Baseline Prairie Provinces Water Institution Report

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I. Introduction

Alberta, Saskatchewan and Manitoba approach environmental sustainability and conservancy through various legal and policy-related mechanisms. This report looks at these mechanisms and how they are a response to issues surrounding water. It then relates these laws and policies to the work of watershed groups within each province. In looking at a progression from water law to watershed group, this report examines how each province approaches issues such as source water protection and water rights. First, it examines Alberta's body of water law and policy, notably discussing Alberta's Water for Life Strategy. Then this report moves to Saskatchewan's centralized response to water-related environmental issues through its Water Security Agency, formerly known as the Saskatchewan Watershed Authority. In discussing Manitoba's response to water-related environmental issues, this report looks at how Manitoba addresses these issues through its conservation districts framework. It also discusses how the conservation districts are involved in integrated watershed management planning. After discussing water law, policy and relevant water institutions, this report briefly looks at the work of three specific environmental governance groups within each province. In addition, this discussion offers some climate change linkages.

II. Alberta

1) Introduction

Alberta's approach to water conservation and environmental sustainability begins with legislative attempt to balance economic forces and environmental impact concerns. Moreover, this legislative balance is promoted down through various provincial governmental ministries, departments and boards. These water-related institutions deal

with several issues including water rights and transboundary concerns. Other issues such as water quality, quantity and climate change are dealt with mostly through Alberta's comprehensive policy approaches such as Alberta's Water for Life Strategy (2003; 2008) and the Alberta Land-Use Framework (2008). Both of these provincial planning frameworks decentralize environmental sustainability, among others, toward non-governmental water governance groups and municipal governments. For example, the Water for Life Strategy's top-down structure specifies certain policy outcomes that establish and mandate the work of the Watershed Planning and Advisory Councils (WPACs), usually through a process of re-mandating existing non-governmental stewardship groups. Information flows outwards and as such, the WPACs' mandates include watershed planning as specified in the Water for Life Strategy. The progress of each of the WPACs in the development of their integrated watershed management plans varies, stemming from various levels of funding, program implementation and regional-specific environmental concerns. Three groups are discussed: the Oldman Watershed Council, the Milk River Watershed Council and the Bow River Basin Council.

2. Water Law

Water Legislation

Environmental Protection and Enhancement Act. More general in scope, the Environmental Protection and Enhancement Act (EPEA) (2000) legislates the balance between economic development and environmental sustainability. For example, one of the purposes of the Act is to acknowledge "the need for Alberta's economic growth and prosperity in an environmentally responsible manner and the need to integrate environmental protection and economic decisions in the earliest stages of planning"

(EPEA, 2000, s.2(b)). While the Act discusses specific ends such as a polluter pays system, its focus is on the role of policy and planning in the mitigation of environmental degradation in relation to an economic development focus. It acknowledges "the importance of preventing and mitigating the environmental impact of development and of government policies, programs and decisions" (EPEA, 2000, s.2(d)).

Alberta's Water Act. In Alberta's Water Act (2000), the purpose and contents of the Act similarly establishes a balance between economic development and environmental sustainability as these focuses pertains to water usage and planning. For example, the Act (2000) outlines that its primary purpose is:

> to support and promote the conservation and management of water" balanced with "the need to manage and conserve water resources to sustain our environment and to ensure a healthy environment and high quality of life in the present and in the future" (s.2(a)), "the need for Alberta's economic growth and prosperity" (s.2(b)), and "the need for an integrated approach and comprehensive, flexible administration and management systems based on sound planning, regulatory actions and market forces" (s.2(c)).

The Act also emphasizes citizen and stakeholder engagement as a necessary component to water management and decision-making (s.2(d)). Another main function of the Water Act is to regulate the diversion of water from surface and ground water resources through a water licensing system that operates in a First in Time, First in Right principle. This includes the issuance, classification, suspension or termination, and amendment of licenses (see Water Rights). The Act also legislates the development of a provincial planning framework and the development of water management plans (Water Act, 2000, s.7(c)), both of which the minister has the responsibility of establishing. The Act endeavours for both the provincial planning framework and water management plans to

adopt an integrated approach using best management practices (s.7(e); s.9(2)(a)). These are directly linked to Alberta's Water for Life Strategy.

Irrigation Districts Act. The Irrigation Districts Act (2000) is primarily purposed with irrigation governance through the creation, management and potential dissolution of irrigation districts. The focus of these districts is to promote and maintain economic viability (s.6(1)(c)). The Act specifies the purposes and powers of each district including to the basic functions of water delivery and conveyance for irrigation and the construction and maintenance of irrigation infrastructure. In dealing with water rights under the Water Act, one of the powers of the irrigation districts is that each district maintains the privileges, rights and powers of a natural person (s.6(2)).

The Act legislates the expropriation of land and interest for the purpose of increasing irrigative capacities. The Irrigation Districts Act supplements the Water Act by providing a procedure for the transferring of water licenses. Unlike other license holders, an irrigation district cannot transfer its water licenses through the regular process under the Water Act unless the irrigation district board holds a meeting with the public and "by resolution [that] authorizes the holding of a plebiscite to obtain the approval of the irrigators" (s.11(1)). The Act also legislates the potential stoppage of water delivery under certain circumstances such as an owner or lessee within the district using the water for unlawful purposes, the water delivery exceeding the amount prescribed by local bylaws or that the quantity of water delivery is not enough to fit the acreage needs of a parcel of land within the district. The Irrigation Districts Act also establishes an Irrigation Districts Council and Secretariat.

Related Legislation

Alberta Land Stewardship Act. The Alberta Land Stewardship Act (2009) similarly emphasizes the balance between environmental and economic goals in relation to land-use and development, promoted through the provincial government's role in establishing these economic objectives. The Act provides "a means by which the Government can give direction and provide leadership in identifying the objectives of the Province of Alberta, including economic, environmental and social objectives" (s.1.2). Under these objective groupings, the focus of this Act is on planning and communication with stakeholders, including First Nations stakeholders.

The focus on planning and communication is elaborated through the power of the Lieutenant Governor in Council to create integrated planning regions that includes planning pertaining to water. The Act specifies a supervisory role for the provincial government in within this planning process. This includes requesting the creation of future plans or requiring amendments to current plans. The Act also includes a description of how these plans are made and amended, the components that should be included within the plan, and the parameters within which a plan must stay. For example, the plan may include:

> (a) information relevant to the history of the planning region, its geography, its demographics, and its economic, environmental and social characteristics" and "(b) a description of the state of the planning region describing matters of particular importance in or to the planning region, and the trends and the opportunities and challenges for the planning region, including the economic, environmental and social opportunities and challenges" (s.7).
> The planning region may also "permanently protect, conserve, manage, and enhance environmental, natural scenic, esthetic or agricultural values" within the establishment of a conservation directive within their regional plans.

The regulatory power within this Act also results in the ability to create policy relating to land-use. The resulting policy is called the Alberta Land-Use Framework. In addition to planning regions, the Act also encourages the establishment of market-based incentives in the effort to meet the overall objectives of the Act. The Act emphasizes the use of technology and research in the development of market-based incentive tools operationalized through the use of pilot projects.

Energy Resources Conservation Act. The focus of the Energy Resources Conservation Act (2000) is more on the economic capacity of Alberta stemming from energy resources. The Act relates to water through the promotion of environmental best practices during the exploration for energy resource. Thus while the Act is focused on energy resource exploration, it is guided by principles of non-pollution, sustainability and conservation. For example, three of the principles within the Act relate to environmental best practices. The Act states that some of its purposes are:

> (d) to control pollution and ensure environment conservation in the exploration for, processing, development and transportation of energy resources and energy;
> (e) to secure the observance of safe and efficient practices in the exploration for, processing, development and transportation of the energy resources of Alberta;
> (e.1) to secure the observance of safe and efficient practices in the exploration for and use of underground formations for the injection of substances. (s.2)

The Act continues the Energy Resources Conservation Board as a corporation that has the power to investigate practices that fall under the Section 2 (see above), It has an appeal process stemming from these investigations.

Municipal Government Act. The Municipal Government Act (2000) deals with defining municipal water jurisdiction. Within municipal boundaries, the municipality has direct control over the natural water systems, surface or groundwater, within the limits for any other act. The act states:

> Subject to any other enactment, a municipality has the direction, control and management of the rivers, streams, watercourses, lakes and other natural bodies of water within the municipality, including the air space and the ground below (s.60(1)).

For example, a municipality requires license for their water use relating to infrastructure and is limited by the First in Time, First in Right principle within the Water Act.

Public Health Act. The Public Health Act (2000) deals with water in regards to the prevention and mitigation of health hazards. The prevention of health hazards relates to the maintenance and cleansing of water facilities. This includes the enactment of protocols relating to a state of emergency.

Public Lands Act. The Public Lands Act (2000) deals with water in relation to agriculture. This Act allows for the zoning of lands into agricultural districts and emphasizes the determination and promotion of the grazing capacity of public lands. This includes the irrigative capacity of the land.

Water Rights

Replacing the Water Resources Act of 1931, the Water Act is the main piece of legislation that determines who has access to water and how much access they have. Access to water is determined by an individual or group's right to water through a license allocation system. The water rights allocation system is guided by the First in Time, First in Right principle, wherein older licenses take priority over newer licenses. Licenses with a greater priority are assigned a lower number, and as licenses are issued, the number assigned to each subsequent license is higher that it predecessor. With this guiding principle, a licence holder who has a greater priority is entitled to divert all of their allocation before a licensee who has a lower priority license can take any of theirs. In times of water shortage, de Loë, Varghese, Ferreyra, and Kreutzwiser (2007) point out

that this principle organizes who has access to water first (as cited in Living Water Project, n.d). The licenses are subject to quantity and purpose limitations under the Act including, for example, that the issuance of a license is limited by the effect that the potential usage of water may have on the "aquatic environment; hydraulic, hydrological and hydrogeological effects; and the effects on household users, other licensees and traditional agricultural uses" (s.51(4)(b)). The Water Act describes several other legislative components to the water rights allocations system:

a) Household users and traditional agricultural users are granted a statutory right to water and as such, do not require a license if their use does not go beyond the aforementioned limitations and if their use does not exceed quantity limits within the Water Act (1250 cubic meters for household users and 6250 cubic meters for agricultural users) or within an approved water management plan (s.19(1); s.21(1))
b) Agricultural users that have a license are limited to water that their irrigation works can carry (s.31(1).
c) Two water licences can be combined (s. 56(1)).
d) One licensee can divert water through another's pending a mutual agreement that includes a form of compensation (s.52(1)).
e) The Water Act prohibits water transfers that move water to outside of Canada (s.46(1)), and its prohibits transfers between major basins (s.47).
f) Licenses can be transferred, but these transfers are subject to restrictions and can be subject to a conservation holdback of 10% (s.83(1)).

g) Decision-making pertaining to when application for a license, a temporary or otherwise, a license renewal, or a license transfer, and when a licensee's license is being considered for suspension or cancellation is weighed against several conditions:

1) That use fits within an approved water management plan within the area

2) The existing, potential, or cumulative effects that use has or will have on the aquatic environment, the hydraulic, hydrological, or hydrogeological effects, and the effects that use has or will have on the household users, licenses, or traditional agricultural users.

3) The effects on public safety.

4) Any other relevant issues.

Relating to an outcome within the Alberta Water for Life Strategy, there have been several pushes to amend the water rights system in Alberta. This is in part because the government has begun to prevent further license allocation in certain areas of Alberta such as the South Saskatchewan River Basin. The Alberta Government is now looking at how to change the legislation to reflect new ways to allocate and trade water with respect to a balance between environmental, human, and economic needs (Alberta Water Portal, 2012). The Ministry's Advisory Group on Water Management and Allocation, the Alberta Water Council, and Alberta Innovates are currently advising the government on these changes.

Groundwater Permitting

Other than domestic users and traditional agricultural users who do are not required to obtain a license under the Water Act, individuals and groups may apply to

divert groundwater. To specify a regulatory framework for this process, Alberta Environment published a document in 2011 entitled *Alberta Environment Guide to Groundwater Authorization*[1]. With the regulatory framework, the permitted use of groundwater is divided into 3 categories: an approval, a licence or a temporary diversion license. An approval is issued for activities such as construction or mining that would result in a disturbance of groundwater rather than in the actual use of the water (Government of Alberta, Environment and Sustainable Resource Development, 2011). A license for groundwater functions the same way as a license for diverting surface water, placing the ability to divert groundwater within the First in Time, First in Right prioritization system. The temporary diversion license is similar to a license; however, it is a license for the ability to divert for only one year or less (Government of Alberta, Environment and Sustainable Resource Development, 2011). With a temporary licence, copies of water well drilling reports are required to be submitted (Government of Alberta, Environment and Sustainable Resource Development, 2011).

Under the Potable Water Regulation in the EPEA, groundwater is mentioned in relation to source water protection through what is called a GWUDI designation: Groundwater under Direct Influence of surface water. If a source is considered GWUDI, then it requires treatment like any other surface water sources when used for potable water (Government of Alberta, Environment and Sustainable Resource Development,, 2011).

[1] References to Alberta Environment as opposed to Alberta Environment and Sustainable Resource Development reflect the department title before the realignment of departments in Alberta Government in 2012.

Transboundary Issues

There are three agreements that detail how waters are shared among the various Alberta borders. First, the 1909 Boundary Waters Treaty is an agreement between the United States and Canada that governs how water is to be shared between nations, as they are represented by Alberta and Montana. Second, the Master Agreement on Apportionment (1969) is a domestic agreement that details how water is to be shared among Saskatchewan, Alberta, and Manitoba. Third, the Mackenzie River Basin Transboundary Waters Master Agreement details the sharing of waters in the Mackenzie River Basin.

1909 Boundary Waters Treaty: This treaty sets out that water from the St. Mary's and Milk Rivers can be shared by both countries through a system of seasonal apportionment. The 1921 Order of International Joint Commission builds upon the treaty in specifying an allocation system that involves apportionment based on irrigation seasons. Alberta is allowed 75% of the first 666 cfs in the St Mary River during the irrigation season from April 1 to October 31. Montana is entitled to the remaining 25%. During that same time frame, Montana is entitled to 75% of the first 666 cfs from the Milk River and Alberta is entitled to the remaining 25%. Any quantity above 666 cfs is divided equally between both parties. During the non-irrigation season, the waters are divided equally.

Issues arise from this apportionment agreement because the St. Mary River has a higher and more reliable flow than the Milk River, resulting in Canada receiving a higher proportion of the total flow (Cook, Klein, & Le Roy, 2010). The difference, as reported by Alberta Environment, is that Alberta receives around 55% of the combined flow and

Montana receives 45% (as cited in Cook, Klein, & Le Roy, 2010). In 2003, the then governor of Montana made an appeal to the International Joint Commission to review the regulations set forth within the 1921 Order. In 2008, both the then governor of Montana and premier of Alberta requested that a joint task force be formed to review the ways in which the two rivers were shared. The Milk River Watershed Council, as requested by the Premier, was involved with this joint task force. In 2010, a research arm of the University of Lethbridge, called the Southern Alberta Resource Economics Centre, reviewed some of the claims made by both governments including Montana's claim that Alberta was using more water than it was entitled to. They found the following the following:

1) Contrary to the Montana Governor's claim that Albertans were using more than their entitlements, Alberta data shows that the United States used a greater percentage of their water entitlement than Canada has. This is partly because Montana lacks the proper of infrastructure (Government of Alberta, Environment, 2007a). Evaporation accounts for a huge loss of water from the Milk River and erosion compounds this effect when ice from the winter run-off widens the stream, increasing the surface area of the Milk River.
2) Both Alberta and Montana could utilize more of their respective entitlements if consumers in Montana maintained their infrastructure and Albertans added to their storage capacity. Finding ways for the two countries to utilize more of their entitlements, such as integrating infrastructure to use the winter/flood flow that currently drains off as unusable spillage would enhance water capacity and benefit both (Government of Alberta, Environment, 2007).

Mackenzie River Basin Transboundary Waters Master Agreement. In 1997, Canada, British Columbia, Alberta, Saskatchewan, the Northwest Territories and Yukon, came into an agreement on the process of sharing the waters from the Mackenzie River Basin. The Mackenzie River Basin Transboundary Waters Master Agreement was guided by 4 overarching principles: equitable utilization, prior consultation, sustainable development, and maintenance of ecological integrity (MRBB, 2010).The agreement makes a provision for the establishment of bilateral agreements between parties. Only the Northwest Territories and the Yukon have completed theirs. Also, the agreement establishes the Mackenzie River Basin Board, funded by all participating governments, to monitor the progress of the remaining bilateral agreements.

