

# South Saskatchewan River Watershed

## Source Water Protection Plan

September 2007



Saskatchewan  
Watershed  
Authority

South Saskatchewan River  
Watershed Stewards Inc.



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*Courtesy of Ducks Unlimited Canada*



# 1. Comments from Participants

## 1.1 A message from your Watershed Advisory Committees

### North

“Safe drinking water and a good supply of water are important to ALL citizens. During the last three years we have worked to develop a plan that ensures the protection of the quality and quantity of water on the north portion of the South Saskatchewan River Watershed, from circa Beaver Creek to the confluence into the Saskatchewan River. Recently we have worked with the Lake Diefenbaker and West planning groups in the Watershed to produce a comprehensive plan covering the complete South Saskatchewan River Watershed.”

Craig Riddel, Councillor, Rural Municipality of Corman Park #344

**Stewardship:** caring for land and associated resources and maintaining healthy ecosystems for future generations.

### West

“Living in the driest area of the watershed has made us conscious of how important water quality and quantity is. Residents have always understood the importance of aquifers and the South Saskatchewan River to their water needs; now with the source water protection plan, we can move forward in providing local people the understanding of why maintaining a healthy watershed is important for themselves and their neighbours upstream and downstream.”

Al Heron, Mayor of Eston

### Lake Diefenbaker

“The planning process has tried to include all phases of agriculture, industry, towns, cities, resorts, Indian reserves, etc. to find the needs and wants and concerns of having good water and ample amount for future generations. In addition to technical support, we have gathered information from outside our province which is directly connected to our water sources.

Many concerns that have been raised have helped to identify things which could be a deterrent to good water working with such a varied group of people has been very educational and has brought forth the realization of having a good water source.

Through this planning, objectives are identified and recommendations have been made to how our water source plan can be implemented. We hope all citizens would educate themselves on the need for good water and be actively promoting it in their respective areas. Being supporters of the watershed plan, we can insure that we will have good water for the future.”

Clayton Yloiija, Reeve, R.M. of Coteau

## 1.1 A message to Watershed Residents from your Watershed Planning Team

Watershed Residents:

The Province of Saskatchewan formally initiated the South Saskatchewan River watershed planning process in the spring of 2003. The South Saskatchewan River Watershed was recognized for its importance in the provincial economy and for the fact that one-third of the provinces people get their drinking water from the South Saskatchewan River. Despite its geographical size, the common vision and initiative that the Watershed Advisory Committee members have taken in working together will ensure this Source Water Protection Plan will succeed.

The planning team would like to thank all those who contributed to the development of this plan, and our gratitude goes out to the members of the three Watershed Advisory Committees whose understanding, perseverance and patience during the process were much appreciated. A special thanks goes to those members who booked and organized meeting halls and lunches for our meetings. It was a pleasure to visit your communities.

Thanks to the invaluable advice and information provided by the South Saskatchewan River Watershed Technical Committee. Your time to prepare information and come to meetings and present your information was valuable in identifying the key actions for this plan.

## 2. Watershed Protection and You

### 2.1 One Step in the Multi-Barrier Approach to Drinking Water Protection

Drinking water supplies can be broken down into three parts: the source water, the water treatment system, and the distribution system that transports treated water to homes, businesses, schools, and other buildings. As drinking water travels to the tap, it could become contaminated in many ways. A multi-barrier approach to protecting drinking water supplies is one preventive risk management technique that identifies all known and potential hazards and makes sure barriers are in place to reduce or eliminate the risk of contamination.

The implementation of this Source Water Protection Plan represents the first barrier in protecting source water. It cannot be stressed enough that source water protection is only the first barrier of defense against contamination which can lead to waterborne diseases or illnesses. Another key barrier is the routine treatment of water, usually by chlorination, and continual removal of unwanted elements such as bacteria, viruses, and organisms, through treatments such as reverse osmosis and filtering. The only way of knowing what treatment the water supply needs is to have an expert do a comprehensive test of the source water, and then implement recommended measures to reduce risk. Saskatchewan communities are required to meet strict standards of testing and treatment



of their water supplies. The same cannot be said for private water supply systems. Although many people are encouraged to test their water supply, most limit it to the testing available from the provincial laboratory for both E. coli and nitrates. As a reflection of this "what we don't know can't hurt us" attitude, almost half of the farm respondents surveyed in the Upper Qu'Appelle River Watershed drank unfiltered water right from the tap (48.5%), and more than half the farms (60.8%) did not have any type of treatment unit or filter on their water system. The primary benefit of source water protection ensures the best quality of water for drinking and other human uses even before it is treated.

All watershed residents have an interest in protecting source water and, as such, all should be responsible for the implementation of this Source Water Protection Plan. Everyone should and can do their part. That includes big parts, such as being a councilor for a city or rural

municipality which is responsible for the drinking water of hundreds of people, or small parts, such as urban people being educated about where water comes from and wastewater goes, practicing stewardship and testing and treating the water on your own farm. Get involved and do your part!

## 2.2 Secondary Benefits of Protecting Source Water: Quality and Quantity

### 2.2.1 Quality

Protecting source water can mean removing and/or reducing known point sources of pollution and accumulative non-point source pollution. Source water protection can mean maintaining nature's own purification systems and not overloading them. Source water protection comes in many forms: protecting specific ecosystems such as **wetlands** that remove contaminants and purify our drinking water; protecting water for recreational uses such as swimming and boating; and maintaining water supplies for livestock use, and for the protection of wildlife and fish habitats.

