing Forward in partnership with Agriculture and Agri-Food Canada. Projects are in irrigation agronomy and technology, water conservation and water quality.

- 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. Technical assistance is provided when requested to Ministry of Environment on effluent disposal via land application to help ensure a high level of environmental protection and ongoing agricultural productivity.

- Ministry of Agriculture requires intensive livestock operations to develop waste storage and management plans that will not contaminate water resources and in 2010-2011, there were seven plan approvals issued for intensive operations. Some approvals were for expansions and/or modifications to existing operations. Monitoring continues for surface quality in watercourses adjacent to intensive livestock operations. The 2003 Surface Water Quality Monitoring Report is available online at www.agriculture.gov.sk.ca/Default.aspx?DN=ab517097-0749-4293-b98e-dbe1935deefa.

Measurement Results
Water Quality Index ratings for rivers

Table 16: Water quality index ratings for rivers (three year average water quality index values and ratings for rivers)

Location	2004 -06	2004-06 Rating	2005 -07*	2005-07 Rating*	2006 -08	2006-08 Rating	2007- 09	2007-09 Rating
Assiniboine River (Highway #8)	68.9	Fair	79.3	Fair	75.6	Fair	83.2	Good
Battle River (Battle Rapids)	NR	NR	78.9	Fair	84.3	Good	81.1	Good
Beaver River (Beauval)	91.0	Good	80.5	Good	83.3	Good	91.4	Good
Beaver River – (Dorintosh)	82.5	Good	75.1	Fair	76.3	Fair	83.3	Good
Churchill River (Otter Rapids)	100.0	Excellent	88.2	Good	90.8	Good	83.4	Good
North Saskatchewan River (Upstream Highway #16 Bridge)***	NR	NR	71.9	Fair	92.7	Good	91.7	Good
North Saskatchewan River (Borden Bridge)	NR	NR	80.8	Good	82.2	Good	83.3	Good
North Saskatchewan River (Prince Albert)	73.3	Fair	73.8	Fair	71.5	Fair	66.6	Fair
North Saskatchewan River (Cecil Ferry North Bank)	58.9	Marginal	84.4	Good	80.6	Good	75.2	Fair
North Saskatchewan River (Cecil Ferry – South Bank)	68.1**	Fair	73.1	Fair	80.2	Good	75.2	Fair
Qu'Appelle River (below Qu'Appelle Dam)	100.0	Excellent	95.5	Excellent	100.0	Excellent	100.0	Excellent
Qu'Appelle River (at Highway # 2)	NR	NR	79.1	Fair	80.3	Good	74.8	Fair
Qu'Appelle River (above Wascana Creek)	70.1	Fair	58.4	Marginal	65.5	Fair	82.2	Good
Qu'Appelle River (Highway #11 at Lumsden at rock dyke)	67.4	Fair	62.8	Fair	61.4	Fair	82.9	Good
Qu'Appelle River (Highway #56)	NR	NR	70.2	Fair	70.3	Fair	90.6	Good
South Saskatchewan River (Leader)	NR	NR	81.5	Good	71.5	Fair	74.2	Fair
South Saskatchewan River (near Outlook)	NR	NR	94.5	Good	94.8	Good	83.3	Good
South Saskatchewan River (near Queen Elizabeth power station)	NR	NR	95.5	Excellent	95.5	Excellent	91.7	Good
South Saskatchewan River (west Clarkboro)	NR	NR	90.9	Good	91.0	Good	91.7	Good
South Saskatchewan River (near Muskowday)	NR	NR	64.8	Fair	72.8	Fair	75.0	Fair
Saskatchewan River (Highway #6)	NR	NR	90.4	Good	86.3	Good	83.5	Good
Souris River (Highway #39)	NR	NR	70.1	Fair	63.5	Fair	62.9	Marginal
Tobin Lake (at E.B. Campbell Dam)	NR	NR	80.9	Good	81.9	Good	82.7	Good

*Index values and ratings were re-calculated in May 2010 for 2006-2008 based on the Canadian Environmental Sustainability Indicator (CESI) methodology. The CESI methodology differs from methodologies used to calculate the index in previous years and therefore the results are not directly comparable to previous values. The Ministry of Environment intends to employ the CESI water quality index methodology in future years.
** No data for 2005*** Data for 2008 only
Source: Ministry of Environment surface water quality monitoring results

The Water Quality Index (WQI) is a measure of the quality of ground water 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 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.

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. WQI values were provided for 2007-2009. Some stations showed a modest improvement in water quality based on the index calculations.

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.