Water Quality

Drinking Water Laws

Drinking water is legislated through a body of law that includes the Environmental Protection and Enhancement Act (EPEA), the Agricultural Practices Act, and the Public Health Act.

EPEA: The Act has a section pertaining to potable water. This section details aspects surrounding drinking waterworks systems including detailing the procedure for the government to implement environmental protection orders, emergency or otherwise. It also prohibits the release of substances into the waterworks system and defines who is responsible for such a system that includes a responsibility for the cleanliness of the water that leaves the waterworks system.

a) **Activities Designation Regulation (EPEA)**: This regulation further defines what is meant by domestic and industrial wastewater, a wastewater collection system, and a waterworks system.

b) **Potable Water Regulation (EPEA)**: This regulation goes into detail about how a waterworks system is to operate within the parameters of the EPEA. It states that the design, operation and maintenance of a waterworks system must be in compliance with the applicable code of practice or approval. The minimum standards for design are specified through meeting the standards and guidelines within Alberta's *Standards and Guidelines for Municipal Waterworks, Wastewater and Storm Drainage Systems.* The regulation also defines the minimum standard for drinking water quality with respect to its physical, microbiological, chemical and radiological characteristics. This minimum standards that is referred to is the:

> Maximum acceptable concentration or interim maximum acceptable concentration specified in Health Canada's *Guidelines for Canadian Drinking Water Quality*" and the *Standards and Guidelines for Municipal Waterworks, Wastewater and Storm Drainage Systems* (s.6(1)(a)).

The regulation also specifies the performance and maintenance standards of waterworks systems.

c) **Approvals and Registrations Procedure Regulation (EPEA)**: This regulation details the registration procedure for the construction of any waterworks systems. It includes the several limitations that the application will be reviewed against.

d) **Environmental Appeal Board Regulation (EPEA)**: This regulation defines the actions of the Environmental Appeals Board including and relating to drinking water dispute resolution mechanisms that may be necessary in case of an application being turned down under the EPEA and subsequent regulations.

Public Health Act: The Public Health Act allows, as one of its topics, to make regulations on drinking water.

A) **Nuisance and General Sanitation Regulation (Public Health Act):** This regulation first defines potable water and then specifies certain requirements of storing potable water relating to the maintenance and operation of public drinking water facilities, water tanks and cisterns.

Agricultural Operations Practices Act: This Act, as it relates to drinking water, discusses in general the practices that would be included in source water protection including the procedural requirements for the construction or expansion of confined feeding operations, manure storage facilities and manure collection areas. It also details the fines for offences relating to actions that fall outside the practices specified in the Act and its subsequent regulations. As part of its regulatory topics, it specifies the ability of the Minister to make regulations on the physical and geographical characteristics of confined feeding operations, manure storage facilities and manure collection areas.

A) **Standards and Administration Regulation (Agricultural Practices Act)**: This regulation specifies the standards to which confined feeding operations, manure storage facilities and manure collections are required to meet. Promoting both ground and surface water resource

> protection, the regulation specifies minimum distance requirements for the construction of confined feeding operations to common bodies of water at a distance of 30 meters, unless interception infrastructure is built to divert run off away from that body of water. It also specifies slope-to-distance ratios in relation to the construction of a temporary manure storage facility. It details the requirement of each confined feeding operation or manure storage facility to have either a natural or constructed surface water control system to limit the water runoff that flows through and from the feeding or manure facilities.

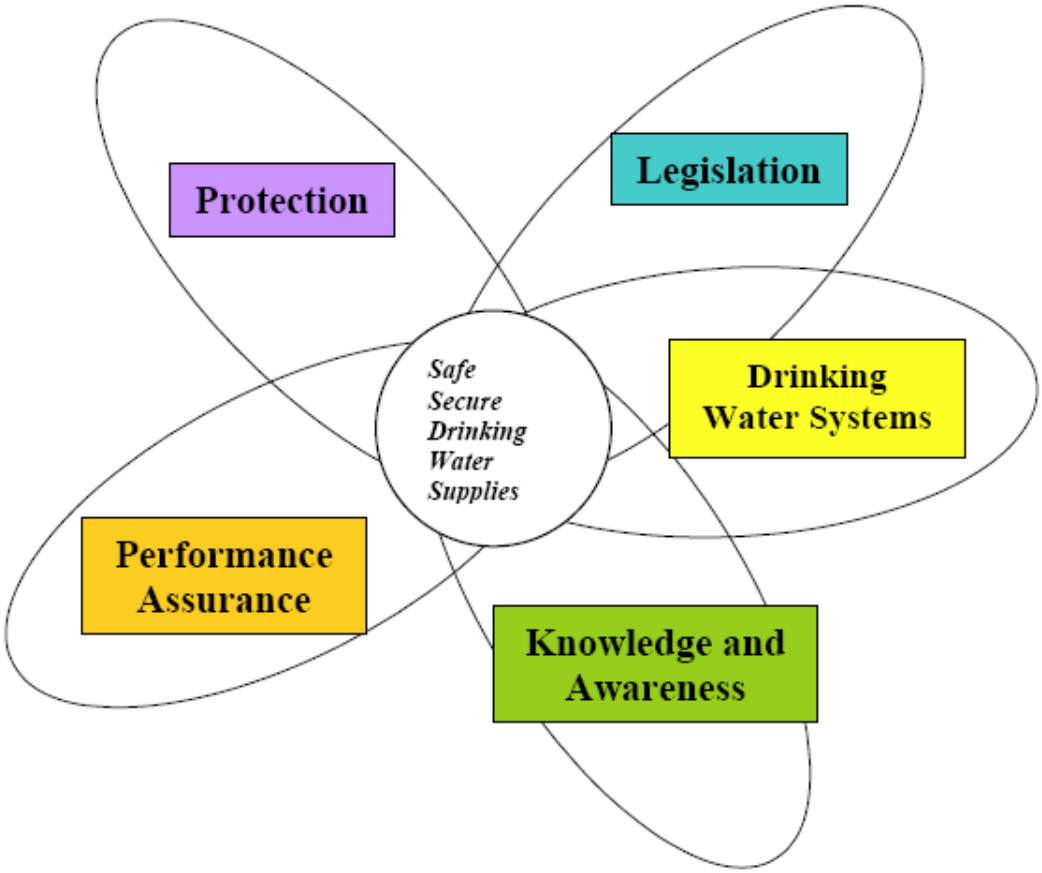
Source Water Protection

Source water protection is not specified in any legislation but rather it derives from several acts and policies. For example, while the EPEA and its regulations discuss potable water, the Agricultural Operation Practices regulation looks at protecting surface and groundwater from polluted runoff as a result of confined feeding operations and manure storage. The Water Act and Land Stewardship Act relate to source water protection in general through their respective emphasises on water management planning and land-use planning regions. Source water protection terminology appears in one of the outcomes within the Water for Life strategy (see Water for Life Strategy). It was not until 2008 in planning document published by the AWC that the planning process, including the development of watershed plans that were to be integrative of source water protection, was specified (see AWC, 2008).

As a result of an outcome from Alberta's Water for Life Strategy specify source water protection, Alberta Environment published a document called *Alberta*

Environment's Drinking Water Program: A Source to Tap, Multi-Barrier Approach. This document discusses how source water protection is rooted in legislation and policy (see figure 1).

Figure 1: Alberta's Source to Tap Multi-Barrier Approach (Government of Alberta, Environment and Sustainable Resource Development, 2009, p.5)



Ecosystem Quality Needs

Ecosystem quality needs are discussed generally in relation to environmental sustainability and water management planning with certain pieces of legislation such as the EPEA and specifically in relation to drinking water quality in legislation such as the

EPEA, Agricultural Practices Act and the Public Health Act. Policy such as Alberta's Water for Life Strategy focuses on water quality through its goals and outcomes with emphasises on the delivery of real-time information regarding water quality issues improving waterworks infrastructure, and developing research. Water quality objectives in relation to ecosystem needs are externalized to the various Watershed Planning and Advisory Councils (WPACs) to be addressed by the WPACs within their integrated watershed management plans. The planning process begins with a need-discovery process with the development of State of the Watershed Reports and then involves forming water quality objectives to match those needs within the actual integrated watershed management plan.

Water Quantity

Water Conservation Strategy

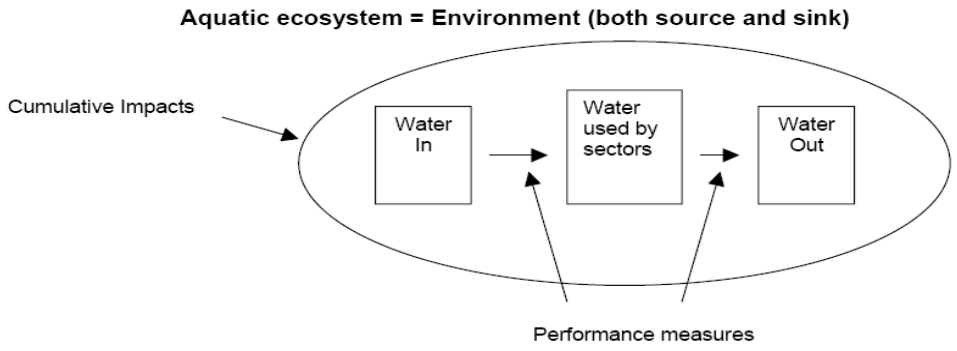
Through their legislative authority, Alberta Environment and Sustainable Resource Development oversees water conservation. Legislation allows for the development of water management plans that could presumably include regional conservation strategies, but water conservation as a part of its license allocation system under the Water Act is not required (Alliance for Water Efficiency, n.d). Specifically, the Water Act allows for the creation of water conservation objectives including allowing but not requiring conservation holdbacks. Section 83(1) of the Act allows for a 10% holdback to be applied to new license transfers only.

Weighed against ecosystem needs, water conservation objectives are set throughout legislation. In the EPEA, the focus on sustainable development and the maintenance on healthy ecosystems presumably could include water conservation

objectives. Also, in the Alberta Land Stewardship Act the focus on stewardship and regional planning zones could also include conservation objectives. Water conservation is more prevalent throughout policy and is emphasized through water conservation objectives.

The provincial government has not developed a specific water conservation strategy, but water conservation objectives are included within Alberta's Water for Life Strategy under the effort of making Alberta's water supplies both reliable and sustainable (See Alberta Water for Life). Created from Alberta's Water for Life Strategy, Alberta Water Council developed a water conservation strategy that focuses on the interconnectedness between conservation, efficiency and productivity. This strategy also includes the development of sectored plans. This strategy has 4 desired outcomes: the demand for water is reduced, water use productivity is increased, resources are conserved to maintain healthy aquatic systems, and water quality is maintained or enhanced (AWC, 2009). The strategy emphasizes, when looking at sectored plans, the use of performance indicators to measure the successfulness of their outcomes (see Figure 2). The sectored approach integrated with performance indicators resulted in a integrative sector performance measure and chart (see Appendix 1).

Figure 2: (Source: AWC, 2007)



As mentioned above, Alberta Environment no longer accepts water license applications for the South Saskatchewan Basin. In addition, section 15(1) of the Water Act allows for the creation of conservation objectives, pending public consultation. As a part of the South Saskatchewan River Basin Water Management Plan, recommendations were made to set Water Conservation Objectives based on an instream flow needs projection for the basin as a whole and for four sub-basins (Government of Alberta, Environment, 2007a). The below recommendations are retrieved from the four South Saskatchewan River Basin WCO recommendations documents:

Bow River Basin WCOs:

a) For the Bow River Mainstem to be either 45% of the natural rate of flow, or the existing instream objective increased by 10%, whichever is greater at any point in time.

b) For the headwater reaches of the Bow River and tributaries of the Bow River to be less than the existing instream object or the WCO downstream on the mainsteam, whichever is greater at any point in time.

Oldman River Basin WCOs:

a) For the Oldman River mainstem to be either 45% of the natural rate of flow, or the existing instream objective increased by 10% whichever is greater at any point in time.

b) For the head water reaches of the Oldman River and tributaries of the Oldman River to be not less than the existing instream objective or the WCO downstream on the mainstream, whichever is greater at any point in time.

Red Deer River Sub-Basin WCOs:

a) From the Dickson Dam to the confluence with the Blindman River, the WCO for any applications received or licenses issued after May 1, 2005 and for existing licences with a retrofit provision is:

> 1) A rate of flow that is 45% of the natural rate of flow or 16cms, whichever is greater at any point in time.
> 2) For future licenses received after May 1, 2005 for withdrawals from November to March:
> -a rate of flow that is 45% of the natural rate of flow or 16cms whichever is greater at any point in time
> 3) For future licenses received after May 1, 2005 for withdrawals from April to October and for existing licenses with a retrofit provision:
> -a rate of flow that is 45% of the natural rate of flow or 10cms, whichever is greater at any point in time Government of Alberta, Environment, 2007a).

b) For the headwater reaches of the Red Deer River and the tributaries of the Red Deer River, a rate of flow is to be not less than the existing instream objective of the WCO downstream on the mainstem, which ever us greater at any point in time, for any applications received or licenses issued after May 1, 2005.

South Saskatchewan River Sub-Basin WCOs:

a) For the South Saskatchewan River mainstem to be either 45% of the natural rate of flow, or the existing instream objective increased by 10%, whichever is greater at any point in time.

b) For the tributaries of the South Saskatchewan River within this sub-basin, to be not less than the existing instream objective or the WCO downstream on the mainstem, whichever is great at any point in time.

Interbasin Transfers

Water transfers either out of the country, with the exception of processed or municipal water, and transfers between basins are prohibited under Sections 46 and 47 in

the Water Act. Under section 47 of the Act, licenses for interbasin transfers cannot be made unless specifically authorized under a Special Act in the legislature.

3. Water Institutions

Ministries, Organizations, and Boards

Alberta Environment and Sustainable Resource Development. Alberta Environment and Sustainable Resource Development is the main provincial ministry that deals directly with water issues. In May of 2012, Alberta Environment and Sustainable Resource Development a resulted from a Provincial Cabinet restructuring, stemming from an amalgamation between the Ministry of Environment and Water and the Ministry of Sustainable Resource Development. As such, Alberta Environment and Sustainable Resource Development now deals directly with three central pieces of legislation: the Water Act (2000), the Environmental Protection and Enhancement Act (EPEA) (2000), and the Albert Land Stewardship Act (2009). However, the functions surrounding issues under Environment and Water as opposed to Sustainable Resource Development remain separate but under the authority of the same Minister. This department administers the board involved with water licensing. It works directly with the Alberta Water Council in their efforts to meet the goals and objectives within Alberta's Water for Life strategy, and the department works with the Land-Use Secretariat in their mandate relating to the Alberta's Land-Use Framework. In addition, this ministry deals with the promotion of Alberta's Water Codes of Practice, a general consolidation of statutory requirements set out in both the Water Act and the EPEA. Similarly and having an linkage with water, this department also coordinates with other ministries and municipal governments in the area of development and land-use.

Alberta Environment and Sustainable Resource Development delivers several programs each relating directly to components within the Water Act, the Environmental Protection and Enhancement Act, and/or the Albert Land Stewardship Act. Relating to water, the Ministry delivers programming on drinking water, flood hazard identification, groundwater, lake water quality, surface water quality, services relating to upstream oil and gas authorizations and consultation, water allocation, and water quantity. Relating to land-use and water, the Ministry delivers programs such as a certification program for solid waste, a landfills and security program, services pertaining to pesticide management, and services relating to environmental assessment. The Ministry also deals directly with education services and communication programs. In addition the Ministry also develops research relating to its programming and legislative goals; however, a majority of research, as it relates to Alberta's Water for Life Strategy is produced through an arm of the Ministry of Advanced Education and Technology named Alberta Innovates, an amalgamation of the Alberta Energy Research Institute and the Alberta Water Research Institute.