Source water protection also means having healthy riparian areas which remove sedimentation that potentially carries waterborne chemicals. Source water protection also means protecting upland areas that have the most human activity and can have a potentially negative effect on runoff water quality. There are economic benefits to having higher quality water available in many industries, such as manufacturing and value-added agriculture. Many times a good quality, high quantity water source can be the driving force that entices an industry to locate in a particular area.

**Wetland:** an area that is saturated by surface or ground water, with vegetation adapted for life under those soil conditions, as swamps, bogs, fens, marshes, and estuaries. Wetlands are a source of water, forage, and wildlife habitat, and perform a number of important functions such as groundwater recharge, water storage, flood control, sediment and residue trapping, shoreline protection, and nutrient cycling and storage.

When source water is of the highest natural quality, treatment is less costly and less complex. Potential health risks posed by the failure of treatment systems are also reduced when the water from the source is high quality.

## 2.2.2 Quantity

Water is a renewable resource. Different forms of water are fully replenished during the hydrological cycle, but at very different rates. For instance, the period for complete recharge of oceanic waters takes about 2,500 years, permafrost and ice about 10,000 years and deep groundwater and mountainous glaciers 1,500 years. Water storage in lakes is fully replenished over 17 years, and in rivers about every 16 days. Surface water and groundwater are directly related and form a part of the hydrological cycle. Groundwater that is close to the surface can be influenced in both quality and quantity by surface activities. Deeper groundwater is usually much less influenced by surface activities. Part of ensuring that water supplies are available for people and nature for now as well for our future generations requires us to take into account the water supplies natural fluctuations. While the potential effects of climate change are still being debated, what is not debatable is that there will be droughts, there will be floods, and as such, we should plan to mitigate the effects from these natural occurrences.

## 3. South Saskatchewan River Watershed


The Saskatchewan portion of the South Saskatchewan River Watershed is a portion of the Saskatchewan-Nelson River watershed which drains an area more than one million square kilometers.

The South Saskatchewan River is fed by three major tributaries in Alberta: the Red Deer, Bow, and Oldman Rivers. These rivers originate on the eastern slopes of the Rocky Mountains where the shape of the land consists of steep slopes at high elevations, and converge near the Alberta-Saskatchewan boundary to form the South Saskatchewan River. The South Saskatchewan River receives runoff from about 120,000 square kilometres of southern Saskatchewan.

The South Saskatchewan River flows east into Saskatchewan where it is stored in Lake Diefenbaker. At the Village of Elbow, the river turns north and flows 380 kilometres until it joins the North Saskatchewan River east of Prince Albert. The total distance of the South Saskatchewan River in Saskatchewan, as measured along the center of the river valley, is 716 kilometres. The total drainage area for the South Saskatchewan River in Saskatchewan is 35,000 square kilometers.







In Saskatchewan, the river flows through a region of very low runoff. On average, the local runoff contributes two (2) percent of the natural flow into the river, half of which originates from the Swift Current Creek. Swift Current Creek is the largest tributary to the South Saskatchewan River, entering Lake Diefenbaker at its upstream end. Swift Current Creek is traditionally managed independently of the South Saskatchewan River, and therefore will have its own source water protection plan.

## 4. Watershed Planning Methodology

The purpose of the South Saskatchewan River Watershed Source Water Protection Plan is to: identify the threats and opportunities around protecting source water, to provide a plan to address these threats, and take advantage of opportunities within the watershed. Watershed planning is part of Saskatchewan's Long Term Safe Drinking Water Strategy and is the first barrier of defense to protecting drinking water.

To facilitate planning and encourage local participation, the South Saskatchewan River Watershed was divided into three watershed planning areas: the North, Lake Diefenbaker and West (see planning area map on page 6). The South Saskatchewan River Watershed Source Water Protection Plan was developed co-operatively by the Watershed Advisory Committees established in each watershed planning area with critical support from the Technical Committee. The membership of the Watershed Advisory Committees includes representatives from urban and rural municipalities, First Nations, and industry, environmental and agricultural interest organizations. Technical support was provided by a variety of provincial and federal government agencies, Ducks Unlimited Canada and the City of Saskatoon. (Participant lists for all committees can be found in the Appendix.)

This Source Water Protection Plan identifies threats to source waters and provides strategies to address these threats. The plan was formulated using a consensus approach, with all objectives, recommendations and key actions decided by all the Watershed Advisory Committee members. Specifically, this plan assembled pertinent information, analyzed threats and opportunities, built commitments to protect source water, and summarized the Committee member's recommendations and technical analysis in a number of recommendations. Finally, key actions were formulated from these concerns and interests, stating their implementation date and the agency or agencies responsible.

In support of the planning process, the South Saskatchewan River Watershed Background Report was developed to provide a collective understanding of the watershed. This report provides a summary of information to help build awareness of the many factors that influence the watershed's water quantity and quality. The watershed is described in terms of its physical characteristics, ecology, land-use, climate, population, demographics, and major economic activities, which include agriculture, tourism and recreation, and industry. The Background Report also describes water resources in terms of quantity, quality, allocation and use. Different land cover functions are described for upland, riparian and wetland habitats. Watershed management is explored and determined by municipal planning and zoning, federal and provincial legislation, stewardship activities, and funding. For more detail, refer to the South Saskatchewan river report on the attached CD.