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

Table 17: Number and percentage of municipalities with bylaws in place to protect their drinking water supplies

December 2005 Baseline		December 2006		December 2007		December 2008		December 2009		December 2010	
Number	Per Cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
178	22	178	22	181	23	182	23	188	24	201	26

Source: Ministry of Municipal Affairs

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.

In 2010, 13 new municipal planning bylaws that require drinking water protection provisions were prepared. The per cent of the urban and rural municipalities with some form of water management policy contained in their community planning bylaws has increased to 26 per cent. Through a suite of initiatives including mandatory source water protection policies under the Planning and Development Act, 2007, the anticipated Statements of Provincial Interest, the "Planning for Growth" funding initiative, 138 municipalities have been assisted in developing regional planning capacity and plans. And, along with the ongoing work of the Municipal Capacity Development Program, municipalities are increasingly aware of their responsibility for source water protection, which is reflected in their bylaws.

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 is a summary of activities which were conducted during 2010-11, and the related achievements in working to ensure that consumers value quality water and recognize the need to pay for it.

Results

- The Ministry of Environment participated in the SWWA annual convention in November 2010, as a means to further the understanding of the importance of operator certification. Ministry staff provided the key address at the convention as a means to convey direction and developments in the water and wastewater regulatory framework. The ministry also continues to support education efforts at the SARWP annual meeting and trade show in December 2010. The ministry also assisted with the planning and delivery of a northern water workshop in April 2010, for the seventh year in succession.

- During 2010-11 the ministry maintained up-to-date information on the SaskH2O website at www.SaskH2O.ca/DWBinder.asp, as a means to provide information for the public on the topics of water cost and value. These documents were also distributed directly during waterworks inspections.

- In 2010, SaskWater delivered its "The value is clear" campaign to create higher awareness of the value of water and of the value of SaskWater as a water and wastewater services provider. The campaign will continue into 2011.

  The campaign included placement of billboards in five customer communities, online advertising, and a quiz posted on SaskWater's website. SaskWater also celebrated Earth Day by inviting 60 Grade 5 classes in 38 customer communities to participate in a *value of water* poster contest. The company chose 12 posters to be included in their 2011 "The value is clear" calendar.

  SaskWater also sponsored Engineers without Borders (EWB) interactive workshops with 700 students in eight communities. Participants built mini water filters and learned about Canadian water issues. The funding from SaskWater helped EWB deliver its program to both rural and urban customers.

- On a biennial basis, SaskWater polls customers on key customer satisfaction measures including water quality, price and access to information. The most recent survey conducted by SaskWater occurred in December 2010, and was targeted toward industry, communities, associations and individual users. This survey measured customer satisfaction with SaskWater, the price of water, and the value of water. The results show that the overall satisfaction with the crown corporation is strong; customers perceive prices as being fair and reasonable, and the majority of customers rank water as highly important. Of the customers surveyed, 94% would recommend SaskWater to similar organizations.

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	Change
61	61.9	68	70.8	67.8	68.8	66.5	65.5	65.8	↑0.3

Source: Ministry of Environment Polling Results – May 2011

Based on a poll conducted by the Ministry of Environment in May 2011, 65.8 per cent of people polled are willing to pay more to improve their drinking water (strongly agree or agree) (Table 18). This value is 0.3 per cent more than the previous poll in March 2010, and is 4.8 per cent greater than the December 2001 poll results. This small increase is not considered to be a significant change since 2010-11, however the polling results continue to show ongoing public recognition of the value of water or willingness to pay for it at levels relatively consistent with polling results since March 2005. These polling results may be related to the high level of confidence in safety of drinking water, may be influenced by ready access to information on drinking water quality, greater profile of water related issues in the media or a high profile of precautionary drinking water advisories and emergency boil water orders showing government is working to improve drinking water management.

Table 19: Summary of regional polling results on survey respondents indicating that they are very or somewhat confident in the quality of their tap water

% Strongly Agreeing	2010				2011			
	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.	14.0%	21.4%	17.6%	14.6%	23.3%	20.3%	23.8%	21.1%

In terms of regional differences (Table 19), all regions show an increase in strong agreement except for the City of Regina since 2010, in terms of willingness to pay more for improved water quality and safety. In 2011, 20.3 per cent of Regina residents strongly agree with this statement compared to 21.4 per cent in 2010.

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

Consumer 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 is a summary of activities conducted during 2010-11, and the related achievements in working to improve citizen and consumer trust in the quality and reliability of their drinking water systems and confidence in the regulatory system.

Results

- The Ministry of Environment conducted polling to determine public opinion associated on drinking water safety in May 2011. The polling results show the measurement of results. Public opinion polling remains as an important mechanism in determining the level of success in attaining government's safe drinking water goals.