Outside of the programs directly administered by Alberta Environment and Sustainable Resource Development, the ministry is also involved either directly or indirectly with several boards and councils that administer policies such as Alberta's Water for Life Strategy and Alberta's Land-Use Framework. The main boards and councils are the Alberta Water Council and the Land-Use Secretariat:

> **Alberta Water Council (AWC)**: Established in 2004 through Alberta's Water for Life Strategy, the Alberta Water Council is a multi-stakeholder, non-profit council with 24 members from governments, industry and

NGOs (AWC, n.d.). Its mandate deals with the monitoring and stewarding of the implementation of Alberta's Water for Life Strategy and working with stakeholders to ensure the achievement of the Water for Life's outcomes. The council serves an advisory capacity to Alberta Environment and Sustainable Resource Development on the progress of the implementation of the Water for Life Strategy. This includes the ability of the Council to make policy recommendations to the Ministry. Under the 2010 to 2013 Business Plan for the AWC, the AWC's three main operational goals are that:

> 1) The implementation of the Water for Life (WFL) Strategy is reviewed in a timely and thorough manner;
> 2) Alberta Water Council's policy recommendations are timely, based on credible information, implementable, have consensus and support WFL goals and timelines;
> 3) Alberta Water Council has an effective process for sectors to discuss and resolve water management issues. (AWC, n.d)

B) **Alberta Land-Use Secretariat:** Legislatively established in the Alberta Land Stewardship Act, the Land-Use Secretariat is responsible for the creation and administration of the Land-Use Framework, and is mandated to:

> 1) Provide provincial oversight of regional planning;
> 2) Review and decide terms of reference for regional plans;
> 3) Review and make final decisions on regional plans;
> 4) Ensure integration of provincial land-use related policies; and
> 5) Ensure regional plans are implemented to achieve provincial outcomes (Government of Alberta, Environment and Sustainable Resource Development, 2010).

Alberta Agriculture and Rural Development. Alberta Agriculture and Rural Development deals with water-related issues as they pertain mostly to irrigation. It is tasked with 3 main core objectives:

1) Facilitate sustainable industry growth
2) Enhance Rural Sustainability
3) Strengthen business risk management (Government of Alberta, Agriculture and Rural Development, 2009).

This department works with various partners to promote programs that relate to water issues. One of its main functions is to monitor the work of the irrigation councils:

> A) **Irrigation Council** or **Irrigation Districts Council**: Established under the Irrigation Districts Act, the Irrigation Council's mandate is "to support the Minister of Agriculture and Rural Development by providing relevant advice and regulatory administration for irrigation sustainability" (Government of Alberta, Agriculture and Rural Development, n.d). While the functions of the Irrigation Council are largely administrative, other functions involve the monitoring the operations of the irrigation districts. In monitoring the irrigation districts, the Irrigation Council approves funding for infrastructure rehabilitation and has a key role in protecting public interest in the multi-million dollar Irrigation Rehabilitation Program, a provincial cost sharing initiative that began in 1969 (Government of Alberta, Agriculture and Rural Development, n.d).

Alberta Energy. Alberta Energy is mandated with assuring the "sustained prosperity in the interest of Albertans through the stewardship of energy and mineral resource systems, responsible development and wise use of energy" (Government of

Alberta, Energy, n.d). Alberta Energy is linked with the Energy Resource Conservation Board:

> A) **Energy Resource Conservation Board**: The Energy Resource Conservation Board (ERCB) is an independent quasi-judicial regulatory agency that regulates the exploration of energy resources within the parameters of the environmental best practices described in the Energy Resource Conservation Act. Surrounding this main function as it relates to water, the ERCB is mandated with ensuring that "the discovery, development and delivery of Alberta's energy resources take[s] place in a manner that is fair, responsible and in the public interest" (ERCB, n.d).

Alberta Justice: The Ministry of Justice and Solicitor General is linked to the compliance staff of Alberta Environment and Resource Development in pursuing prosecutions under the EPEA and the Water Act. The environmental law section provides interpretations and applications of civil and regulatory matters from both Acts. A Special Prosecutions Branch is involved with pursuing prosecutions based on violations of either Act.

Watershed Planning and Advisory Councils

In a document entitled, *Enabling Partnerships, A Framework in Support of Water for Life: Alberta's Strategy for Sustainability* (2004), Watershed planning and advisory councils were mandated to "to engage governments, stakeholders, other partnerships, and the public in watershed assessment and watershed management planning, considering existing land and resource management planning processes and decision-making authorities" (p.8). According to the AWC (2008), this consisted of first developing a

State of the Watershed Report, holding stakeholder meetings and then beginning a multi-phase process in developing watershed management plans that include a focus on source water protection. Through the Water for Life Strategy, the watershed groups that operate in the major basins have been designated WPACs and have been given funding to complete watershed these plans. The groups that are of an additional focus in this summary are the Oldman Watershed Council, the Milk River Watershed Council and the Bow River Basin Council.

Oldman Watershed Council

While the Oldman Watershed Council (OWC) has participated in the delivery of educational programs and watershed-specific programming similar to those described in the Water for Life Strategy of 2003, its main action has been to complete an integrated watershed management plan. The OWC's watershed management planning team began the planning process in the Spring of 2009. This included developing a State of the Watershed report in 2008, a specific action mentioned in the Water for Life Strategy. Phase 1 of the process began with developing specific outcomes for the watershed management planning process based on needs identified in the State of the Watershed Report and was followed by community member engagement through several sets of interviews. Phase 2 consisted of a developing process summary for the public in 2010, and continued with further community engagement in 2011, through a priority setting exercise. An update of these priorities was published in 2012. It stated that "the goal of the OWC Integrated Watershed Management Plan (IWMP) is to engage and empower watershed residents and decision makers to determine environmental outcomes and develop an implementation strategy that will maintain and improve the Oldman

watershed. This document is the basis of that strategy" (OWC, 2011, p.4). Source water protection is to be included in the watershed management plan. As of yet, the Oldman Watershed Council is working on Phase 4 of the IWMP process that focuses on planning for the headwaters.

Milk River Watershed Council

As a relatively new organization, the Milk River Watershed Council Canada (MRWCC) was established in 2005 in response to a discussion with stakeholders from which 95% of respondents indicated that they would want a watershed planning and advisory council in their area. The Milk River watershed is the only watershed in Alberta that drains south into the Gulf of Mexico. The watershed is a trans-boundary, semi-arid area, and it covers 6,550 km^2 of Alberta land. Water scarcity is a significant issue. During irrigation season, Canada is entitled ¼ of the flow in the Milk River and ¾ of St. Mary's River. During non-irrigation, the allocation of flow is divided evenly. The Canadian entitlement is allocated between Alberta and Saskatchewan and Alberta has a little over a ¼ of Milk River Watershed in Canada. A continued partnership with Montana has been a goal for the MRWCC exemplified by the Montana-Alberta Water Management Initiative.

Before formation the MRWCC in 2005, a steering committee developed a Bylaw and Action Plan document. Most of the actions laid out in the action plan have been completed such as their State of the Watershed (SOW) in 2008. The MRWCC was designated as the Watershed Planning and Advisory Council (WPAC) for that area. Both the recognition as a WPAC and the SOW lay the foundation for the IWMP process which began in 2010. In December of 2008, an Alberta-Montana Joint Initiative Team (JIT), began meeting to discuss efficient water sharing between Canada and the US and to

debate changes to the Boundary Waters Treaty of 1909 and its amended section (1921). They met multiple times, culminating in a presentation of recommendations to both governments in the spring of 2010. Through the MRWCC, several other projects have been undertaken, including a groundwater study, a macroinvertebrate study, and projects that raise awareness in the community such as the Yellow Fish Road Program and the presentation of xeriscaping displays.

The MRWCC has identified water supply as a priority for watershed management. In the SOW report, they have divided the watershed into 9 landscape management units. Only one of those units has been determined to be meeting water supply needs. Although the area is largely unpopulated and only 51% of it is deeded, there are 2 units that have been designated as "unreliable, sometimes no flow" and the remaining units have been designated as "low to very low" or "often no flow" in the fall/winter or summer period (MRWCC, 2008, pp.147-148). This is complicated by tourism that increased water demands in the summer.

There are several components that the council has been working on to address issue of water quantity. First, with support of the MRWCC, a Private Irrigators Pilot Project has installed flow meters throughout the watershed. This yielded beneficial information for developing the SOW and for obtaining information that would be beneficial for the Alberta-Montana joint initiative. Second, in 2008, the MRWCC obtained a $102,500 grant to hire a consultant to identify possible supplemental water supply routes. Three preferred routes were looked at further. Third, the JIT meetings were intended to yield management options that will allow for more efficient trans-boundary water sharing. Last, the Milk River Transboundary Aquifer Project (MiRTAP) was

supposed to provide accurate information on the availability and sustainability of groundwater. Other issues such as water quality, the effect of oil and gas wells, abandoned or otherwise and species at risk are in the research and monitoring stages.

Bow River Basin Council

The Bow River Basin Council (BRBC) formed in 1992 as an advisory body to the no defunct Ministry of Environmental Protection. The formation was in response to recommendations from the Bow River Water Quality Task Force. Created by Ralph Klein, the then Alberta's Minister of Environment, the task force responded to private and public sector concerns over deteriorating water quality in the Bow River.

The BRBC deals with a vast basin that covers 25,000 km^2 and is highly populated with 1.2 million people, including the population of Calgary. The BRBC is a multi-stakeholder organization that includes urban and rural representatives, irrigated and dryland agriculture stakeholders, recreational and industrial interests, First Nations peoples, and not-for-profit organizations. Within its mandate, the council promotes "awareness, improvement and protection of the Bow River water quality, foster[s] cooperation among agencies with water quality responsibilities, and provide[s] communication links among governments, interest groups and the general public" (BRBC, n.d).

The BRBC has published two State of the Watershed (SOW) reports since its establishment, one in 1994 and one in 2005. Producing these reports has been major projects for the BRBC. On December 20, 2004, the council was designated as the Watershed Planning and Advisory Council for the area. Subsequently in 2005, they began Phase 1 of the Integrated Watershed Management Plan (IWMP) that focused on surface

water quality. In 2008, Phase 1 was completed. In 2010, they published a web-based, interactive SOW. Since its establishment, the BRBC has held quarterly educational forums that allow stakeholders from the community to meet and discuss issues of concern and learn more about current projects. In 2003, funding was identified as a major problem; however, funding for the BRBC has increased by 187% between 2003 to 2008 resulting in revenues of that year to be at the highest ever at $909,187. This increase has largely been due to increasing corporate donations which more recently. According to the BRBC's 2008/2009 Annual Report, funding significantly decreased leaving the revenues for 2009 at $642,478 (BBRC, 2009, p.5). In their most recent report for the 2010/2011 fiscal year, revenue for the BRBC increased to $721,143 (BRBC, 2012, p.5). The BRBC completed Phase 2 of their Integrated Watershed Management Plan in 2012.

Since 1992, water quality has been a major area of concern for the BRBC. The lower reaches of the river have been low in quality and as a result, restricted to only certain uses. In a report in 1998 titled *Preserving Our Lifeline: Survey of Urban Water Use Management in the Bow River Basin*, water use and quality were determined to be of a growing concern to stakeholders as a result of burgeoning intermediate communities with a population of 1,000-100,000. In response to this the BRBC published several recommendations in a guide for municipalities, landowners, and developers called *Protecting Riparian Areas: Creative Approaches to Subdivision Development in the Bow River Basin.* Furthermore, to address these issues of water quality, BRBC initiated an Urban Stormwater Implementation Project in 1999. According to the SOW 2005, increasing levels of pharmaceutical waste was turning up in water samples. As of 2005, a study of this phenomenon began. Between the first and second SOW reports, the BRBC

has indentified many improvements resulting from the publishing of the first report: water and wastewater treatment plants were upgraded, per capita water use declined including within Calgary's city limits, volunteer water quality monitoring and visual assessment programs were initiated, and storm drain marking programs were underway.

4. Water Strategy

Alberta's Water for Life

Alberta's Water Act legislates the development of a provincial planning framework. This resulted in the creation of the Alberta's Water for Life Strategy (2003). The strategy reflects the overarching purpose of the Water Act in that it endeavours to balance economic and environmental concerns. This comprehensive, integrative water policy covers various aspects of water management and conservation under three main goals: (1) safe, secure drinking water, (2) healthy aquatic systems, and (3) reliable, quality water supplies for a sustainable economy (Government of Alberta, Environment, 2003, p.7). Building on these goals, the strategy describes numerous outcomes and actions. For example, relating to the goal that Albertans should have "safe, secure drinking water", one outcome is that "Albertans have real-time access to information about drinking water quality in their community" (p.7). There are also three main key directions that contain specific actions that elaborate on those directions. The three directions are: knowledge and research, partnerships, and water conservation (p.9).Under these directions several outcomes relate to the issues such as water rights, groundwater, water quality, transboundary issues and water quantity. Water rights are discussed through an objective to reform the water licensing allocation system. Transboundary issues are similarly discussed in the Water for Life Strategy, as the completion of the

necessary bilateral agreements has been slated as specific outcomes in both the original and the 2008 renewal of the Water for Life Strategy.

Water quality was emphasized through a new focus on source water protection. Source water protection was mentioned as an medium-term outcome in the 2003 Water for Life Strategy in that they endeavoured to "adopt a multi-barrier; source-to-tap approach at all drinking water facilities" (Government of Alberta, Environment, 2003, p.19), and then refocused in the strategy's renewal as the need to "update water quality programs to support source protection information and planning" (Government of Alberta, Environment, 2008, p.11). The focus on source water protection was also buttressed by an emphasis in the two strategies on the formation of WPACs and their work in developing watershed management plans in all the large basins, a reflection of legislative objectives from the Environmental Protection and Enhancement Act.

One of the outcomes of Alberta's Water for Life Strategy as it relates to groundwater was to first develop a research base of data on Alberta's groundwater resources and second to develop educational programs that help Albertan's better understand groundwater in general and Alberta's groundwater supplies specifically. The former included objectives to understand the quality and quantity of groundwater supplies through GIS mapping and modelling of Alberta's groundwater resources. In 2007, an ambitious program was launched to inventory groundwater resources in Alberta. This program is called the Groundwater Observation Well Network and comprises over 250 monitoring wells spread across the province. At 200 of these wells, groundwater levels are monitored on a continual basis (Government of Alberta, Environment, 2008).

In the interim, however, access to groundwater or the ability to divert groundwater is determined in the same manner as it is with surface water.

One goal within the strategy deals in general with water conservation under which key outcomes set specific targets for water conservation. The outcome states, "The overall efficiency and productivity of water use in Alberta has improved by 30 per cent from 2005 levels by 2015 (firm targets to be determined by the Provincial Water Advisory Council)" (Government of Alberta, Environment, 2003). As a result, a working group was formed to determine how these targets will be met. Within this objective, the role of developing a water conservation strategy is left with the Alberta Water Council.

Alberta's Water for Life Strategy emphasizes water conservation in several ways. Particularly relating to WCOs, the original strategy promotes the evaluation of the "merit of economic instruments to meet water conservation and productivity objectives" (Government of Alberta, Environment, 2003, p.21). This is supported by several programs that have been in place such as the implementation of an electronic water monitoring systems in 2006. The result of using economic instruments to meet WCOs is the setting of conservation targets under the water rights allocation system.

There are several other problems that arise from the strategy that relate to its comprehensiveness, the attainability and measurability of some of the outcomes, and the attainability of some of the outcomes and actions within their estimated completion times. For example, under the goal "safe, secure drinking water" the outcome that "Albertans have full and complete knowledge of drinking water issues" is slated as a medium-term goal to be completed between 2007/2008 and 2009/2010. This outcome leads to several questions. How is this full and complete knowledge going to be

measured? What is considered full and complete knowledge? If this goal is measurable, how can it be attained by 2010? The comprehensiveness of the strategy in general is problematic. Some of the goals, outcomes and directions presumably require significant research, and evidenced by conflicting estimated completion dates, this research seems to not be prioritized logically. For example, while one of the short-term actions is to develop a research plan, other short-term outcomes or actions that require a certain amount of research are expected to be completed within the same timeline.

Evaluations

2004. As mentioned, the attainability, comprehensiveness and measurability of some of the aspects of the original strategy are problematic, and this is discussed in the periodic evaluations of the implementation of the strategy. In the first review by the Alberta Water Council (AWC) in 2004, the council indicated that while there were some actions that were on track, other actions attained very little progress, were behind schedule or were in need of greater research (AWC, 2005). As an example of an outcome that the AWC evaluated as being on time, the Water for Life Strategy sets water productivity and efficiency improvement targets, specifically a 30% improvement from 2005 levels by 2015 (Government of Alberta, Environment, 2003).

The first evaluation indicated that other goals and outcomes were falling behind their estimated completion times. The actions to "determine and report on the true value of water in relation to the provincial economy" and "complete an evaluation and make recommendations on the merit of economic instruments to meet water conservation and productivity objectives" were identified as falling behind their targets and likely not to be completed by their target timelines (AWC, 2005). In addition, the goal "reliable, quality

water supplies for a sustainable economy" was discussed as in need of a reprioritization and an identification of research needs (AWC, 2005).

2005-2006. Similar to the first review, the second review indicated that there were problems surrounding research, resources and the prioritization of actions. For example, under the goal "healthy aquatic systems" it was identified that there were not enough resources to address all key directions under this goal concurrently (AWC, 2007). Although there were a number of actions and goals thought to be completed or on track, there were also a number of them that were still falling behind. For example, it was indicated that a lack of resources was a problem with regard to the progress of actions and outcomes within the knowledge and research section (AWC, 2007).