This plan is a living document that can be changed, altered or adapted to suit the needs of the watershed and its residents through the input of the local Watershed Advisory Committees.

## 5. Interests and Issues

All three Watershed Advisory Committees identified a variety of interests and issues surrounding source water protection in the watershed. Some issues were unique to the individual watershed planning area, while others were common to all. The following chart identifies priority issues in the entire South Saskatchewan River Watershed and indicates which Watershed Advisory Committee initiated the issue as a priority.

Most of the interests and issues are interconnected. This is to be expected, as the watershed is complex and interdependent on natural and human relationships.



	West	Lake Diefenbaker	North
Watershed Education	■	■	■
Groundwater Threats and Protection	■	■	■
Gravel Pits	■	■	■
Providing Safe Drinking Water to Residents	■	■	■
Effluent Releases	■	■	■
Landfills (Waste Disposal Sites)	■	■	■
Watershed Development	■	■	■
Lake Diefenbaker Water Levels/Operation of Gardiner Dam	■	■	■
Gas Exploration	■	■	
Agriculture Activities	■		
Water Conservation	■	■	■
Acreage Development			■
Role of Fisheries and Oceans Canada in Saskatchewan		■	■
Opimihaw Creek flooding			■
Water Quality from Alberta	■		
Stormwater Discharge from Saskatoon			■
Federal Lands	■		

## 6. Planning Objectives and Recommendations

The South Saskatchewan River Watershed Advisory Committees have identified the following objectives, recommendations and key actions:

### 6.1 Watershed Education

People often take good quality, abundant water for granted. They do not always understand how their actions influence water quality and quantity, or how good stewardship and improved land-use practices can be implemented to maintain and improve their water.

Educational programs can raise awareness of watershed issues and change the values and beliefs people have regarding their watershed. This change in attitude must happen before behavior can change; people are generally consistent in their attitudes and behaviors. Changing behavior is fundamental to promoting environmental sustainability, as the cumulative impact of individual and group actions far outweighs what can be accomplished through the broad regulatory management of agencies such as the Saskatchewan Watershed Authority.

#### **Objective:**

To provide information to watershed residents on the economic, environmental and cultural values of water, to increase their knowledge and awareness of the fundamental social, economic and environmental values of water and how they can protect the quality and quantity of water.

#### **Recommendations:**

- Provide literature through brochures and articles in local newspapers
- Hold educational workshops (Project WET, Project WILD)
- Write a letter to the school board to encourage the use of Project WET and Project WILD programs
- Provide a distribution list of teachers with Project WET and Project WILD training.
- Environmental value
- Organize Public seminars
- Work with youth groups (4H, Cubs, Beavers, etc.) or at provincial/regional parks
- Have Watershed Advisory Committee volunteers or a summer staff member do educational activities
- Hire a summer staff member
- Adopt programs and initiatives that other water stewardship groups have done
- Promote stormwater education



### 6.1.1 Key Action: Develop and implement an education and communication strategy for the watershed.

Implementation date	Completion date	Responsibility
March 31, 2007	November 1, 2007	<b>South Saskatchewan River Watershed Stewards Inc.</b> Partners FOR the Saskatchewan River Basin Saskatchewan Watershed Authority Ducks Unlimited Canada Prairie Provinces Water Board

## 6.2 Providing Safe Drinking Water to Watershed Residents

In most communities, source water is tested to determine proper water treatment. Any failure in the treatment process may result in a potential contamination of drinking water. In order to reduce the health risks due to such failures, source water should be of the highest natural quality.

Many human activities and natural occurrences contribute to the potential contamination of source water for human consumption and use. While treating water supplies lowers the human health risks, it does not eliminate it. The multi-barrier approach to protecting source water is the most efficient and effective way to reduce the contamination risks to humans.

### Objective:

To supply safe, treated drinking water to watershed residents.

### Recommendations:

- Encourage cost share programs to help with the cost of getting samples to the laboratories.
- Encourage/lobby the Saskatchewan government to pay for water sample testing
- Encourage the Saskatchewan government to review its drinking water policy and focus on the policy's impact on municipalities.
- Develop a program to identify and reduce the risks to community source water supplies in the watershed.



6.2.1 Key Action: Encourage the Saskatchewan government to provide financial and technical assistance to municipalities supplying drinking water to watershed residents.

Implementation date	Completion date	Responsibility
March 31, 2007	October 1, 2007	South Saskatchewan River Watershed Stewards Inc.

6.2.2 Key Action: Develop and implement a watershed protection program that targets known high-risk potential sources of contamination to drinking water from human and non-human sources.

Implementation date	Completion date	Responsibility
March 31, 2007	March 31, 2008	South Saskatchewan River Watershed Stewards Inc. City of Saskatoon Prairie Farm Rehabilitation Administration Saskatchewan Agriculture and Food Saskatchewan Stock Growers Association Partners FOR Saskatchewan River Basin



## 6.3 Groundwater Threats and Protection

Measuring groundwater, in general, is a difficult task. Groundwater data is extensive for some areas of the watershed and limited in others. The actual quantity of water available for use is difficult and expensive to estimate, and resources available for groundwater research are limited.