- The ministry continued to advance educational efforts, water treatment workshops and consumer notification initiatives during the 2010-11 fiscal year as a means to increase consumer and water system owner/operator knowledge of drinking water related issues. Information was provided through presentations at the annual Saskatchewan Water and Wastewater Association meetings in June and November 2010, and through workshops delivered to northern waterworks owners and operators in April 2010. Information continued to be provided through fact sheets on water conservation, by means of discussion with waterworks owners and through the SaskH2O website at www.SaskH2O.ca, as a means to help increase consumer confidence in their water supplies.

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

Dec 2001	May 2003	Mar 2005	Mar 2006	May 2007	Feb 2008	May 2009	Mar 2010	May 2011	Change
72	87	86	87.3	82.6	86.6	89.9	88.7	85.5	↓ 2.2

Source: Ministry of Environment Polling Results – May 2011

Based on a poll conducted by the Ministry of Environment in May 2011, 85.5 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 and represent a decrease of 2.2 per cent from March 2010. The results are 13.5 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. Actions such as consumer education efforts, waterworks inspections, implementation of water quality standards, water workshops and consumer notification help build confidence in the safety of drinking water at a relatively high level which has held 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

% Strongly Agreeing	2010				2011			
	North	Regina	Saskatoon	South	North	Regina	Saskatoon	South
Saskatchewan residents have safe drinking water.	28.3%	25.6%	33.4%	27.3%	31.0%	40.7%	43.1%	29.5%
I am confident that my drinking water is safe.	50.1%	43.0%	59.3%	48.3%	53.4%	54.2%	59.2%	47.4%

In terms of regional differences (Table 21) in May 2011, Regina and Saskatoon residents are more likely to strongly agree that Saskatchewan residents have safe drinking water, compared to March 2010, (from 25.6% to 40.7% and 33.4% to 43.1%, respectively). Further, in May 2011, Regina residents are more likely to strongly agree that they are confident in the safety of their drinking water, compared to March 2010 (43.0% vs 54.2%), whereas Saskatoon residents remained about the same (59.3% in March 2010 vs 59.2% in May 2011). Polling results did not provide any direct indication as to why confidence levels changed from 2010 to 2011.

Citizens have meaningful access to information about their water quality

Information on water quality is important in building public trust in water systems. Information 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 is a summary of activities conducted during 2010-11 and the related achievements in working to ensure citizens have meaningful access to information about the quality of their drinking water.

Results

- SaskWater publishes an annual Comprehensive Water Quality Report highlighting water quality parameters for all of its service areas. As outlined in the report, SaskWater continues to meet monitoring and testing requirements, ensuring safe water supply to its customers. The Water Quality Report 2010 is available at www.saskwater.com/MediaCentre/Documents/2010_Water_Quality_Report.pdf.

- The results of waterworks 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 regulatory processes.

Measurement Results
Number of system owners that publicly release water quality results

Table 22: Number of system owners that publicly release water quality results

Mar 2002	Mar 2003	Mar 2004	Mar 2005	Mar 2006	Mar 2007	Mar 2008	Mar 2009	Mar 2010	Mar 2011	Annual Change
3	118	359	508	494	511	637	653	681	698	↑17

Source: Ministry of Environment – Environmental Management System

As of March 31, 2012, 698 of 779 MOE regulated waterworks owners publicly released water quality results to the consumers that they serve (Table 22). This value represents a significant increase of 17 since the 2009-10 fiscal year and represents 89.6 per cent of waterworks regulated by the Ministry of Environment in 2010-11. Notification of consumers is required on an annual basis for waterworks governed by the Ministry of Environment. The ministry will continue to pursue further progress on attainment of public reporting requirements during 2011-12, 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 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 is a summary of activities which were conducted during 2010-11 and the related achievements in working to reduce consumption of water.

Results

- The Saskatchewan Watershed Authority led implementation of water conservation practices. As part of the Go Green Strategy, the province announced the Provincial Toilet Replacement Rebate Program in January of 2009. The program provides funding of $11.2 million over four years to

replace existing residential toilets with low or dual flush toilets. In 2010-11, the program received 12,512 applications and rebates were provided for 16,037 low flow toilets. Since the rebate program began in January of 2009, more than 1.1 billion litres of water have been saved and more than 3.5 thousand tonnes of CO2 emissions avoided. This program is an important vehicle to increase water use efficiency and educate the public on the need to conserve water. Community partnerships have resulted in programs targeting municipal leaks and outdoor water use. Public education in the form of bill stuffers, workshops, advertising campaigns and water conservation booklets have been achieved in partnership with organizations such as the Saskatchewan Environmental Society, SaskWater and SaskEnergy.