2006-2008. The third review was published at roughly the same time as the 2008 Water for Life Renewal. It contained little by the way of specific goal evaluation as it did not discuss these goals in the same way as in the previous reviews. Instead, in adding to the strategy's comprehensiveness, the AWC made recommendations for additions to the strategy in the future. The AWC pointed further to a lack of progress for certain outcomes. For example, it indicated that the goal "healthy aquatic systems" was still falling behind schedule (AWC, 2009).

2008 Water for Life Renewal. In 2008, the planning framework of the original strategy was reworked. Several outcomes and actions seemed to be dropped in the renewal, some were modified, refocused and/or given new estimated completion dates, and some outcomes were renamed. In certain areas the two strategies do not align. For example, some long-term outcomes, expected to be completed by 2013 should become short- or medium-term outcomes in the renewal, expected to be completed by either 2012

or 2015. This was not always the case. The outcome "establish science-based methods for determining the ecological requirements for a healthy aquatic environment", originally a short-term goal expected to have been completed in 2007, was deferred in the renewal as a short term goal to be completed in 2012 (Government of Alberta, Environment, 2008).

2012 Review. The new set of outcomes was reviewed in 2012 by Alberta Environment and Sustainable Resource Development, and these outcomes were reorganized with a necessary reprioritization and focus on research needs. The review indicated that most of the short, medium, or long term goals were incomplete at the time of review. The outcomes that were being completed were research-based in their focus. For example, the outcome to "complete instream flow needs methods and tools including a desktop approach" was completed. This may be indicative of necessary refocusing and prioritization in the strategy's renewal.

Alberta Land-Use Framework

Stemming from the Alberta Land Stewardship Act and administered by the Land-Use Secretariat, the Alberta Land-Use Framework focuses on how to deal with competing interests to finite land and water resources. Developed through public consultation, the Land-Use Framework adopts 7 strategies to identify key interest groups and stakeholders and the capacity of the land within Alberta:

1) Strategy 1: Develop seven regional land-use plans based on seven new land-use regions.
2) Strategy 2: Create a Land-use Secretariat and establish a Regional Advisory Council for each region.
3) Strategy 3: Cumulative effects management will be used at the regional level to manage the impacts of development on land, water and air.
4) Strategy 4: Develop a strategy for conservation and stewardship on private and public lands.
5) Strategy 5: Promote the efficient use of land to reduce the footprint of human activities on Alberta's landscape

> 6) Strategy 6: Establish an information, monitoring and knowledge system to contribute to continuous improvement of land-use planning and decision-making
> 7) Strategy 7: Inclusion of aboriginal peoples [sic] in land-use planning (Government of Alberta, 2008, pp. 3-4).

The purpose of the land-use framework relates to three desired outcomes specified for the province of Alberta:

> 1) Healthy economy supporter by our land and natural resources,
> 2) Healthy ecosystems and environment, and
> 3) People-friendly communities with ample recreational and cultural opportunities. (Government of Alberta, Environment and Sustainable Resource Development, 2008b, p. 23)

The planning framework reflects the collaboration between the Provincial Cabinet, the Land-Use Secretariat and regional planning advisory councils. The role of the Provincial Cabinet is to provide oversight for the development of regional plans, draft terms of reference for the planning advisory councils and review and finalize regional plans (Government of Alberta, Environment and Sustainable Resource Development, 2008b, p. 29). The role of the Land-Use Secretariat is to take the lead on the development of regional plans, guide the management of cross-regional infrastructure, advise regional planning advisory councils on relevant policy and to reconcile the regional plans with existing policy (p. 29). The role of the regional planning advisory councils is not only to act as an advisory committee toward the land-use secretariat's role in developing regional plans but also to act in a technical capacity by offering advice on "trade-off decisions regarding land-uses" and to set thresholds to address cumulative effects (p. 29).

The land-use framework has developed immediate priorities, some of which have been competed. The priorities are to develop the:

> 1) Legislation to support the Land-use framework
> 2) Metropolitan plans for the Capital and Calgary regions

3) South Saskatchewan Regional Plan
4) Lower Athabasca Regional Plan (p. 45)

Another area relating to immediate priorities is to address policy gaps at the provincial level and to address areas that are of interest to the province. These directions relate to the following categories:

1) Managing subsurface and surface activities within our province
2) Reducing the fragmentation and conversion of agricultural land
3) Develop a transportation and utility corridors strategy
4) Manage recreational use of public lands
5) Conserve and protect the diversity of Alberta's ecological regions
6) Manage flood risk (p. 46)

While some of these directions and outcomes are expected to have been completed by 2010, the remainder of the outcomes are expected to be completed by the end of 2012.

5. Climate Change

The Alberta government has published three documents that address issues of climate change in relation to water. The first document is the Climate Change and Emissions Management Act (2003). The Act discusses the role of the province of Alberta in stewarding the environment. This is operationalized in the Act through the establishment of emission reduction targets. The second document is Alberta's Climate Change Strategy published in 2008. The strategy has three overarching themes:

1) Conserving and using energy efficiently
2) Implementing carbon capture and storage
3) Greening energy production (Government of Alberta, Environment and Sustainable Resource Development, 2008a, p.7).

One of the actions under the Climate Change Adaptation Strategy that will focus on water among other aspects of the environment is identifying impacts, risks and vulnerabilities

of natural resource exploration (Government of Alberta, Environment and Sustainable Resource Development, 2008a).

The result of the Climate Change Adaptation Strategy was several outcomes that related directly to energy and resource exploration within the oil and gas industry. This is backed up by a push for greater educational awareness and the establishment of a consumer rebate program. There are four areas in which the Government of Alberta intends to address climate change:

a) Regulating and reducing carbon emissions: This was achieved in creating two programs, a greenhouse gas reporting program and a greenhouse gas reduction program. These relate to the establishment of a greenhouse gas limit. As of January 7, all facilities whose emissions were greater than 100,000 tonnes were required to reduce their emissions intensity by 12% (Government of Alberta, Environment and Sustainable Resource Development, n.d, n.p.). The greenhouse gas reporting program involves self-reporting of facilities' emissions to an electronic database. Stemming from the establishment of carbon emission limits, the greenhouse gas reduction program involves requiring facilities to by compliant to the above limit in four ways: by making improvements to their operations, purchasing Alberta-based offset credits, contribution to the Climate Change and Emissions Management Fund, or purchasing or using Emission Performance Credits.

b) Pricing and regulating a carbon offset market: Relating to the emissions reduction program, facilities can purchase offset credits from other sectors. In addition, the Government of Alberta created a set of protocols that outline how to quantify and verify emission reductions for different types of projects.

c) Low-carbon technology: The Alberta government, through their climate change strategy, committed various large investments toward low-carbon technology. One such program is the Carbon Capture and Storage Program. Through this program, the government projects carbon reductions of 139 megatonnes per year by 2050 (Government of Alberta, Environment and Sustainable Resource Development, n.d, n.p).

d) Education and Consumer Rebate: Moving away from a producer-focused approach, the Alberta government also supports the strategy through educational awareness and through an energy efficient rebate program. The program is run by a non-profit organization named C3 (or Climate Change Central).

The third document that mentions climate change is the Alberta's Water for Life: A Renewal. One of the medium-term goals to be completed by 2015 is to "develop strategies to deal with the management of changing future water supplies through the provincial Climate Change Adaptation Strategy and through the implementation of the Land-use Framework and watershed planning" (Government of Alberta, Environment and Sustainable Resource Development, 2009).

III. Saskatchewan

1. Introduction

Saskatchewan's approach to water law and policy is centralized through one of Saskatchewan's Treasury Board Crown Corporations, the Water Security Agency, formerly the Saskatchewan Watershed Authority. The Water Security Agency has legislative responsibilities within several pieces of legislation but whose legislative authority derives from the Saskatchewan Watershed Authority Act (2005). Through the Water Security Agency and regional watershed groups, the province adopts a planning

approach that emphasizes source water protection. In addition to discussing source water protection, this section discusses topics such as water quality and water quantity and then discusses the roles and mandates of several ministries and boards, most notably the Water Security Agency. It then moves to the roles and functions of watershed groups, specifically discussing three groups: the Lower Souris River Watershed Committee, the Swift Current Creek Watershed Stewards and the Wascana Upper Qu'Appelle Watersheds Association Taking Responsibility, or WUQWATR. After discussing these groups, this section moves into policy by exploring two water strategies: Saskatchewan's Safe Drinking Water Strategy and the recently published 25 Year Water Security Plan. Last, it explores some linkages to climate change.

2. Water Law

Water Legislation

Saskatchewan Watershed Authority Act. The Saskatchewan Watershed Authority Act (2005) is the main piece of legislation pertaining to water management. Within the area of water management, issues such as surface and groundwater permitting, the establishment of reservoir development and special flood hazard areas, and complaints regarding drainage works are covered within this legislation. One of the main functions of the Saskatchewan Watershed Authority Act is to set the mandate and possible actions that may be taken to carry out the mandate for the Saskatchewan Watershed Authority, now the Water Security Agency (see *Ministries, Organizations, & Boards*). The Act also deals with diversions of water, limiting the right to divert water to those licenses granted under the Act, grandfathering in any water rights established previously to this legislations enactment.

The Saskatchewan Watershed Authority Act grants the regulatory powers to the Lieutenant Governor in Council regarding the establishment of both reservoir development areas and special flood hazard areas. As defined in the Act, a reservoir development area is an expansion of a reservoir into all or a portion of an area surrounding that reservoir (s.44(1)). A special flood hazard area is a designation of any area surrounding an existing water way or riparian area that has been known to experience frequent flooding. Both designations are limited to ideas of the minimization of public expenditures and the minimization of environmental impact. The role of then Saskatchewan Watershed Authority, now Water Security Agency, as it pertains to these designations is to recommend, by notice of intention, the desire to designate an area either as a reservoir development area or a special flood hazard area.

Water Corporation Act. This Act (2002) establishes a crown corporation known as SaskWater. At this time, SaskWater is a commercial corporation that supplies water across Saskatchewan except in its two largest cities Regina and Saskatoon.

Water Power Act. The Water Power Act (1978) establishes a water power crown corporation by which all provincial water powers are owned (s.5). It places conditions on the sale or leasing of water interests that are capable of generating a certain amount of power:

> No interest in any water power capable of developing more than 12,500 of continuous horsepower or in any land required for such undertaking or necessary for creating, protecting or development such water power shall be leased or otherwise granted…(s.7(1)).

Watershed Associations Act. The Water Association Act (1978) is a water governance act that legislates the process of creating a watershed association. It also details the powers of these groups if established under the Act (see *Watershed*

Associations). In addition, it details the relationships between crown works corporations and watershed associations, and watershed associations and municipalities. For example, one of these relationship dimensions is the ability of a watershed association to impose levies on its municipal members.

Related Legislation

Agricultural Operations Act. The Agricultural Operations Act (1996) relates to water through its provisions on handling effluent. The Act describes compliance procedures for agricultural operations in handling effluent. It also describes the penalties for noncompliance. In addition, it describes that with complaints relating to the pollution of waterways or groundwater, the onus is on the claimant to prove that noncompliance to standard agricultural practices took place (s.4).

Conservation and Development Act. The Conservation and Development Act (1978) contains provisions describing how to establish a conservation and development area. This includes establishing works on such an area that are deemed necessary to conserve or develop any land or water resource (s.12(1)).

Environmental Management and Protection Act. The Environmental Management and Protection Act (2002) contains provisions regarding several areas of water management and protection. Its main focus is water quality and source water protection. Also, it contains a regulation that discusses subjects such as wastewater treatment and pollution control.

A) **The Water Regulations:** These regulations have two focuses. One is on wastewater sewage and industrial effluent works and the other is on waterworks. In the area of wastewater treatment, it contains requirements

on permitting. It details who does not need a permit in the handling of effluent. It also contains information on water sampling. In the areas of waterworks and water quality, it contains bacteria level, water turbidity and chemical standards.

Irrigation Act. A combination of focuses from two repealed acts, The Water Users Act and the Irrigation Districts Act, the Irrigation Act (1996) details the process of establishing an irrigation district, the powers of that irrigation district, the relationship between irrigator and individuals requiring irrigation, and the process of establishing an Irrigation Crop Diversification Corporation (see *Ministries, Organizations, & Boards*). The establishment of an irrigation district begins with an application process and applications are weighed against limitations such as whether the creation of the irrigation district is in the "best interest of the applicants and other landowners in the proposed irrigation district" and the "best interests of water utilization, preservation or water quality and long-term water use in, and economic diversification of, the proposed irrigation district" (s. 6(1). The powers of the irrigation district include the ability to enter into agreements with governments, corporations, agencies and individuals, the ability to construct, operate and maintain irrigation and other water works subject to the provisions to the Saskatchewan Watershed Authority Act. It also includes the ability to perform standard actions such as acquiring electricity and employing staff (s.13). Individuals requesting services from an irrigation district must have lands within the district area and must enter into a water service agreement (s.29(2)).

Public Health Act. The Public Health Act (1994) as it relates to water is involved in general in two general areas: community health and environmental health. Both areas

contain regulations regarding drinking water and health hazards. In addition, this Act discusses enforcement of environmental health standards.

Water Rights

Water Rights are determined by the Water Security Agency and the agency is guided by their legislative authority under the Saskatchewan Watershed Authority Act (2005). The water rights system assumes no first-in-time, first in right allocation. The Water Security Agency under the Act, maintains far reaching power in the allocation of the right to water:

> 50(1) On receipt of an application pursuant to section 51, the corporation may issue a water rights license to any person for the right to the use of any water except any water that may be:
>
> (a) allocated for the use of any other person; or
>
> (b) withdrawn from allocation by order of the minister.
>
> (2) The corporation may issue a water rights license pursuant to subsection (1) to any person:
>
> (a) for any term that the corporation considers appropriate; and
>
> (b) subject to any terms and conditions that the corporation considers Appropriate (s.50).

This means that the Water Security Agency has the ability to define both the term and conditions of any water withdrawal that they have approved. In addition, the possible causes for a refused water diversion permit application are not determined by the Act but are determined by the Water Security Agency in relation to the Act. The Act, however, does contain conditions that would provide cause for the cancellation or suspension of a permit. These causes include the non-compliance to whichever conditions were set out by the Water Security Agency, the defaulting on a payment or fee, or that the licensee uses the water for a purpose other than what they proposed in their application (s.53(1)). Domestic use does not require a license. And licenses to divert surface water are not required if that body of water is on private land and is used for domestic purposes

(s.57(2)). Appeals of decisions made by the Water Security Agency on issues of permitting fall under the powers of the Water Appeal Board.

Groundwater Permitting

Permits to divert groundwater are similarly regulated by the Water Security Agency and under the Saskatchewan Watershed Authority Act (2005). No individual or group is able to divert groundwater (s.75), unless it is on their property and is for domestic use (s.57(4)). Groundwater permits are only granted for groundwater investigation and are tightly regulated by the Water Security Agency.

Transboundary Issues

Like with Alberta and Manitoba, transboundary waters are regulated by similar legal mechanisms. First, transboundary waters between Saskatchewan and the United States are legally informed by the 1909 Boundary Waters Treaty and between the prairie provinces with the Master Agreement on Apportionment (1969).

A) The Prairie Provinces Water Board: This association is primarily responsible with the implementation of the Master Agreement on Apportionment. It has a multi-government representative board and is tasked with the effective and equitable apportionment of provincial boundary waters (PPWB, n.d). It performs this function through monitoring and regulating.

Water Quality

Drinking Water Laws

While there are several ministries and departments involved in the provision and monitoring of potable water, drinking water quality is regulating through the

Environmental Management and Protection Act (2002) and its regulations such as The Water Regulations.

Environmental Management and Protection Act: The Environmental Management and Protection Act (2002) includes laws preventing pollution of water resources. In addition, is requires that the government produce a Drinking Water Annual Report. This Act legislates a duty to provide safe drinking to anyone who operates a waterworks system that produces water intended for human consumption.

A) **The Water Regulations:** The Water Regulations defined the standards to which drinking water must meet. It adopts the standards set out by three federal Acts:

1) The Guidelines for Sewage Works Design

2) The Municipal Drinking Water Quality Monitoring Guidelines

3) A Guide to Waterworks Design.

The Water Regulations expand on the above federal guidelines defining acceptable water sources and specifying the particular operational guidelines for water treatment facilities.

The Health Hazard Regulations: These Regulations, under the Public Health Act 1994, require inspections for compliance of semi-public works.

The Pest Control Products (Saskatchewan) Act: These regulations, under the Irrigation Act 1996, define permitting for the use of pesticides.