Groundwater can be contaminated from numerous activities or sources, including agricultural activities, oil and gas exploration and production, gravel pits, and septic systems. Once contaminated, groundwater is not easily restored to its former condition. Generally speaking, the deeper the groundwater source is located the less potential there is for the quality of the water to be impacted by surface activities.

The primary domestic groundwater zone used for drinking water is the near-surface zone, where groundwater is more directly and efficiently connected to precipitation and surface water features. **Aquifers** in the near-surface zone are more prone to drought and more vulnerable to contamination from surface activities, although water quality is usually less mineralized than water from deeper sources. Aquifers in the near-surface zone are used primarily for domestic supplies because they have limited water well yields. Surface water bodies, including lakes, rivers and wetlands, can serve as either recharge or discharge areas for groundwater, depending on the local **hydrogeology**.

**Aquifer:** an underground layer of gravel or sand that contains groundwater.

Wellhead protection includes protecting the “captured zone” of a water well from contamination, including direct contamination from activities in close proximity to the water well. Good wellhead protection practices include the prevention of the reverse contamination of water supplies by back-flows and cross-connections.

**Hydrogeology:** the study of the movement of groundwater.

Groundwater is a source of domestic drinking water for many of the communities and rural residents within the watershed. Protecting the quality and quantity of groundwater is extremely important to watershed residents.

### Objective:

To maintain a safe and adequate supply of groundwater.

### Recommendations:

- To properly decommission abandoned water wells in the watershed.
- Promote the Saskatchewan Watershed Authority’s Rural Water Quality Advisory Program among rural residents of the watershed.
- Send a letter to rural municipalities to request data for current/old wells for the purpose of developing a map showing all the known wells in the rural municipalities.
- Mail out educational information on proper well maintenance to municipalities and residents.
- Monitor the groundwater for any changes in water quality or to detect any contamination (use data from health on private well tests).



6.3.1 Key Action: Develop a map that shows all the known water wells in the Watershed including wells that have been tested under the *Rural Water Quality Advisory Program*.

Implementation date	Completion date	Responsibility
March 2007	October, 2007	<b>Saskatchewan Watershed Authority</b> Partners FOR the Saskatchewan River Basin Rural municipalities South Saskatchewan River Watershed Stewards Inc.

6.3.2 Key Action: As part of the communication and education strategy, develop an educational package on protecting groundwater for watershed residents and municipalities.

Implementation date	Completion date	Responsibility
March, 2007	November, 2007	<b>Saskatchewan Watershed Authority</b> Partners FOR the Saskatchewan River Basin Government Relations

6.3.3 Key Action: Collaborate with the Prairie Farm Rehabilitation Administration and Saskatchewan Watershed Authority to inventory and test domestic water wells in the watershed.

Implementation date	Completion date	Responsibility
March 31, 2007	March 31, 2010	<b>Saskatchewan Watershed Authority</b> Partners FOR the Saskatchewan River Basin Saskatchewan Watershed Authority Prairie Farm Rehabilitation Administration

### 6.3.4 Key Action: As part of the communication and education strategy, encourage watershed residents to test groundwater through the Rural Water Quality Advisory Program.

Implementation date	Completion date	Responsibility
March, 2007	November, 2007	<b>South Saskatchewan River Watershed Stewards Inc.</b> Partners FOR the Saskatchewan River Basin Saskatchewan Watershed Authority Ducks Unlimited Canada Prairie Provinces Water Board/Water Survey of Canada

## 6.4 Gravel Pits

Gravel and sand extraction for the purpose of road construction and maintenance is prevalent throughout the watershed. The method used to extract gravel and sand involves stripping away the natural vegetative barrier between the surface and aggregate; therefore, this activity increases the potential for surface contaminants to leach into the groundwater and impacting its quality.

### Objective:

To monitor the development and use of gravel pits for the purpose of protecting groundwater and the public's safety.

### Recommendations:

- Register gravel pits in rural municipalities
- Provide educational information about reclamation and maintenance of active pits to limit the potential threat to ground and surface water.
- Encourage rural municipalities to place conditions on gravel extraction with set standards.
- Recommend to administrators in rural municipalities that a bylaw be put into effect for gravel extractions.





### 6.4.1 Key Action: Recommend to municipalities that a bylaw be put into effect to regulate gravel extractions and gravel pits to protect groundwater.

Implementation date	Completion date	Responsibility
March 31, 2007	November 1, 2007	<b>South Saskatchewan River Watershed Stewards Inc.</b> Partners FOR the Saskatchewan River Basin Government Relations Saskatchewan Environment Saskatchewan Highways

## 6.5 Acreage Development

More people today are looking to escape from the confinement of the city without losing access to the amenities a city offers. Acreage development has been growing around Saskatoon for many years, and with the current increased demand, acreage development and demands are expanding outside the Rural Municipality of Corman Park into other Rural Municipalities. The appeal of the acreages is to have a view of the South Saskatchewan River Valley. There is a legitimate concern with locating extensive acreage developments in the Rural municipality of Corman Park due to the unknown impacts of multiple septic fields on groundwater and potentially the South Saskatchewan River.

### Objective:

To determine the potential impact of dense acreage development on groundwater quality.