- Implementation of water conserving practices is actively being pursued by the Saskatchewan Watershed Authority through partnerships with the Ministry of Environment, communities and organizations to promote municipal and agricultural water conservation by developing beneficial management practices, educational materials and programming. The authority is also supporting the Council of the Federation's efforts to improve sharing of Canada-wide water data and information and the development of a national water efficiency labeling scheme for Canada. Research to mainstream climate change adaptation within water use policy is underway and supports the continued efforts to develop a strategic direction for water conservation.

- The 2010 spring issue of *Corporate Knights*, a Canadian magazine for responsible business, rated Saskatchewan with the best performance in Canada attaining an A- in indicators relating to water consumption, water treatment and drinking water quality achievements.

Measurement Results
Average per capita consumption [litres per capita per day]

Table 23: Average per capita consumption [litres per capita per day]

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Annual Change
346	368	348	367	331[1]	323[2]	338[3]	333[4]	328[5]	335[6]	N/A	↑ 7.0

N/A: Complete dataset is not available
[1] For 2004 the LCD (litres/Capita/Day) was 331 (72.75 gallons per day) and the weighted LCD was 432 (95.03 gallons).
[2] For 2005 the LCD was 323 (71.14 gallons per day) and the weighted LCD was 423 (93.05 gallons).
[3] For 2006 the LCD was 338 (74.41 gallons per day) and the weighted LCD was 449 (98.77 gallons).
[4] For 2007 the LCD was 333 (73.25 gallons per day) and the weighted LCD was 440 (96.79 gallons).
[5] For 2008 the LCD was 328 (72.14 gallons per day) and the weighted LCD was 422 (92.83 gallons).
[6] For 2009 the weighted LCD was 416.

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.

Source: Saskatchewan Community Water Use records for 2009, published June, 2010

Measuring the municipal per capita water consumption provides for total annual urban water use (in-home, business and municipal irrigation) within communities (Table 23). 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 Saskatchewan Watershed Authority does not have direct control over this measure but, through water conservation programs, does influence the measure.

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 Saskatchewan Watershed Authority 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.

A complete dataset for 2010 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 2010 data and will be available in July 2011.

Over the 2005 to 2011 period, the Saskatchewan Watershed Authority and the Ministry of Environment have promoted responsible water use through public education, partnerships and programs such as the Provincial Toilet Replacement Rebate Program.

2010-11 Financial Overview

Actual expenditures relating to drinking water management in 2010-11 were $113.7 million, which was $30.6 million higher than the budgeted expenditures of $83.1 million. This net variance is primarily attributable to extra expenditures for flood relief in preparation for Spring 2012.

Within the Ministry of Environment, the net under expenditure resulted from lower-than-budgeted travel expenditures and vacancy savings and during the fiscal in comparison with a full staff compliment of 34.9 FTEs.

The Ministry of Health FTE utilization for the Saskatchewan Disease Control Laboratory was at the full level of 17.5 FTE's 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 Municipal Rural Infrastructure Fund (MRIF), the Canada-Saskatchewan Building Canada Fund-Communities Component (BCF-CC), the Canada-Saskatchewan Building Canada Fund-Major Infrastructure Fund (BCF-MIC), the Canada-Saskatchewan Provincial/Territorial Base Fund (PT Base), the Canada-Saskatchewan Infrastructure Stimulus Fund (ISF), and the Saskatchewan Infrastructure Growth Initiative (SIGI), the Ministry of Municipal Affairs provides financial support to municipalities for priority drinking water and wastewater infrastructure improvements. In 2010-11, $2.674 million in federal-provincial funding was paid out under the MRIF; $26.640 million in federal-provincial funding was paid out under BCF-CC; $2.875million in provincial funding was paid out under BCF-MIC; $5.454 million in federal-provincial funding was paid out under PT Base; $19.677million in federal-provincial funding was paid out under ISF; and $2.3 million in provincial funding was paid out under SIGI for water and wastewater projects.