Source Water Protection

Source Water Protection guides the primary approach taken in Saskatchewan to policy and planning. Stemming from the Saskatchewan's Safe Drinking Water Strategy

and the now Water Security Agency's mandated responsibility, source water protection derives from a holistic approach to water protection as part of a watershed planning model.

Protecting our Water: A Watershed and Aquifer Planning Model for Saskatchewan (2003): This planning model created by the Ministry of the Environment states that a source water protection focus was integral to the plan's development. For example, within the document it states that "substantial efforts will be undertaken to identify threats to source waters and provide a plan to address these threats" (p.2). In addition, it states that "sound water management and source water protection is [sic] everyone's business" (p.2).

The model discusses the planning process which first involved the establishment of three committee structures:

> 1) The watershed advisory committee to provide local input and guide the process and share in the implementation of outcomes;
> 2) The technical committee to collect information and conduct analysis as required; and
> 3) The planning team to coordinate the activities with ultimate responsibility to develop the plan (p.2)

The structure of the plan is to include background information, a summary of issues, a summary of objectives, analysis and recommendations and key actions. This model recommends that any plan should be implemented through an adaptive resource management approach and with a source water protection focus (p.8).

Source Water Protection by Watershed Group: Currently, 12 watershed groups have completed their source water protection plans.

> -Assiniboine Watershed
> -Carrot River Watershed
> - Lower Qu'Appelle River Watershed

-Lower Souris River Watershed
-Moose Jaw River Watershed
-North Saskatchewan River Watershed
-Old Wives Lake Watershed
-South Saskatchewan River Watershed
-Swift Current Creek Watershed
-Upper Qu'Appelle River and Wascana Creek Watershed
-Upper Souris River Watershed
-Yorkton Area Aquifers

Ecosystem Quality Needs

Ecosystem quality needs were identified as surface water quality needs within a called *Surface Water Quality Needs* (2006). The development of this document has a history that began with the publishing of the Saskatchewan Water Quality Objectives in 1975. These objectives were used to evaluate water quality until the federal document called Canadian Water Quality Guidelines was published in 1987. Again Saskatchewan's Water Quality objectives were revised. They were revised again after the Canadian government released the Canadian Water Quality Guidelines in 1999. The point made in by the Saskatchewan government and illustrated by the legislation's history is that these ecosystem needs are under constant revision and review. The resulting document, Surface Water Quality Objectives (2006) has several dimensions:

A) Objectives for Effluent Discharges

B) Guidelines for Effluent Mixing Zones

C) Surface Water Quality Objectives

i) Aquatic Life: The document maintains that objectives under this category are particularly stringent and it specifies surface water quality objectives in terms of parameters such as chlorine levels, aluminum levels, etc.

ii) Agricultural Uses: The values recommended in this section are "recommended concentration limits of contaminants in irrigation and livestock water" (p.5).

iii) Recreation and Aesthetics: The concerns that are identified relate to maintaining objectives in waters that are primarily used for activities in which the user comes into frequent direct contact with the water (p.7).

Water Quantity

Water Conservation Strategy

The attempt to develop a current water conservation strategy began with the publishing of a discussion guide intended for holding public consultations. The guide contained information regarding water use trends and availability by region and sector. As of yet, no strategy stand-alone water conservation strategy has been developed. However, the Water Security Agency has published documents with some guidelines regarding conservation in the home and conservation on the farm. Also, water conservation objectives are included in the 25 Year Security Plan. An example of this is the efficient use of water and the production of a water availability study. In addition, individual water conservation is emphasized by Saskatchewan's GoGreen program.

Interbasin Transfers

Water is prohibited to be transferred outside of a watershed under the Saskatchewan Watershed Authority Act (2005):

> … the corporation shall not grant:
> (a) any licence or approval to construct or operate works for the purposes of transferring water out of a watershed; or
> (b) any licence or approval to transfer water out of a watershed (s.50).

3. Water Institutions

Ministries, Organizations and Boards

Until October 1st, 2012, two main governmental departments were responsible for water management in the province of Saskatchewan: The Saskatchewan Watershed Authority and the Ministry of the Environment. Currently, water management within Saskatchewan is now under the newly renamed Water Security Agency, under which the functions of the Saskatchewan Watershed Authority are performed, as the main legislative authority on water management. The Ministry of Environment is no longer responsible for waste management and municipal water management, as those responsibilities have been integrated under the Water Security Agency's mandate. However, they are still responsible for fisheries and they maintain their environmental assessment services.

The Ministry of Agriculture and the Ministry of Health also have responsibilities relating to water management. Beneath these ministries, there are several organizations and boards that operate in the area of water delivery or management, such as thePrairie Provinces Water Board, and the main watershed planning units, the Watershed Groups. In this report, three watershed groups and their work are explored: the Upper Qu'Appelle River and Wascana Creek Watershed Group, otherwise known as WUQWATR, the Swift Current Creek Watershed Group, and the Lower Souris River Watershed Group. All three groups' Source Water Protection Plans have been completed.

Saskatchewan Watershed Authority. The Saskatchewan Watershed Authority (SWA) was integrated into the Water Security Agency on October 1st, 2012. Previous to this integration, the SWA had legislative responsibility over several pieces of legislation

including the Saskatchewan Watershed Authority Act (2005), the Conservation and Development Act (1978), the Water Power Act (1978), and the Watershed Associations Act (1978). The main piece of legislation that designated the SWA's authority and mandate was the Saskatchewan Watershed Authority Act (2005). Under this act the SWA was mandated to:

> (a) to manage, administer, develop, control and protect the water, watersheds and related land resources of Saskatchewan;
> (b) to promote the economical and efficient use, distribution and conservation of the water, watersheds and related land resources of Saskatchewan;
> (c) to maintain and enhance the quality and availability of the water, watersheds and related land resources of Saskatchewan for domestic, agricultural, industrial, recreational and other purposes;
> (d) to promote and co-ordinate the management, administration, development, conservation, protection and control of the water, watersheds and related land resources of Saskatchewan;
> (e) to promote, undertake and co-ordinate research, investigations, surveys, studies, programs and activities relating to the management, administration, development, conservation, protection and control of the water, watersheds and related land resources of Saskatchewan;
> (f) to promote, undertake and co-ordinate conservation programs in Saskatchewan (s.5).

The Act also limits the actions that the SWA could take in carrying out its mandate:

> (a) regulate and control the flow of water in any lake, river, reservoir or other water body in Saskatchewan;
> (b) receive and consider applications for, and issue, water rights licences and approvals to construct, extend, alter or operate works, and establish the terms and conditions of those licences and approvals;
> (c) promote, undertake and co-ordinate research, investigations, surveys, studies, programs and activities relating to:
> (i) the management, administration, development, conservation, protection and control of the water, watersheds and related land resources of Saskatchewan; or
> (ii) conservation programs;
> (d) subject to any prescribed restriction, enter into any agreement with any person, government, agency, organization, association, institution or body within or outside Saskatchewan for any purpose relating to:
> (i) the management, administration, development, conservation, protection and control of the water, watersheds and related land resources of Saskatchewan; or

(ii) conservation programs (s.6(1)).

These powers include the ability to make partnerships with First Nations Bands and the Federal Government. It defines the relationship with the Prairie Provinces Water Board and it allows the SWA to enter into agreements with any agency, government, or group (s.6). The Saskatchewan Watershed Authority was then integrated, along with its legislative powers into the Saskatchewan Water Security Agency.

Water Security Agency. The Water Security Agency is the primary agency responsible for water management in Saskatchewan. It is a treasury board crown corporation whose mandate is similar to the Saskatchewan Watershed Authority and summarized in their 2011-2012 Annual Report. The Saskatchewan Water Security Agency mandates that they:

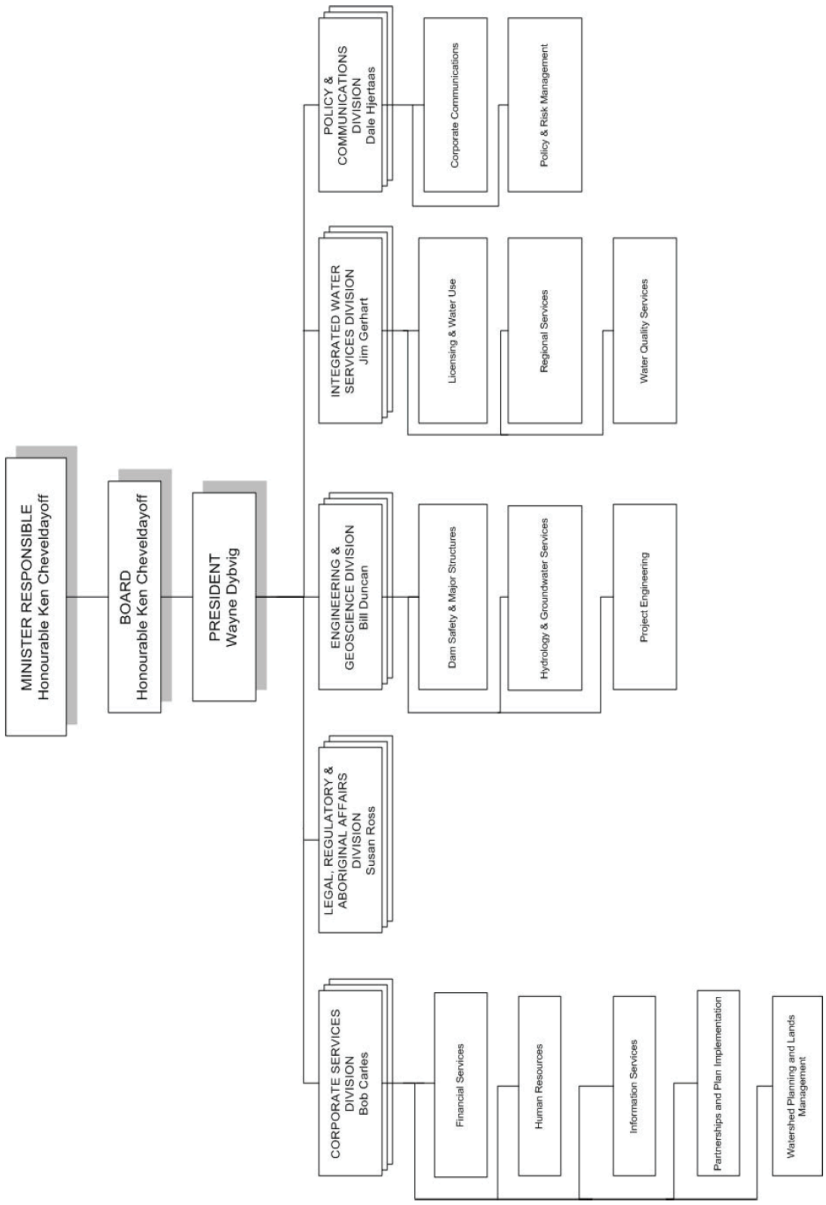
> Lead management of the province's water resources to ensure safe sources for drinking water and reliable water supplies for economic, environmental and social benefits for Saskatchewan people (Saskatchewan Watershed Authority, 2012, p.1).

In addition, the Water Security Agency maintains the same organizational structure and divisions: Integrated Water Services, Engineering and Geoscience, Policy and Communications, Corporate Services and Aboriginal Affairs (Saskatchewan Watershed Authority, 2012, p.9; see Figure 3).

The Water Security Agency is involved in delivering several services and programs. These include programs relating to drainage approval and licensing and water conservation programs such as toilet rebate programs and flood prevention programs. The Water Security Agency is also responsible for regulating all water control projects, such as reservoirs and dams, within the province. Through its Operations Division, the agency collects information pertaining to streamflow and water level data from hydrometric

gauging stations located throughout the province. The agency also monitors and operates several flood control areas within the province. Relating to water licensing, the Water Security Agency is responsible for allocating permits for surface water diversions and groundwater investigation.

Figure 3. Water Security Agency Organizational Structure (Water Security Agency, 2012, p.44)



In this past year, the Water Security Agency has focused on several areas that it has considered significant achievements. First, in dealing with a major flood event that occurred in the Spring of 2011, the agency performed the following actions:

> -flood forecasting and flood warnings
> -operating provincial water management infrastructure
> -repair of damaged infrastructure
> -assistance to communities and individuals including the Emergency Flood Damage Reduction Program, which assisted 1,238 communities, businesses and individuals to take action to prevent flood damage (Saskatchewan Watershed Authority, 2012, p.2)

In the area of research and development, the agency completed several projects which included the Qu'Appelle River Water Supply Model, the drafting of the Water Demand Study for the Qu'Appelle River Basin and a Regina Groundwater Map,

> A) **Saskatchewan Watershed Advisory Committee**: This committee is made up of 19 stakeholders and consultants representing groups ranging from Duck Unlimited, the Partners for the Saskatchewan River Basin to the PFRA, the Women's Agricultural Network and urban and rural municipality associations. According to a news release in 2003, the purpose of the advisory group is to "identify and evaluate a broad range of water issues, challenges and opportunities to provide the Authority's Board of Directors with information and advice" (Saskatchewan Watershed Authority, 2003, n.p.)

Ministry of the Environment. Although certain services and responsibilities have been centralized and integrated into the Water Security Agency, some responsibilities and functions that pertain to water remain with the Ministry of Environment. For example, functions relating to fisheries, and fishing licenses and

permits remain with the Ministry of the Environment. In addition, this Ministry is responsible for the providing environmental assessments.

Ministry of Agriculture. The Ministry of Agriculture's mandate is:

> To foster a commercially viable self-sufficient and sustainable agriculture and food sector. The Ministry encourages farmers, ranchers and communities to develop higher value-added production and processing and promotes sustainable economic development in rural Saskatchewan through better risk management (Government of Saskatchewan, Ministry of Agriculture, n.d., n.p.).

As it pertains to water, the Ministry of Agriculture is responsible for dealing with issues of irrigation, irrigation development, and investigating into and preventing pollution stemming from intensive livestock operations. In the areas of irrigation and irrigation development, the ministry of Agriculture has services and information that detail the proper construction and development of irrigation works including information on standards and best business practices. In the area of pollution and stemming from intensive livestock operations, the Ministry has information on dugout water treatment, livestock water quality testing, water analysis interpretation information and water conservation for hog operations. In addition, there is some overlap with the now Water Security Agency in terms of a programming pertaining to rural water quality such as the program called the Rural Water Advisory Program which helps farmers and rancher improve water quality on their farms or ranches.

> A) Spirit Creek Watershed Monitoring Committee: The Spirit Creek Watershed Monitoring Committee is the first committee of its kind with the responsibility of monitoring intensive livestock operations in three areas: water, soil and air or odour (Spirit Creek Watershed Monitoring Committee, n.d., n.p.).

Ministry of Health. Obtaining their legislative authority under the Public Health Act, the Ministry of Health is responsible for areas in environmental health. The purpose of its initiatives under its general mandate is to "prevent injury and disease related to exposure to biological physical and chemical hazards" (Government of Saskatchewan, Health, n.d., n.p.). Areas of importance within the Ministry of Heath that relate to water are flooding preparedness, private sewage systems and water quality. Within the area of water quality, this ministry performs water testing in many areas, in conjunction with Water Security Agency, to test municipal and rural drinking water.

Water Appeals Board. The Water Appeals Board is mandated with the receiving and acting on appeals from decisions, orders and actions of the Water Security Agency.

Watershed Associations.

The main mechanisms for the dissemination of regional information and for the development of water management plans, in Saskatchewan referred to as Source Water Protection Plans, are the 12 watershed groups. These groups are legislatively created under the Watershed Associations Act (1978). These powers are subject to the Watershed Associations Act (1978) and include to:

> a) plan, undertake, construct, alter, improve, repair and operation projects in which the agencies constituting the association have a common interest;
>
> i) for the purpose of storing, conserving, using, controlling, protecting or developing the water or water resources available to the association; and
>
> ii) for the purpose of conserving, controlling, protecting or developing land, forest r recreation resources available to the association (s.21).

The watershed groups under the legislative authority of the Water Security Agency are the main planners of source water protection plans. These plans have been developed and

implemented to varying levels; however, the three groups discussed in this report have completed their plans.

Lower Souris River Watershed Committee

The Lower Souris Watershed Committee (LSWC) was formed in 1999 as a conglomeration of local stakeholders and conservation groups that sought to develop watershed plans in the area. In 2004, the local sub-watershed committees, Four Creeks, Pipestone, and Antler Advisory committees were designated as local watershed advisory committees by the Saskatchewan Watershed Authority. The Lower Souris Watershed is located in the south-eastern corner of Saskatchewan and in an area known as Aspen Parkland. Recently in 2011, this watershed committee dealt with a major flood event in the Pipestone Creek area. Also, during dry years, the committee deals with conflicts surrounding the release of water from the Moosimin Dam that has reportedly led to water shortages.