### Recommendations:

- Standardize dense acreage development regulations for septic discharge.
- Improve communication between the province, local people and developers on the development plans for protecting groundwater.
- Monitor the groundwater for any changes in water quality or to detect any contamination (use data from health on private well tests).

### 6.5.1 Key Action: Initiate a study of groundwater quality around dense acreage development in the Rural Municipality of Corman Park.

Implementation date	Completion date	Responsibility
March 31, 2007	March 31, 2009	<b>Saskatoon Health Region</b> Partners FOR Saskatchewan River Basin Saskatchewan Watershed Authority

## 6.6 Landfills (Waste Disposal Sites)

Landfills and private waste disposal sites contain high levels of contaminants and pose a risk to both groundwater and surface water. The extent and potential risk of contamination is directly determined by the local geological characteristics of an individual landfill. While over time communities have learned what not to put in landfills, and licensing of landfills has improved landfill use, there remains an unknown level of threat from landfills to water quality.

#### Objective:

To remove the water pollution potential from current and old landfills within the watershed.

#### Recommendations:

- Develop a regional landfill plan
- Improve access and increase the facility's size for environmentally harmful substances like: used oil, paints, anti-freeze, tires, etc.
- Educate the residents of the options available for disposing garbage – including private landowner waste sites
- Find a way to collect and dispose of old tires missed through the current recycling program
- Ensure old landfill sites have been properly decommissioned. Have reports submitted to the Watershed Advisory Committees and made available to the public
- Work with Saskatchewan Environment to complete their 2001 initiative to license and bring up to standard all current landfills, decommission old landfills and to centralize the collection system
- Encourage governments to provide stronger funding for recycling programs
- Encourage the reduction of the number of private landfill sites

### 6.6.1 Key Action: Initiate a sub-committee in the West planning area to develop a regional landfill plan.

Implementation date	Completion date	Responsibility
March 31, 2007	March 31, 2008	<b>South Saskatchewan River Watershed Stewards Inc.</b> Partners FOR the Saskatchewan River Basin Saskatchewan Environment Regional Economic Development Authority

### 6.6.2 Key Action: Initiate a comprehensive collection of current and old urban and rural municipality landfills in the watershed and map the sites.

Implementation date	Completion date	Responsibility
March 31, 2007	March 31, 2009	<b>Saskatchewan Environment</b> Partners FOR the Saskatchewan River Basin Rural and urban municipalities

### 6.6.3 Key Action: Encourage and work with Saskatchewan Environment to complete the 2001 initiative to have all landfills brought up to standard and licensed.

Implementation date	Completion date	Responsibility
March 31, 2007	March 31, 2008	<b>Saskatchewan Environment</b>

#### 6.6.4 Key Action: Provide residents with information on ways to reduce household waste by reducing paper and organic material.

Implementation date	Completion date	Responsibility
March 31, 2007	Ongoing	<b>South Saskatchewan River Watershed Stewards Inc.</b> Partners FOR the Saskatchewan River Basin Saskatchewan Environment Saskatchewan Environmental Society Saskatchewan Waste Reduction Council

#### 6.6.5 Key Action: Partner with local vehicle dealerships to use local municipality's tire credits to help collect abandoned tires missed in the recycling program.

Implementation date	Completion date	Responsibility
March 31, 2007	Ongoing	<b>South Saskatchewan River Watershed Stewards Inc.</b>



*Courtesy of Saskatchewan Environment*



## 6.7 Oil and Gas Exploration, Development, Pipelines and Storage

Oil and gas development in the South Saskatchewan River watershed is growing, providing the local area with economic benefits. Through the planning process, two concerns were identified with regards to the oil and gas development and industry. First, is the concern that these activities influence groundwater, reducing the water quality in individual water wells. Secondly, there is concern about the potential contamination from the five oil and gas pipelines crossing under the South Saskatchewan River between Gardner Dam and Outlook.

### Objective:

To maintain groundwater quality in light expanded gas exploration and development in the watershed.

### Recommendations:

- To have adequate baseline data before exploration activities begin. This will determine whether the effects are natural or exploration related.
- Collect and map water well information.
- Educate the rural municipalities on how they can protect the groundwater used by residents in their municipality.
- To have a neutral party pre-test groundwater before exploration and provide a report on their findings.
- Ask Saskatchewan Industry and Resources about the conditions rural municipalities can put on companies exploring in their area.
- Look at completing a groundwater assessment similar to the Gull Lake area project.
- Work with Prairie Farm Rehabilitation Administration/Saskatchewan Watershed Authority to take inventory and map water wells
- Establish communication with Enbridge on the pipelines crossing under the South Saskatchewan River.

**6.7.1 Key Action: Have Saskatchewan Industry and Resources provide municipalities an outline of what conditions they can impose on companies exploring in their area to ensure source water is protected.**

Implementation date	Completion date	Responsibility
March 31, 2007	October 31, 2007	Saskatchewan Industry and Resources Partners FOR the Saskatchewan River Basin Government Relations

## 6.8 Effluent Releases

Effluent can adversely influence both groundwater and surface water through ground leaching and wastewater releases. According to Environment Canada, municipal wastewater effluent discharge is one of the largest causes of **point-source pollution**, by volume, to surface water in Canada. The relative risk that effluent has on source water is generally unknown. The risk of groundwater contamination by nitrates can be very high.