Expenditures

The following table outlines information on the actual and budgeted expenditures based on original 2010-11 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 – Total	**3,487**	**3,303**	**(184)**[1]
Saskatchewan Watershed Authority - Total	**4,414**	**49,429***	**45,015**[2]
Ministry of Municipal Affairs **			
- BCF-CC	**40,578**	**26,640**	**(13,939)**
- BCF-MIC	**0**	**2,875**	**2,875**
- ISF	**27,584**	**19,677**	**(7,907)**
- MRIF	**1,982**	**2,674**	**692**
- PT Base	**2,380**	**5,454**	**3,074**
- SIGI	**1,235**	**2,300**	**1,065**
Ministry of Municipal Affairs - Total	**73,759**	**59,620**	**(14,139)**[3]
Ministry of Health			
Regional Health Services			
- Regional Health Authorities (Health Regions) Base Operating Funding	**476***[4]	**476**	**0**
- Regional Targeted Programs and Services	**30**	**0**	**(30)** [5]
- Regional Programs Support	**0**[4]	**0**	**0**
Saskatchewan Disease Control Laboratory – Environmental Services	**887**	**870**	**(17)** [6]
Ministry of Health - Total	**1,393**	**1,346**	**(47)**
Total	**83,053**	**113,698**	**30,645**

* Expenditures shown are grants from the General Revenue Fund to the Saskatchewan Watershed Authority for these programs. The Authority received supplementary estimates of $45.015M for flood relief.
** The Ministry of Municipal Affairs 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 2010-11.
*** This amount does not include additional funding provided to Health Regions to offset increases to salaries and benefits through collective bargaining agreements.

Explanations of Major Variances

[1] The under expenditure is the result of vacancy savings and lower-than-budgeted travel expenditures during the fiscal year.

[2] The Ministry of Environment received supplementary estimates of $45.015M for flood relief in 2010-11.

[3] In 2010-11, Saskatchewan had record amounts of rainfall and early onset of winter, causing construction delays in various areas of the province. Contractors could not work on the project, or were delayed at other projects due to the weather. Delays were also caused by lack of engineering capacity

and lack of construction firms available to complete the work. ISF and BCF-CC Top Up projects were granted an extension to October 31, 2011 thus deferring spending from 2010-11 to 2011-12. These under expenditures are partially offset by over expenditures under BCF-MIC, SIGI and PT Base.

[4] $20,000 was transferred from Regional Programs Support to Regional Health Authorities' base operating funding (Mamawetan Churchill River Regional Health Authority) to address costs associated with inspection of remote health regulated water supplies in the far north.

[5] $30,000 under-expenditure in Regional Targeted Program due to deferred projects.

[6] $17,000 under-expenditure for the Saskatchewan Disease Control Laboratory is mainly due to efficiencies in lab testing equipment.

Revenues

There are no revenues that arise specifically in relation to delivery of drinking water activities for the ministries of Environment, Municipal Affairs and Agriculture. Any revenues that arise from government commitments and activities relating to drinking water and source water protection within the Ministry of Health, SaskWater or the Saskatchewan Watershed Authority 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:
www.SaskH20.ca/news.asp or
www.SaskH2O.ca/WaterInformationFactSheet_Drinking_AnnualReports.asp

Or contact:

Municipal Branch
Environmental Protection and Audit Division
Saskatchewan Ministry of Environment
3211 Albert Street
REGINA, SK S4S 5W6
Telephone: (306) 787-6504
Toll free: 1-800-567-4224

Feedback on the key actions and results may also be provided to the Ministry of Environment through the contact information immediately above.

Next year's annual report will address status of drinking water for the 2011-12 fiscal year.

Appendix A: List of Acronyms Contained in this Document

ABC	Association of Boards of Certification
ADD	Provincial Council of Agriculture Development and Diversification (ADD) Boards
ATAP	Advanced Technologies Applications
BCF-CC	Canada-Saskatchewan Building Canada Fund - Communities Component
BCF-MC	Canada-Saskatchewan Building Canada Fund – Major Infrastructure Component
BMP	Beneficial Management Practices
CAC	Certification Advisory Committee
CCME	Canadian Council of Ministers of the Environment
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
MRIF	Canada-Saskatchewan Municipal Rural Infrastructure Fund
MWWE	Canada-wide Strategy for Municipal Waste Water Effluent
NTU	Nephelometric Turbidity Units
OCB	Operator Certification Board
OCP	Official Community Plans
PCAB	Provincial Council of Agriculture Development and Diversification (ADD) Boards
PCAP	Prairie Conservation Action Plan
PDWA	Precautionary Drinking Water Advisory
PPWB	Prairie Provinces Water Board
PT Base	Provincial Territorial Base Fund
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
SCWMC	Spirit Creek Watershed Monitoring Committee
SIAST	Saskatchewan Institute of Applied Science and Technology
SIGI	Saskatchewan Infrastructure Growth Initiative
SUMA	Saskatchewan Urban Municipalities Association
SWWA	Saskatchewan Water and Wastewater Association
WEBs	Watershed Evaluation of Beneficial Management Practices sites
WQI	Water Quality Index