Since its creation the Lower Souris Watershed Committee has published several reports and developed several programs. In 2005, the Pipestone Creek Watershed Committee, a subcommittee of the LSWC released a *Moosimin Reservoir Water Quality Report* and has done so every year since. In 2008 and in conjunction with the then Saskatchewan Watershed Authority, the LSWC released the *Inventory of Wildlife Habitat Quality in the Lower Souris Watershed Report*. This was to determine the quality of wildlife habitat and was part of the Lower Souris Ecological Goods and Services Project. This project was a pilot project that used market incentive-based policy tools to determine the value of private and public land. It also encourages private landowners to be responsible for the provision of functional wildlife habitat as part of their regular

business practices" (LSWC, 2009, p.2). This project was summarized and published in conjunction with the University of Alberta in 2009 in a report entitled *Rural Economy*. This pilot project was under the overall mission statement of the LSWC in "balancing the economic, environmental and social values to sustain and improve the watershed for future generations" (LSWC, n.d., n.p.).

The LSWC was the first watershed group in Saskatchewan to complete its source water protection plan. In November of 2005, the committee released a background report to the Source Water Protection plan that is analogous to a State of the Watershed Report that other watershed groups in other provinces have published. The Source Water Protection Plan was published in March of 2006 and includes information on the single barrier of protecting source water in a multi-barrier source to tap approach. The committee releases annual progress updates on the implementation of the source water protection plan.

Swift Current Creek Watershed Stewards

The Swift Current Creek Watershed Stewards (SCCWS) was formed in 1998 by local individuals in the Swift Current Creek and Rush Lake subwatersheds. The SCCWS was formed with the mission statement to:

> Enhance water quality and stream health of the Swift Current Creek Watershed by promoting awareness and understand among water users (SCCWS, n.d).

To carry out this mission statement the SCCWS has established three separate goals:

> 1) Educate users of the Swift Current Creek Watershed, on a continuous bases, about issues and impacts which affect water quality,
> 2) Monitoring water quality and riparian health to assist in co-operative solutions regarding water management issues,
> 3) Foster an attitude of individual responsibility toward watershed stewardship (SCCWS, n.d).

The SCCWS is involved in stewardship within the Swift Current Creek Watershed which is located in an area known as the Mixed Grassland Ecoregion. The climate in this area is typically dry and as a result, the SCCWS deals on a regular basis with drought issues. The Duncairn Dam and Reid Lake reservoirs are located within the watershed and as such, there has been some conflict surrounding the operation of these facilities in times of drought or flood. In addition, there are oil and gas operations within the area that can lead to tensions.

The SCCWS has been involved in several projects and services since its formation. In 2004, a project designed to assess the overall health of the watershed was implemented called the *Swift Current Creek Watershed Monitoring Project* which existed from 2004 to 2008. The SCCWS also maintains the Swift Current Creek Invasive Plant Species Control Program, largely an educational program. In addition, the SCCWS supports the Agri-Environmental Group Plan whose objective is to provide cost-shared incentives to producers to implement Beneficial Management Practices on farms. As part of their educational goals, the group performs youth educational outreach and delivers educational programs including delivering the Frog Hoppers Water Workshop.

In 2007, the Saskatchewan Watershed Authority mandated the SCCWS with creating a Source Water Protection Plan for the area. After consultations with the Saskatchewan Watershed Authority, a watershed advisory committee was struck and further consultations with key stakeholders were performed. Once a background report was published that included information on surface and groundwater resources, a technical committee and the watershed advisory committee met several times. The result

of these meetings was the *Swift Current Creek Watershed Protection Plan* that was published in 2009. This protection plan maintains a source water protection focus.

WUQWATR

The Upper Qu'Appelle River and Wascana Creek Watersheds are stewarded by a group known as the Wascana and Upper Qu'Apelle Watersheds Association Taking Responsibility or WUQWATR. The group was formed out of the process of developing source water planning in key geographical areas identified by the Saskatchewan Watershed Authority: The Upper Qu'Appelle River watershed and the Wascana Creek Watershed. In addition two other subwatersheds and advisory committees were involved in the planning process: Lanigan/Manitou and Last Mountain Lake subwatersheds. These subwatersheds were selected because of their unique characteristics. For example, the Wascana Watershed is one of the smallest areas in Saskatchewan but contains 20% of the population. This is because the subwatershed has the Regina Population within its borders (WUQWATR, n.d.). The Upper Qu'Appelle subwatershed consists largely of the Qu'Appelle River and contains the major waterway control infrastructure known as the Qu'Appelle Dam (WUQWATR, n.d.). The Qu'Appelle River ends at the Last Mountain Lake, the largest natural lake in Southern Saskatchewan, within the Last Mountain Lake subwatershed. This subwatershed is home to Rowan's Ravine, a provincial park and to several regional parks. Last, the Lanigan-Manitou subwatershed contains Little Manitou Lake, a lake with no natural outlet and "one of the highest concentrations of minerals of any water body on the planet" (WUQWATR, n.d.). As a result, these four subwatersheds pose a variety of challenges for the source water protection planning process. In 2005, the watershed advisory committee was formed.

The planning process for the Upper Qu'Appelle River and Wascana Creek Watersheds Source Water Protection Plan, otherwise known as *Getting to the Source*, began with "three years of information-sharing, discussion and consensus-based decision making" (Upper Qu'Appelle River and Wascana Creek Watersheds Advisory Committees, 2007, p.1). These three years resulted in the publishing of the Source Water Protection Plan in 2009, *Getting to the Source,* that identified 82 key actions within 12 key priorities. The progress of these actions are evaluated and published within WUQWATR's annual reports.

4. Water Strategy

Saskatchewan's Safe Drinking Water Strategy

As a result of the Walkerton, Ontario and North Battleford, Saskatchewan's drinking water contamination events, the province released the *Saskatchewan's Safe Drinking Water Strategy* in 2003, a document that builds on an earlier document known as the *Water Management Framework, 1999*. This strategy's vision is "a sustainable, reliable, safe and clean supply of drinking water that is valued by the citizens of Saskatchewan" (Government of Saskatchewan, Environment, 2003, p.2). Under this vision and guided by several principles, this strategy contains 4 key goals:

> 1) Waterworks systems provide safe, clean and sustainable drinking water.
> 2) The drinking water regulatory system is clear and effective
> 3) Source waters are protected now and into the future
> 4) Citizens and consumers trust and value their drinking water and the operations that produce it (Government of Saskatchewan, 2003, p.2).

The strategy defines the roles and responsibilities with regards to the implementation of the strategy. The goals of this strategy are reviewed within annual reporting produced in

the past by the Ministry of Environment and supported by the Ministry of Health's Saskatchewan Disease Control.

25 Year Saskatchewan Water Security Plan

Developed by a process led by the Saskatchewan Watershed Authority and implemented by the newly formed Saskatchewan Water Security Agency, the *25 Year Saskatchewan Water Security Plan* is a comprehensive water strategy. Like Alberta's Water for Life Strategy, it identifies several priority areas and recommends actions to address those priority areas. The plan acknowledges that many water management initiatives may take many years to complete and identifies unforeseeable challenges as a barrier but it maintains a 25-year planning horizon to represent long-term water management initiatives and to "ensure consideration of future generations" (Water Security Agency, 2012, p.1). This plan marks the first official document produced by the Government of Saskatchewan that uses the terminology "water security".

The development of the plan started with consultation sessions that engaged 174 individuals representing 92 organizations. After a push for a new plan from these consultations, a second round of consultations occurred with 78 individuals representing 56 organizations or governance groups. The plan was published after the formation of the Water Security Agency on October 15, 2012.

The plan contains a vision, 7 principles and 7 goals and 29 action areas. The overall vision of the strategy is of "water supporting economic growth, quality of life and environmental well-being" (Water Security Agency, 2012, p. 3). It has 7 overarching principles:

> 1) Long-Term Perspective- Water management decisions will be undertaken within the context of a 25-year time horizon.

> 2) Water for Future Generations- A sustainable approach to water use will protect the quality and quantity of water now and for the future.
> 3) Integrated Approach to Management- Water decisions will integrate the multiple objectives and information pertaining to the economic development, ecological, hydrological, human health, and social aspects of water, considering circumstances and needs that may be unique to a watershed or region, to achieve a balanced outcome.
> 4) Partnerships and Participation- The provincial government will facilitate collaboration in the development and implementation of water management decisions.
> 5) Shared Responsibility- All residents, communities and levels of government share responsibility for the wise use and management of water.
> 6) Value of Water- Water is essential to life and will be treated as a finite resource that is used efficiently and effectively to best reflect its economic, social, and environmental importance.
> 7) Continuous Improvement- Water management will be adaptive and supported by sound monitoring, risk assessment, evaluation, research, innovation and best practices
> (Water Security Agency, 2012, p.3).

Guided by these principles, the strategy contains 7 goals under which 29 action areas were developed:

> 1) Sustainable supplies- Ensure the sustainability of our surface and groundwater supplies.
> 2) Safe drinking water- Ensure our drinking water is safe by protecting supplies from the source to the tap.
> 3) Protection of water resources- Ensure water quality and ecosystem functions are sustained.
> 4) Safe dams-Ensure dams safely meet water supply and management needs.
> 5) Flood and drought damage reduction- Ensure measures are in place to effectively respond to floods and drought.
> 6) Adequate data, information and knowledge- Ensure adequate water data, information and knowledge are available to support decision making.
> 7) Effective governance and engagement- Ensure water management and decision-making processes are coordinated, comprehensive and collaborative
> (Water Security Agency, 2012, p.4).

5. Climate Change

Climate change appears as an area of concern throughout various strategies and policies. For example, climate change is briefly discussed in *Protection our Water* in relation to watershed planning and also discussed in the Saskatchewan's Safe Drinking

Water Strategy. For the government of Saskatchewan, climate change has reappeared as a legislative and policy area, appearing as an action area titled Climate Change Adaptation in the 25 Year Water Security Plan. In this action area, climate change adaptation is discussed in relation to the continuance of working with key partnerships on climate change impacts to identify adaptation strategies (p.11). One such partnership between Saskatchewan, Manitoba and Canadian Governments that is discussed is PARC, or the Prairie Adaptation Research Collaborative. Climate change also was reintroduced as a piece of proposed legislation regarding the management and reduction of greenhouse gases in 2009.

IV. Manitoba

1. Introduction

Manitoba's approach to water legislation focuses on providing a legislative framework for planning and decision-making that is decentralized through the Manitoba Conservation Districts framework. This section discusses how Manitoba's legislation is inclusive of a source water protection focus as a part of integrated watershed management planning. In addition, the role of issues such as water rights, water quality and quantity issues, transboundary issues, and the connections that legislation and policy maintain with these issues is also discussed. Also, several water institutions are discussed. Particularly, the work of three conservation districts, Alonsa, Little Saskatchewan River and Seine-Rat River, are explored in relation to Manitoba's water legislation.

In making connections with relevant legislation, two water-related strategies that Manitoba has published are mentioned. The first strategy is the *Manitoba's Water*

Strategy (2003), a renewal of an older water strategy that relates to six policy areas: water quality, conservation, use and allocation, water supply, flooding and drainage. But, no additional water strategy has been developed or implemented.

As opposed to watershed groups in Saskatchewan or water planning advisory councils in Alberta, Manitoba regionalized its local watershed planning through conservation districts. Although these conservation districts perform a watershed planning function such as the development of integrated watershed management plans, some conservation districts' boundaries are not watershed-based. That is, a conservation district could have multiple major watersheds within their boundaries. The second strategy is the *Conservation Districts Program: Framework for the Future* (2009) is discussed with particular reference to how Manitoba plans to re-align boundaries of conservation districts to reflect major watershed boundaries.

2. Water Law

Water Legislation

Water Resources Conservation Act. The Water Resources Conservation Act (2000) is a major piece of legislation that relates to water in Manitoba. In its preamble, the Act discusses the conservation and protection of water resources through sustainable water resource management practices. While it acknowledges the use of water for social and economic well-being, it limits the use of water to use that will not adversely affect the "ecological integrity" of water resources in Manitoba (s.1). As such the Water Resources Conservation Act prohibits certain uses of water:

> (a) drill for, divert, extract, take or store water for removal;
> (b) sell or otherwise dispose of water to a person for removal;
> (c) convey or transport water for removal; or
> (d) remove water from a water basin or sub-water basin (s.2).

This Act also prohibits the manufacturing and processing of drinking water.

The Act details the sanctions that result from noncompliance of the Act. For an individual noncompliance may result in a fine no greater than $50,000 or a prison term of 6 months or both, and for each subsequent offense, the maximum fine is increased to $100,000 and the maximum prison term is increased to a year. For a corporation, noncompliance may result in a fine no greater than $500,000 and with each subsequent offence the fine is increased to $1,000,000 (s.5(1)). If it is determined that noncompliance resulted in the financial benefit of the individual or corporation, then the an additional fine may be levied (s.5(3)).

Water Protection Act. The Water Protection Act (2005) places source water protection as a focus within law. In legally emphasizing a source water protection focus, the Act provides a comprehensive approach directly relating to water, watershed planning and interjurisdictional water issues that are specific to Manitoba. For example, in the preamble the Water Protection Act (2005) states that:

> The Government of Manitoba is committed to watershed planning as an effective means to address risks to water resources and aquatic ecosystems, and believes that residents of watersheds should be consulted when watershed plans are developed (Preamble).

In focusing the Act to issues specific to Manitoba the:

> Government of Manitoba recognizes the importance of the Canada-United States Boundary Waters Treaty and other inter-jurisdictional agreements protecting water, and the shared right and responsibility of all jurisdictions in the Hudson Bay drainage basin to protect water resources within the basin (Preamble, Water Protection Act, 2005).

While the Water Protection Act details specific water quality standards, it is also details a decentralized framework by designating water quality management zones based on ecological characteristics such as water sources.

Beyond the water quality management zones, the Act designates the authority to develop watershed management plans within these zones. Although it is not clear that these zones necessarily mean the conservation district areas, the Act specifies that watershed management planning decisions must go through any existing and recognized planning authority. As such, conservation districts must be consulted when watershed management planning decisions are made within the conservation district's boundaries (s.17.1(a)).

These watershed plans are to be integrative of source water protection. For example, the content of the watershed plans must include "the protection, conservation or restoration of water, aquatic ecosystems and drinking water sources" (s.16.1(b)(i)). Pertaining to the supervision of the implementation of this Act, the Act establishes a Manitoba Water Council that creates a feedback loop among the Minister of Conservation and Water Stewardship and other provincial bodies such as the Lake Manitoba Stewardship Board and the Lake Winnipeg Stewardship Board (Manitoba Water Council, 2010).

The Drinking Water Safety Act. The Drinking Water Safety Act (2008) establishes the Office of Drinking Water and details the purposes of that office. Other than administering the provisions and regulations made within and under the Act, the Office of Drinking Water is also tasked with providing technical expertise and communication functions regarding drinking water safety (s.4(2)(b)). The Act also

expands on legislation pertaining to water rights by including provisions surrounding the licensing and operation of public water works systems.

The Act includes unsafe drinking water emergency provisions. Stemming from these provisions, the Act requires routine sampling and analysis of drinking water supplies, record keeping, the storage of drinking water data, and public reporting. It also establishes provisions that relate to drinking water boil advisories and other emergency reporting requirements. Drinking water regulations relating to groundwater and water quality have been made under the Act.

The Water Supply Commissions Act. The Water Supply Commission Act (1997) describes the possible regulations that may be made in relation to the management and operation of water supply infrastructure. It designates the powers that a water supply commissioner has, including the designation of water supply commission areas and the preparation of water supply schemes.

The Water Resources Administration Act. The Water Resources Administration Act (2008) defines the powers that are vested with the Department of Conservation and Water Stewardship in relation to several other Acts such as the Dyking Authority Act, the Groundwater and Water Well Act, the Water Power Act, the Water Rights Act, and the Water Supply Commissions Act. It largelydefines who has control over water resources in Manitoba.

The Water Power Act. The Water Power Act (2008) is a piece of legislation that defines jurisdiction between water on Crown lands, lands within a provincial jurisdiction and transboundary waters as it pertains to the energy capacity of water.