### **Point-source pollution:**

Pollution which can be traced back to a specific source such as an oil spill, a discharge pipe or a sewage ditch.

### **Objective:**

To ensure the impact to surface and ground water sources from municipal effluent is minimized.

### **Recommendations:**

- Make use of alternative ways to dispose of effluent (engineered wetlands, landspreading)
- Influence the change of chemicals and landuse in Alberta
- Prevent complacency that the water in the South Saskatchewan River is “good” therefore we don’t need to monitor or test for other chemicals
- Promote more irrigation from lagoons
- Require effluent to be tested before being released to determine if there will be minimal impact to other waterbodies
- Educate the public about easier and more accessible areas to dispose of harmful chemicals and medications

### 6.8.1 Key Action: Promote more irrigation from municipal effluent lagoons.

Implementation date	Completion date	Responsibility
March 31, 2007	April 1, 2008	<b>South Saskatchewan River Watershed Stewards Inc.</b> Partners FOR the Saskatchewan River Basin Saskatchewan Agriculture and Food Saskatchewan Environment

### 6.8.2 Key Action: Provide residents with information about and with more accessible areas for disposing of harmful chemicals and medications.

Implementation date	Completion date	Responsibility
March 31, 2007	April 1, 2008	<b>South Saskatchewan River Watershed Stewards Inc.</b> Regional Health Board Saskatchewan Environment Urban municipalities Partners FOR the Saskatchewan River Basin Saskatchewan Health

### 6.8.3 Key Action: Encourage communities to publish water quality effluent release testing information.

Implementation date	Completion date	Responsibility
March 31, 2007	March 31, 2008	<b>South Saskatchewan River Watershed Stewards Inc.</b> Partners FOR the Saskatchewan River Basin Saskatchewan Environment



## 6.9 Lake Diefenbaker Water Levels and the Operation of Gardiner Dam

Lake Diefenbaker is reliable source of water for many users in the southern part of Saskatchewan. Many of the demands placed on reservoir managers are to maintain suitable water levels for interest groups like irrigation users, cottage owners, SaskPower and wildlife groups. Seasonal variations can make meeting these challenges difficult.

### **Objective:**

To improve communication between watershed residents and the Saskatchewan Watershed Authority on the operation of Gardiner Dam.

### **Recommendations:**

- To have the stakeholders upstream and downstream of Gardiner Dam understand the operation requirements
- The development of a written operation plan, that outlines the operation priorities
- Public communications plan about operation of Lake Diefenbaker.
- To raise the lake level so that it provides higher water levels to upstream irrigation, community and recreation users
- Quarterly report on the operation of Gardiner Dam and Lake Diefenbaker should be placed in local newspapers and on the Saskatchewan Watershed Authority's website
- Improve access to the Streamflow and Lake Level page on the Saskatchewan Watershed Authority website so that it is more user friendly to the public.
- Difference between general information and information the public needs to react to
- Have an action plan for emergency situations
- To achieve the water level at Cabri at 553 metres on June 1st, seven out of ten years.
- To reinstitute the Gardiner Dam Advisory Committee and include Watershed Advisory Committees representatives in the membership.

### 6.9.1 Key Action: To develop a Lake Diefenbaker / Gardiner Dam Advisory Committee to give advice on optimum lake levels for stakeholders.

Implementation date	Completion date	Responsibility
March 31, 2007	December 31, 2007	Saskatchewan Watershed Authority South Saskatchewan River Watershed Stewards Inc.

6.9.2 Key Action: To have the Saskatchewan Watershed Authority develop an operation plan and communication strategy for Gardiner Dam and Lake Diefenbaker water levels.

Implementation date	Completion date	Responsibility
January 1, 2008	March 31, 2008	Saskatchewan Watershed Authority South Saskatchewan River Watershed Stewards Inc.

6.9.3 Key Action: To have the Saskatchewan Watershed Authority provide a quarterly report to local residents on the operation of Gardiner Dam and Lake Diefenbaker levels.

Implementation date	Completion date	Responsibility
January 1, 2008	Ongoing	Saskatchewan Watershed Authority





## 6.10 Watershed Development

The South Saskatchewan River, including Lake Diefenbaker, provides southern Saskatchewan with a reliable source of water for drinking, industry, agriculture, recreation and economic activities.

### **Objective:**

To coordinate the economic and environmental needs of the watershed to protect source water.

### 6.10.1 Key Action: Promote responsible development around Lake Diefenbaker by supporting the land use planning initiative of the Mid-Sask Regional Economic Development Authority.

Implementation date	Completion date	Responsibility
March 31, 2007	Ongoing	<b>South Saskatchewan River Watershed Stewards Inc.</b> Mid-Sask Regional Economic Development Authority Local Rural Municipalities Government Relations Saskatchewan Watershed Authority Partners FOR the Saskatchewan River Basin



## 6.11 Water Conservation

Historic records and future predictions include scenarios for periods of time when water was and will be in shortage. The development of water storage is seen as a practical water management practice.

### **Objective:**

To develop water storage at key locations within the watershed where surface water may be scarce during droughts.

### **Recommendations:**

- Develop a water storage strategy for the watershed

### 6.11.1 Key Action: Conduct water storage needs assessment for the Alvena area.

Implementation date	Completion date	Responsibility
March 31, 2007	March 31, 2009	Prairie Farm Rehabilitation Administration Partners FOR the Saskatchewan River Basin

## 6.12 Stormwater Discharge

Stormwater from major urban centers has the potential to deposit substances adverse to a waterbody's quality. Some major cities are placing stormwater management systems in newly developed areas, but old stormwater catchment basins still pose a threat to water quality. Stormwater management plans have been developed by some urban centers to control water quality.

### **Objective:**

To improve stormwater discharge from communities in the watershed.

### **Recommendation:**

- To reduce the amount of untreated stormwater discharged from the City of Saskatoon.
- To have urban communities develop a stormwater management plan.
- To have an education program put in place so that urban residents, through proper stormwater practices, could help prevent poor stormwater quality.

6.12.1 Key Action: To write a letter of encouragement to the Saskatoon City Council supporting past and future mitigation projects related to stormwater discharge.

Implementation date	Completion date	Responsibility
March 31, 2007	Ongoing	South Saskatchewan River Watershed Stewards Inc.

6.12.2 Key Action: To write a letter to Saskatoon City Council in support of the City of Saskatoon's water protection plan.

Implementation date	Completion date	Responsibility
March 31, 2007	April 1, 2010	South Saskatchewan River Watershed Stewards Inc.

6.12.3 Key Action: Promote the development and implementation of a stormwater management plan for all urban communities.

Implementation date	Completion date	Responsibility
March 31, 2007	March 31, 2010	South Saskatchewan River Watershed Stewards Inc. Urban municipalities



*Courtesy of Tourism Saskatchewan*

#### 6.12.4 Key Action: Develop an understanding and awareness of the impact urban residents have on stormwater quality and to promote beneficial practices that improve stormwater quality.

Implementation date	Completion date	Responsibility
March 31, 2007	March 31, 2010	South Saskatchewan River Watershed Stewards Inc. Urban municipalities

### 6.13 Water Quality from Alberta

#### Objective:

To work with Alberta communities and residents to improve the water quality in the South Saskatchewan River that enters into Saskatchewan.

#### Recommendation:

- Determine the reason for the poorer quality of water entering Saskatchewan compared to the downstream water quality.
- Encourage Alberta residents of the Red Deer and South Saskatchewan River Watershed to improve land use practices.
- Encourage Alberta residents of the Red Deer and South Saskatchewan River Watersheds to dispose of harmful chemicals and medications in a responsible manner by educating upstream residents.
- Monitor water quality in the Red Deer and South Saskatchewan Rivers separately to determine where the majority of the pollution is coming from.

#### 6.13.1 Key Action: Work with the Partners FOR the Saskatchewan River Basin to promote water quality protection and proactive ways to reduce risks to water quality.

Implementation date	Completion date	Responsibility
March 31, 2007	April 1, 2008	South Saskatchewan River Watershed Stewards Inc. Partners FOR the Saskatchewan River Basin

## 6.14 Agriculture Activities

Agriculture activities take place on most of the land within the South Saskatchewan River Watershed. Agriculture contaminants to source water can be categorized as either point source or **non-point** source.

Potential point source threats from agriculture activities can include intensive livestock operations, manure storage, livestock wintering areas, chemical storage and disposal areas, septic systems, and fuel storage. Some potential non-point source agriculture threats include livestock grazing and wintering sites, chemical, fertilizer and manure application, which adversely influence surface water and directly or indirectly influence nature's ability to purify water. Many of these potential point and non-point pollution sources can be identified and addressed on individual farms through the completion of an Environmental Farm Plan or on single issues involving an Agri-Environmental Group Plan. Accumulative effects from non-point sources are of the greatest potential concern because they largely come from activities that, by themselves, do not appear harmful. However, when these activities occur collectively within a significant portion of the watershed, they can have major effects on water quality.

In general, Watershed Advisory Committee members think that the agriculture community is working hard towards reducing impacts to the environment. For producers, good environmental practices can result in improved efficiency and economic benefits in their day to day operation.

**Non-point pollution:** cannot be traced back to a specific source. Non-point source pollution is difficult to identify because it can occur any place activities disturb land or water. Agriculture, urban runoff, forestry, grazing, septic systems, construction, recreational boating, and sediment from eroding stream banks can all contribute to this type of pollution.

### Objective:

To encourage agricultural producers to change to practices that potentially improves water quality in the watershed.

### Recommendation:

- Support and promote the Environmental Farm Plan to producers in the watershed.
- To initiate an Agri-Environmental Group Plan(s) to address impacts by livestock or cropping practices on surface water quality.
- To develop a program, in cooperation with livestock producers, to limit grazing season access to direct water access to rivers and tributaries, and re-locate wintering sites where contaminated runoff would enter the river.
- Encourage Beneficial Management Practices (BMP's) in the watershed.





### 6.14.1 Key Action: Promote the injection of liquid manure fertilizer versus land spreading in the watershed where soils are appropriate.