Related Legislation

The Conservation Districts Act. The Conservation Districts Act (2006) provides a linkage between the legislation of watershed planning in the Water Protection Act and the actual planning performed by conservation districts. This is done through the establishment of governance processes within established and soon-to-be established conservation districts. It affords conservation districts a considerable amount of power by making them the authority of matters relating to land-use, water sustainability and conservation within the boundaries of the district. The Act outlines the powers of each conservation district board. The board may:

> a) Study and investigate, or cause to be studied and investigated such resources of the district as may be necessary to prepare a scheme;
> b) Implement a scheme;
> c) Transfer, for the purposes of maintenance and operation, to an included municipality or other person, jurisdiction, authority, or control, over any works in the district;
> d) Enter into an agreement with the owner of any land for the carrying out of any works considered necessary for the implementation and operation of a scheme;
> e) issue, subject to the provisions of *The Forest Act*, permits for cutting of forest from protected areas;
> f) Issue, subject to provisions of the Water Rights Act, permits to alter surface water courses;
> g) Recommend the acquisition by the Crown, of any real or personal property necessary for a scheme;
> h) Sell, subject to the provisions of the Water Rights Act, water from reservoirs constructed or operated by the board;
> i) Require the municipality to furnish to the board information pertinent to a scheme (s.21).

In addition to these powers granted to the boards of conservation districts, the Conservation Districts Act allows for conservation district boards to construct water diversion infrastructure for the purposes of holding back potable water (s.18). However, this power is subject to other legislation such as the Water Protection Act.

Manitoba Environment Act: As a more general piece of legislation, the Manitoba Environment Act (1996) is the only piece of legislation that mentions the need to balance economic development and environmental sustainability. The intent of the act is:

> To develop and maintain an environmental protection and management system in Manitoba which will ensure that the environment is protected and maintained in such a manner as to sustain a high quality of life, including social and economic development, recreation and leisure for this and future generations (s.1.1).

Specifically, it contains the functions of the department that is intended to oversee the application of the Act. Examples of these are the need to assess development projects in relation to environmental impact concerns, the need for scientific-based research to guide environmental decisions, the need for public consultation in decision-making, and the need to set up awareness programming. This legislation essentially details the best practices of environmental governance. It also leaves room for specific laws and policies to fall under this set of best practices. It states that the intent of the Act is to be "complementary to, and support for, existing and future provincial planning and policy mechanisms" (s.1.1(a)).

Public Health Act. The Public Health Act, revised in 2009, relates to water through health hazard provisions and through one of its regulations, the Protection of Water Sources Regulation:

A) **The Protection of Water Sources Regulation**: This regulation deals with the protection of water resources through the prohibition of pollution. This includes the depositing of manure, refuse, filth, sewage, or liquid waste into any body of surface or groundwater. It also

includes the ability of an health officer to order clean up of such a deposit.

Water Rights

The Water Rights Act (2006) establishes how the diversion of water is owned in Manitoba. The Act is subject to the provisions of the Water Resources Conservation Act. Like Alberta, water rights are determined by a First in Time, First in Right priority allocation system. The dual system of priority first prioritizes the time the acquisition the license was acquired and then prioritizes licenses based on the planned use for the water that is to be licensed. For example, if two licenses are applied for at the same time, then the use priority system would be applied (s.8(4). Water-use priority is as follows:

1) Domestic Purposes
2) Municipal Purposes
3) Agricultural Purposes
4) Industrial Purposes
5) Irrigation Purposes
6) Other Purposes (s.9).

Diversion for domestic purposes does not require a license, as a domestic user is considered to have lawful access to water by virtue of the nature of their diversion. Domestic users do not require a license if their planned use is under 25,000 litres. Licenses are required for the diversion of water, the construction of water works and the construction of any infrastructure or works that is for the purpose of controlling water flow (s.5(1)). Any diversion of water or construction of water works without a license may result in the infrastructure being removed. While the procedural rules of application are set out in regulation, the Act summarizes the purposes of application as they are weighed against the notion of protecting aquatic ecosystems.

Licenses may be cancelled, suspended or not granted based on the determination that such a diversion or waterworks would be unsafe or that the diversion of waterworks would contravene the notion of preserving healthy aquatic ecosystems or would cause an unhealthy instream flow, groundwater, or general water body levels. The Act also allows for other Acts and regulations to be made with regard to transboundary waters.

The Act sets outs sanctions for noncompliance. For an individual, noncompliance may result in a fine no greater than $10,000 or 3 months in prison or both. For a corporation, the fine can be up to $25,000 (s.23(1)). Furthermore, under the Act each day is considered a separate offence (s.23(4)), and it contains a statute of limitation of two years for prosecutions (s.23(5)).

Groundwater Permitting

In the area of groundwater permitting, the Groundwater and Water Well Act (2008) builds on the Water Rights Act. For example, it states that:

> No person shall engage in, or advertise himself as engaged in, the business of drilling wells unless he is the holder of a subsisting license to engage in the business of drilling wells, issued to him under this Act (s.3).

In addition, the Act also details the punishments for noncompliance of the Act. For an individual, noncompliance may result in a fine no greater than $10,000 or 3 months in prison or both. For a corporation, the fine can be up to $25,000 (s.23(1)). Furthermore, under the Act each day is considered a separate offence (s.23(4)).

The Act also makes linkages with the Environment Act. The Groundwater and Water Well Act prevents the direct or indirect pollution of groundwater supplies subject to provisions in the Environment Act. For example, this could include pollution resulting from the improper capping or sealing of an abandoned well. The Act also gives a right of

entry from the government to survey groundwater resources or study "the conservation, development and utilization of ground water" (s.8(1)). Similarly, the quality of groundwater is regulated through Drinking Water Regulation if it is considered Groundwater Under Direct Influence or GUDI (see below).

Transboundary Issues

In Alberta, the watershed planning advisory councils deal with transboundary water issues, but in Manitoba the conservation districts have little jurisdiction over transboundary water issues. These issues are taken up by commission boards who deal with water quality and quantity issues in, for example, Lake Winnipeg and Lake Manitoba.

Like with transboundary laws regulating issues in Alberta and Saskatchewan, there are two major agreements that affect Manitoba's boundary water resources: the Boundary Waters Treaty (1909) and the Master Agreement on Apportionment. In addition, another agreement, the Agreement for Water Supply and Flood Control in the Souris River Basin, is involved in managing the "construction, operation and maintenance of reservoir projects in the Canadian portion of the basin. It was intended that these projects would provide water supply benefits in Canada and flood control benefits in the United States in a manner consistent with the Boundary Waters Treaty" (Government of Manitoba, Water Stewardship Division, n.d.).

Water Quality

Drinking Water Law

With a source water protection emphasis throughout legislation and policy, water quality is regulated at the pre-tap level through the Drinking Water Safety Act (2008) and

its regulations. The Drinking Water Safety Act contains details with regard to licensing, assessment of water system infrastructure and water supply sources, and the establishment of a hierarchical system of communication. The latter establishes a feedback loop among the Lieutenant Governor in Council, the minister, any regulations that are establish, the Office of Drinking Water, and the public through an appeals process.

The Act itself regulates public waterworks to disinfect drinking water to standards detailed within the Act's regulations.

A) **Drinking Water Quality Standards Regulation**: This regulation sets the quality standards, such as bacteriological, microbial, chemical and radiological, and physical standards. This regulation also affirms the Canadian Guidelines for Drinking Water Quality.

B) **Drinking Water Regulation**: This regulation further defines water that is subject to the drinking water regulatory framework to include Groundwater Under Direct Influence (GUDI)[2]. It also elaborates on the permit process involved in the construction or alteration of public waterworks. In addition, it affirms the Canadian Guidelines for Drinking Water Quality in relation to disinfecting requirements of potable water.

Source Water Protection

As mentioned above source water protection is emphasized throughout various pieces of legislation and within the integrated management planning work done by conservation districts. Some conservation districts have specific source water protection plans in place and some have included them in their integrated watershed management

[2] Referred to as GWUDI in Alberta and GUDI in Manitoba

plans. Source water protection, then, while emphasized generally as a priority within various pieces of legislation, is actualized and regionalized by the work of conservation districts.

Ecosystem Quality Needs

Ecosystem quality needs are underlined in general through the Water Protection Act and through the focus on source water protection throughout other legislation. Under this act, the Nutrient Management Regulation specifies limits on levels of nutrients in bodies of water. These limits define when a body of water is to be considered vulnerable. Also, ecosystem quality needs are emphasized through Manitoba's Water Strategy. For example, although the Water Protection Act specifies water quality standards after treatment, standards for water quality are only specified at the source in relation to nutrient levels. Exact definitions of these quality needs are decentralized to down through the Manitoba Conservation and Water Stewardship Department to the individual conservations districts vis-à-vis their region-specific integrated watershed management plans. These needs are set at the conservation district level and then addressed through regional plans.

Water Quantity

Water Conservation Strategy

Although water quantity is discussed in the Water Resources Conservation Act, a specific policy item by the Manitoba government and implemented in collaboration with the provincial utilities department, Manitoba Hydro. In addition, Manitoba Hydro deals with water conservation at the consumer level through various programs, policies and

principles. For example, Manitoba Hydro has published a sustainable development policy that specifies issues of conservation:

> **Conservation**
>
> To the extent practical, plan, design, build, operate, maintain and decommission Corporate facilities in a manner that protects essential ecological processes and biological diversity. Give preference, where practical, to projects and operating decisions that use renewable resources or that extend the life of supplies of nonrenewable resources.(Manitoba Hydro, n.d).

Manitoba Hydro also has a number of rebate programs that involve consumers receiving rebates when they purchase water saving appliances.

Interbasin Transfers

Interbasin transfers are restricted through the Water Resources Conservation Act in a list of prohibited uses of water:

> (a) drill for, divert, extract, take or store water for removal;
> (b) sell or otherwise dispose of water to a person for removal;
> (c) convey or transport water for removal; or
> (d) remove water from a water basin or sub-water basin (s.2).

3. Water Institutions

Ministries, Organizations and Boards

There are a number of departments, ministries and boards or councils that are involved with water stewardship within Manitoba. The main department is the Manitoba Conservation and Water Stewardship of the provincial government. Responsible for administering most of the pieces of legislation relating to water, Manitoba Conservation and Water Stewardship also provides a key linkage between the Acts and the functions of other boards and councils such as the Manitoba Conservation Districts Association and the various conservation districts boards within the province. Other aspects of Manitoba's water administration involve departments such as the Department of Health, the Office of

Drinking Water, and the Department of Infrastructure and Transportation. There are several boards and councils that have a direct linkage with the provincial government, beyond having a representative on the board of directors that deal with transboundary issues such as the Red River Basin Commission, the Lake Winnipeg Stewardship Board and the Lake Manitoba Stewardship Board.

Manitoba Conservation and Water Stewardship. The Department of Manitoba Conservation and Water Stewardship is responsible for administering several pieces of legislation that relate to water: the Conservation Districts Act, the Drinking Water Safety Act, the Groundwater and Water Well Act, the Public Health Act as it is relates to drinking water supplies, the Water Commission Act, the Water Resources Administration Act, the Water Protection Act, the Water Resources Conservation and Protection Act, the Water Rights Act, the Manitoba Water Services Board Act, and the Water Supply Commission Act. This department's mission statement is to:

> Manitoba Water Stewardship provides leadership in environmental stewardship for the benefit of current and future generations of Manitobans so the social, economic and inherent environmental value of water is protected and realized. Manitoba's water and fish resources are managed sustainably and people are safe from water hazards. (Government of Manitoba, Conservation and Water Stewardship, n.d).

Surrounding the administration of several pieces of legislation and stemming from its mission statement, the Conservation and Water Stewardship Department formulated goals based on 5 areas:

1) Departmental Goals
2) Human Health
3) Ecosystem Health
4) Quality of Life
5) Security

From these goals, the department has formulated key strategies.:

1) Watershed-based planning and management that integrates surface and groundwater, fisheries, land and other related resources.
2) New community based initiatives with new governance approaches built on citizen engagement.
3) Strong legislative and policy foundation
4) Economic incentives that ensure markets reflect the true value of ecological services
5) Locally delivered water related management and programs.
6) Innovative, sustainable funding methods and models
7) Capacity building internally and externally in support of departmental outcomes and strategies (Government of Manitoba, Conservation and Water Stewardship, n.d)

These strategies reflect the conservation districts program and involve the development of Integrated Watershed Management Planning done by each conservation district.

This department is involved in the delivery of programming that stems from the above objectives that relate to water quality, emergency services, and education programs. The department also has a funding program called the Water Stewardship Fund that is designed to encourage projects and programs that fall under categories such as research and development, water stewardship, education and economic development (Government of Manitoba, Conservation and Water Stewardship, n.d). In addition, this department is involved with several groups and councils necessary to deliver its strategic plan.

A) **Water Licensing Branch**: The Water Licensing Branch operates within the parameters of the Water Rights Acts and deals with the procedural aspects of licensing such as issuing, cancelling, or suspending licenses.

B) **The Environmental Assessment and Licensing Branch**: The Environmental Assessment and Licensing Branch is involved with the

protection of water supplies through the prevention of pollution within source waters and surrounding lands. It is mandated with:

i. administering development approval requirements of The Environment Act, The Dangerous Goods Handling and Transportation Act, The Public Health Act, and the Pesticides Regulation;
ii. controlling municipal, industrial and hazardous waste sources of pollutants;
iii. minimizing environmental impact of development proposals; minimizing adverse effects to the environment and public health from pesticide use; and
iv. administering the Water and Wastewater Facility Operators Regulation (Government of Manitoba, Conservation and Water Stewardship, Environmental Assessment and Licensing Branch, n.d.).

C) **Office of Drinking Water**: The Office of Drinking Water administers the delivery of potable water, through regulating the potable water itself and its delivery systems. It also has a function in delivering emergency communication in relation to unsafe drinking water supplies.

D) **Manitoba Water Council**: The Manitoba Water Council is the senior advisory board reporting to the minister of Conservation and Water Stewardship. The Manitoba Water Council (2010) "coordinates and oversees the work of all provincial advisory bodies on water protection, and is an important consultative mechanism for the government on province-wide water issues" (n.p). It is a statutory body created under the Water Protection Act. It is mandated with:

i. advising the Minister on a broad spectrum of matters relating to water

ii. providing direction and advice of a consensus position to the government, stakeholders and the public on water-related issues
iii. assisting in reporting sustainability indicators relating to water
iv. monitoring the development and implementation of watershed management plans in the province
v. reviewing regulations respecting water quality management zones and providing advice to the Minister
vi. coordinating the activities of advisory boards and similar entities that perform functions relating to water, including advisory boards and other entities specified by legislation
vii. performing any other duties assigned to it by an Act or regulation
viii. as per clause 28, acting on any Ministerial request within their responsibilities and in accordance with the terms of reference, considering the matter and providing a written report of findings and recommendations (Manitoba Water Council, n.d).

E) **Red River Basin Commission**: Manitoba Conservation and Water Stewardship is a main funder of the Red River Basin Commission (RRBC). The RRBC is a non-profit binational governing organization for the Red River Basin. Its mission is to develop a Red River Basin integrated natural resources framework plan, to achieve commitment to implement the framework plan, and to work toward a unified voice for the Red River Basin (RRBC, 2004).

F) **Lake Winnipeg Stewardship Board**: Under the direction of the Conservation and Water Stewardship Department and serving as an advisory board to that department, the Lake Winnipeg Stewardship Board was in part responsible for the decision-making surrounding the water quality of Lake Winnipeg. It was mandated, among other components, to identify the actions that are required to achieve water quality objectives that were identified by the Minister of Conservation

and Water Stewardship, for Lake Winnipeg. The Board reported directly to the Minister. As of January 2010, the board became no longer active.

G) **Lake Manitoba Stewardship Board**: The Lake Manitoba Stewardship Board was created in 2007 by Manitoba Conservation and Water Stewardship as a result of a recommendation made by the Lake Manitoba Regulation Review Advisory Committee. The board's mandate is:

> To enhance the long-term health of the Lake Manitoba Watershed along with Lake St. Martin, Pinimuta Lake, Fairford River, Dauphin River and to the mouth of Lake Winnipeg. (LMSB, 2007).

Manitoba Infrastructure and Transportation. Within the Water Control and Supply Division, Manitoba Infrastructure and Transportation is mandated with the:

> Safe and effective provincial water control infrastructure and structures, through the delivery of inspection, planning, design, maintenance, rehabilitation and construction activities. Responsible for the overall management of infrastructure inventory that includes: 1,800 bridges; 2,100 large culverts; 13,000 thru-dike culverts; 4,500 km of drains; over 90 dams; 61 reservoirs; 345 water control structures; 12 diversions; 18 community ring dikes; 425 km of river dyking, and 41 pumping stations. (Government of Manitoba, Infrastructure and Transportation, Water Control and Structures Division, n.d).

Through this mandate, the Water Control and Supply Division works with external partners such as engineering firms and internal partners such as Manitoba Conservation and Water Stewardship to perform several key actions. Some of these include responding to emergency situations that involve or potentially involve waterworks systems, creating

research and development, providing waterworks infrastructure, and inspecting such infrastructure.

Manitoba Health: Within the Environmental Health division of Manitoba Health, the Environmental Health division is responsible for administering aspects of the Public Health Act that relate to safe drinking water.

Manitoba Agriculture: Through the Agri-Environment Division, Manitoba Agriculture is involved in the delivery of water-related programming. The Agri-Environment Knowledge Centre is responsible for the delivery of these programs. Several of these programs are market-based incentive programs or have prioritized water-related agricultural issues when paying out funding. For example, there are several incentivized programming available. One of which is the Ecological Goods and Services Initiatives that is a technical assistance program designed to help:

> Investigate, develop and implement new and innovative ecological goods and services (EG&S) policy options to achieve multiple environmental outcomes associated with Manitoba's agricultural landscape and sustainable agriculture (Government of Manitoba, Agriculture, Food, and Rural Initiatives, n.d).

Other incentivized programs are the Agri-Extension Environment Program, the Agricultural Sustainability Initiative, the Environmental Farm Action Program, the Environmental Farm Plan, and the Manure Management Financial Assistance Program. In addition to these programs, the Agri-Environment division acknowledges the current and potential impact of climate change through mitigation and adaptation programming. It is also involved in watershed management planning through the provision of technical assistance throughout the planning process.

Conservation Districts

Conservation districts are the main environmental planning regions in Manitoba. According to the Manitoba Conservation and Water Stewardship Department (2010a), conservation districts are defined as:

> A group of neighboring rural municipalities (RMs) working in partnership with the Province of Manitoba to develop programs to effectively manage the natural resources of their area. Conservation Districts are established under the authority of The Conservation Districts Act (n.p).

Also, the Manitoba Conservation and Water Stewardship Department states that conservation districts are split into sub-districts along watershed boundaries (2010a); however, the conservation district's boundaries are not necessarily along watershed boundaries. As such, a conservation district can have two or more major watersheds within its boundaries. Conservation districts are partly funded through municipal levies and through provincial government grants. There are 18 conservation districts in Manitoba (see figure 4).

Conservation district boards are the main planners of integrated watershed management plans. The integrated watershed management planning process involves the identification of a planning authority, such as a conservation district board, setting terms of reference, public consultation, gaining ministerial approval, and then implementing the plan (Government of Manitoba, Water Stewardship Division, 2010b). The level of planning within each conservation district varies (see figure 5)

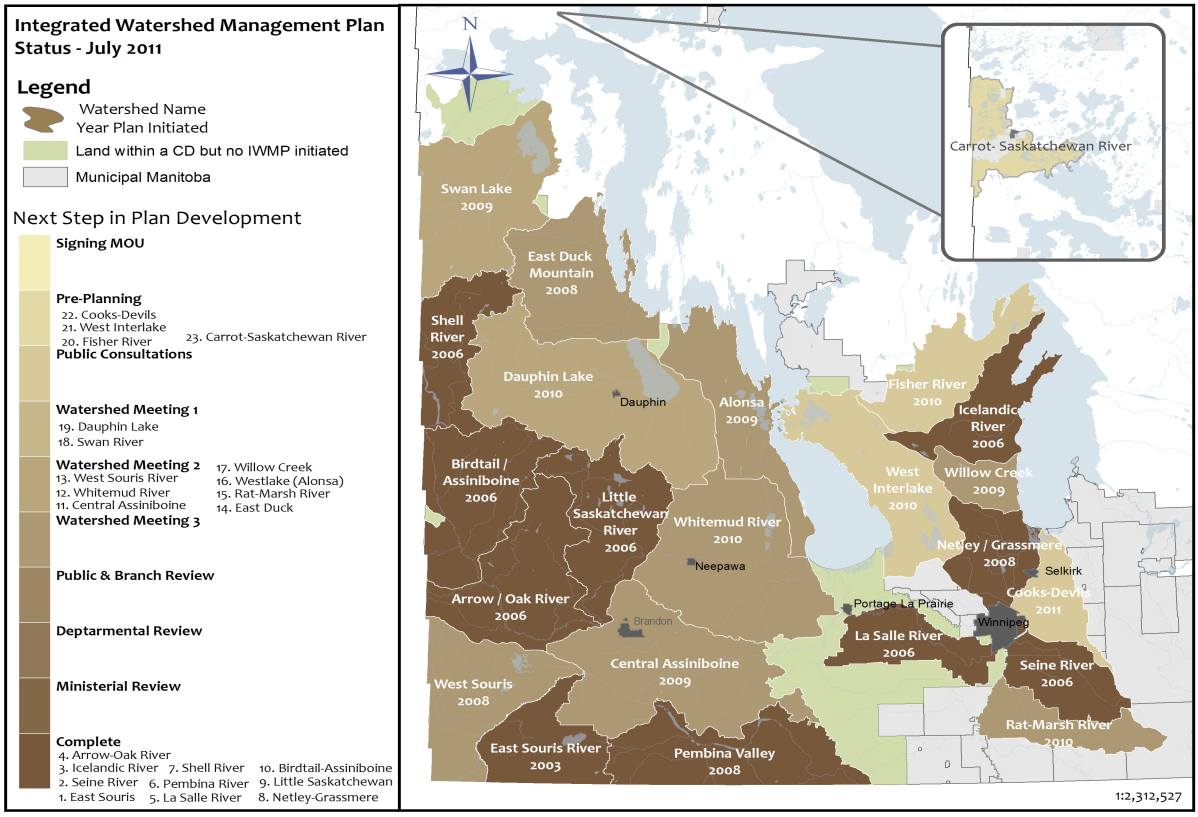
Like the Department of Manitoba Conservation and Water Stewardship, the Manitoba Conservation Districts Association (MCDA) is also involved in the administration and representation of conservation districts within the province. The MCDA's mandate surrounds 4 areas:

1) Leadership: to demonstrate and provide leadership and capacity building skills for conservation district's boards.
2) Education: to build and enhance relations with the Conservation Districts and promote the understanding and value of strong watershed-based programming to public and private partners.
3) Advocacy: be the unified voice for the Conservation Districts to champion stewardship in healthy watershed sustainability.
4) Promotion: assume the role as a leader with a defined presence and profile in watershed management. (MCDA, n.d.).

Figure 4: Conservation Districts Map

(Manitoba Conservation and Water Stewardship, 2010)

Figure 5: Integrated Watershed Management Plan Status



(MCDA, 2011)

Alonsa Conservation District

The Alonsa Conservation District (ACD) was incorporated in 1978 and covers approximately 4,450km^2. The area encompasses the Rural Municipalities of Alonsa and Lawrence, and the land comprises largely of ridges and sloughs. The local economy in the area is mostly made up of seasonal beef cattle farming and commercial fishing in the winter. The area includes major watersheds such as Garrioch Creek, Sucker Creek, and Reedy Creek, and it has several systems that drain into Lake Manitoba, Lake Ebb & Flow, and Lonely Lake. This conservation district has smaller of its budgetary capacity

for watershed planning and water management and less planned or implemented water-related programs. Also, its educational programs focus less on watershed awareness and primarily on restoring and providing tours of nature trails, preserving Aboriginal spiritual sites, and maintaining and restoring a local church and museum.

The work with Aboriginal groups has surrounded recreation projects such as preserving and building nature trails on several ceremonial sites. So far 3 such sites have been preserved. However, it seems that work with Aboriginal groups has declined since 2007. The Manitoba Metis Federation provided grants of $7,776 in the 2004/2005 year and $8,128 in the 2005/2006 year towards the ACD's partnership role with a local fish hatchery to implement a Pickerel Spawning Project, but this funding ended for the 2007/2008 fiscal year (Government of Manitoba, Water Stewardship, 2005, p. 16; Government of Manitoba, Water Stewardship, 2006, p.16).

The group is leading the development of the Westlake Integrated Watershed Plan (WIWP). In their annual reports, the ACD indicated that they began work on a watershed management plan with the process of data collection that began in 2008. Outside of this, their water management planning includes compiling a surface water management plan and performing annual water quality testing. Currently, they have helped complete several documents relating to source water protection and the completion of their WIWP. They have helped to complete, in conjunction with Manitoba Water Stewardship, a *Groundwater Resources of the Westlake Integrated Conservation District* report, a *Water Use Licensing* report, and a *Surface Water Hydrology* report. The WIWP is expected to be completed within the year.

The ACD has focused on the maintenance of drainage infrastructure by performing several activities annually such as drain cleanouts, flood repair and protection, removal of beaver dams or debris, and the installation of berms. In 2006, the ACD obtained Geographical Information System data on their drainage systems within the district. They have also performed annual small-scale riparian health projects. In the *Groundwater Resources of the Westlake Integrated Conservation District* (2010) report, groundwater quality was identified as an issue because water quality deteriorates in the northern and southern regions of the watershed. Large-scale livestock operations and abandoned wells have been identified as possible sources of contamination.

Little Saskatchewan River Conservation District

The Little Saskatchewan River Conservation District (LSRCD) was incorporated in 1999 as Manitoba's 12th conservation district. It includes all or part of 10 rural municipalities and 4 towns. Currently, the district covers 4,200 km^2 and has a population of 10,500. The area is considered one of the most important waterfowl development areas. Furthermore, its uniqueness derives from distinctive pothole marshes, undulating lands, significant elevation changes, and steep valleys. All of these characteristics present challenges to land-use planning.

Since the district is considered an important waterfowl development area, the LSRCD in conjunction with the Delta Waterfowl Federation and Keystone Agricultural Producers developed a proposal for a 3 year pilot project called the Alternative Land-Use Strategy (ALUS) to be implemented within the RM of Blanshard in the 2004/2005 year. Although the funding information for the implementation of the strategy in its first year was unavailable at the time of writing, during second year of implementation the district

received $50,055.50 in external funding and $750.78 in such funding in the programs final year (Government of Manitoba, Water Stewardship, 2005, p. 85).

While the LSRCD spends less than half of its expenditures annually on water-related projects, it still performs a large amount of water management, planning and programming. In 2006, the Little Saskatchewan River and Upper Assiniboine River Conservation Districts were jointly designated the Water Planning Authority for the Arrow-Oak River Watershed with the purpose of completing integrated watershed management plans on the upper reaches of the Assiniboine River. In June of 2008, the collaboration between the two conservation districts produced the State of the Watershed report for the Arrow-Oak River Watershed. In October of 2009, the draft of the IWMP was completed. Also in 2006, the LSRCD was appointed the Water Planning Authority for the Little Saskatchewan River to complete its IWMP. In July of 2008, the State of the Watershed Report was completed for the Little Saskatchewan River Watershed. In December of 2009, a draft of the IWMP was completed. During this time the LSRCD also partnered with the Lake of the Prairies Conservation District to assist them with their IWMP.

At least since 2004, the district has been involved in groundwater protection, including implementing a coordinated well testing day and an abandoned well sealing program. Since that time, they have tested 62 wells and sealed 98 abandoned wells. They have also done work in the area of riparian health, participating in the construction of 6 riparian fencing projects since 2004. In 2005, the western portion of the district experienced significant flooding. The flood was as a result of a large and fast snowmelt which damaged local infrastructure. This was followed by a significant rain which

compounded the damage. Although this hampered program delivery for the 2005/2006 year, the district assisted local municipalities with regional planning that had a watershed focus and was supported by GIS data to better understand flooding issues. Also, the conservation district repaired 5 grassed waterways and small dams in the 2006/2007 year. In the 2009/2010 year the district initiated a partnership with Manitoba Water Stewardship to establish a long term water quality monitoring station on the Little Saskatchewan River.

Seine-Rat River Conservation District

The Seine-Rat River has also made significant progress toward fulfilling their CD mandate through the completion of an integrated watershed management plan for the Seine River Basin and it is on its way to completing a draft plan for the Rat Marsh River Basin. For both basins, this process began with developing a State of the Watershed Report, Groundwater reports, and Source Water Protection Strategies. Meeting the requirements identified within the Water Protection Act for watershed planning, the Seine River integrated watershed management plan was completed in 2009. The Rat Marsh River integrated watershed management plan is in the planning stages.

4. Water Strategy

Manitoba Water Strategy

As a renewal of an earlier policy in 1990, the Manitoba Water Strategy is intended to tie together new legislation, such as the Drinking Water Safety Act and the Water Resources Conservation Act, with new funding sources to bring about change in six specific policy areas: water quality, conservation, use and allocation, water supply, flooding and drainage. There is a focus on issues relating to these six areas and the

interjurisdictional issues surrounding Lake Winnipeg but through an integrated watershed management planning focus. Source water protection is again emphasized as part of the entire process from legislation through this strategy down to the work of the conservation districts. For example, under the area of water quality, the strategy states that the "preservation of drinking water sources is essential" (Government of Manitoba, Conservation and Water Stewardship, Water Stewardship Division, 2003, p.10). As such, one of this strategy's actions is to complete source water protection plans for all the major bodies of water in the province and to look to the future to "further protect water quality through integrated planning of watersheds, aquifers and basins" (p.11).

This strategy extends beyond water quality to deal with issues of water quantity through topics such as conservation, use and allocation, water supply, and flooding all relate to this focus. Part of the strategy's actions in relation to the policy area of conservation has been to expand the number of conservation districts. Also, another action that has been emphasized in the area of conservation is the establishment of tax-based incentive programs.

The Manitoba Water Strategy is comprehensive and reflects a decentralized emphasis on the work of watershed groups in the integrated watershed management planning process. But it fails to have any mechanism for measuring the progress its outcomes and actions. One of the components of the strategy is the "review and modification of legislation related to water" (Government of Manitoba, Conservation and Water Stewardship, Water Stewardship Division, 2003. p.21). But it fails to integrate a system that explains how this will be accomplished.

Manitoba's Conservation District Program Framework for the Future

The Manitoba Conservation Districts Association and Manitoba Water Stewardship developed a planning framework for the future of the Conservation Districts program. While this is not specifically a water policy, the contents of the policy relate to the ability to produce and implement integrated watershed management plans. This policy then provides another linkage between legislation and the work of the conservation districts.

This policy emphasizes that the conservation districts are the main planning bodies pertaining to water-related decision-making. The framework also details the organizational structure and procedures of conservation districts groups in relation to watershed planning, reflecting the Conservation Districts Act. In addition, it integrates some principles in watershed planning that reflect the Manitoba Environment Act and the Water Protection Act. In an effort for more efficient watershed management planning, the framework specifies the need to realign district boundaries with watershed boundaries.

5. Climate Change

Climate change considerations are acknowledged within legislation and a climate change-specific strategy document called *Climate Change: Adapting to the Future*. At the legislative level, climate change is acknowledged in the Water Resources Act. In its preamble, the act states:

> In light of the fact that future domestic needs and the potential effects of climate change are unknown, such a scheme should be based on the precautionary principle and on sustainable water resource management practices (n.p.)

The Government of Manitoba discusses actions-to-date and future directions in the aforementioned publication. Within this document, actions-to-date relating to climate

change adaptation are the development of integrated watershed management plans, the revision of flood protection plans, the expansion of Manitoba's hydrometric network, the introduction of incentive-based programs, and the development of research relating to land-use planning (Government of Manitoba, p.47). The document addresses sector-based climate-change adaptation. For example, within the agricultural sector, there is recommended best-management practices that are "climate friendly", such as "improved handling, treatment, storage and application of manure to reduce CH4 and N2O emissions" (p.3). Within the energy sector, the Manitoba government emphasis the minimization of reliance on fossil fuels and the maximization of energy efficiency through programming (p.4). The role of municipalities in promoting adaptive practices is also discussed through the idea of "climate friendly planning." One such strategy is the Green Building Strategy.

V. Conclusion

This report looked at the provincial responses to water-related environmental issues for three prairie provinces: Alberta, Saskatchewan and Manitoba. It discussed each province's approach through legislation and policies and looked at the work being done by 3 environmental governance groups for each province. Alberta's water law and policy, Alberta Water for Life, largely focused on balancing environmental goals and economic objectives. Saskatchewan's approach was centralized through the work of the Water Security Agency. And unlike Saskatchewan, Manitoba's approach was decentralized through the conservation districts program to the work of each conservation district.

This report also looked at these approaches in relation to specific issues such as water rights, water quality and water quantity. In addition, each provinces approach to source water protection was discussed and it was found that while Alberta has recently began to include source water protection in their legislation and policy, Saskatchewan

and Manitoba included source water protection as a main focus in environmental decision-making. This was evidenced by their emphasis on source water protection in their legislation and policies. In addition, climate change was discussed in relation to its linkages with these issues.

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