Implementation date	Completion date	Responsibility
March 31, 2007	March 31, 2008	<b>South Saskatchewan River Watershed Watershed Stewards Inc.</b> Partners FOR the Saskatchewan River Basin Saskatchewan Agriculture and Food Prairie Farm Rehabilitation Administration

## 6.15 Fish Migration and Habitat

The South Saskatchewan River is home to 26 species of fish. Throughout the river there is a good population of fish; as a result, the South Saskatchewan River, including Lake Diefenbaker, is a popular river for anglers. An important factor in having a good fish population is good fish habitat. Due to various changes within the river, some of the natural habitat for fish like northern pike, lake sturgeon and goldeye has been lost in the river. Protecting the tributaries and coulees that flow into the lake are important for providing fish habitat and spawning areas.

### Objective:

Restore fish habitat and passage in key locations throughout the watershed.

### Recommendations:

- Conduct a fish population, fish habitat and fish migration survey on major tributaries that flow into the South Saskatchewan River and to determine the fish species that are present, the quality of fish habitat and the extent of fish movement in the system.
- Evaluate the barriers to fish migration within the South Saskatchewan River and its tributaries.
- Develop a plan to restore fish passage in the South Saskatchewan River and its major tributaries.

### 6.15.1 Key Action: Conduct, evaluate and restore fish habitat in the South Saskatchewan River Watershed

Implementation date	Completion date	Responsibility
March 31, 2007	Ongoing	<b>Fisheries and Oceans Canada</b> Saskatchewan Environment Saskatchewan Watershed Authority

## 6.16 Role of Fisheries and Oceans Canada in Saskatchewan

Fisheries and Oceans Canada (DFO) has a legislative mandate to protect all fish habitat within Canada. In 2001, DFO increased staff and resources to enhance the protection of fish and fish habitat within Saskatchewan. Prior to this, the province protected fish habitat with a combination of provincial and federal legislation. DFO's renewed focus on fish habitat protection created concerns of increased regulation in Saskatchewan. Lack of consultation between DFO and rural Saskatchewan residents on these concerns has resulted in an erosion of past relationships between DFO and those residents who may be potentially impacting fish habitat and fish passage. Since 2001, DFO has worked more cooperatively with proponents on projects that may impact fish habitat and has developed "Operational Statements" to simplify the project review process. Watershed residents and DFO desire to work together in a cooperative and expedient manner to ensure that development projects are completed in such a way that negative impacts to fish and fish habitat are minimized.

### Objective:

To work with Fisheries and Oceans Canada to better define their mandate area within the watershed to eliminate public misconceptions of what is and is not "fish habitat".

### Recommendations:

- Request Fisheries and Oceans Canada to better define what and where fish habitat is in the watershed.
- Within the watershed, conduct a fish migration and habitat survey to determine the extent and range of fish within the watershed.
- Within the watershed, conduct a "traditional knowledge" survey to determine the extent of fish migration within the watershed.

### 6.16.1 Key Action: To conduct a "traditional knowledge" and research survey within the watershed to determine the basic non-fish habitat areas.

Implementation date	Completion date	Responsibility
March 31, 2007	April 1, 2009	<b>South Saskatchewan River Watershed Watershed Stewards Inc.</b> Partners FOR Saskatchewan River Basin Fisheries and Oceans Canada Saskatchewan Environment Saskatchewan Wildlife Federation branches

## 6.17 Wetland Conservation

Wetlands, **riparian** buffers and uplands are vital to the protection of source water in the watershed. Wetlands are a source of water, forage, and wildlife habitat, and perform a number of important functions such as groundwater recharge, water storage, flood control, sediment and residue trapping, shoreline protection, and nutrient cycling and storage. Healthy riparian areas remove sedimentation which can carry waterborne nutrients and chemicals. The uplands are areas that have been altered by the most by human activity and therefore can potentially influence runoff waters.

**Riparian:** Zones of vegetation adjacent to rivers and streams with a differing density, diversity, and productivity of plant and animal species relative to nearby upland areas.

Significant wetland loss can occur from agricultural development, urbanization, road construction, and oil and gas development and potash mining. The amount of wetland loss from agricultural drainage within the watershed varies greatly, with the highest losses in the most northern part of the watershed and the least, almost non-existent, losses in the southwestern part of the watershed where there is normally a water deficit.

Protection of existing wetlands and restoration of drained wetlands within the watershed will ensure source water is better protected into the future.



**Objective:**

To maintain existing wetlands, including associated riparian, upland and wetland habitats, to protect their ecological function in protecting source water.

### 6.17.1 Key Action: Promote and encourage the voluntary retention of wetlands through education and programming.

Implementation date	Completion date	Responsibility
March 31, 2007	November 1, 2010	<b>South Saskatchewan River Watershed Stewards Inc.</b> Partners FOR the Saskatchewan River Basin Ducks Unlimited Canada Saskatchewan Agriculture and Food Saskatchewan Watershed Authority Saskatchewan Environment

### 6.17.2 Key Action: Encourage programs that conserve native upland and wetland habitats.

Implementation date	Completion date	Responsibility
March 31, 2007	November 1, 2007	<b>South Saskatchewan River Watershed Stewards Inc.</b> Partners FOR the Saskatchewan River Basin Ducks Unlimited Canada Saskatchewan Agriculture and Food Saskatchewan Watershed Authority Saskatchewan Environment

## 6.18 Opimihaw Creek Flooding

Opimihaw Creek is a small tributary that begins west of Martensville and flows east through Wanuskewin Heritage Site into the South Saskatchewan River. During dry periods the creek has little to no flow. In the past few years, the wet condition in the area has resulted in the creek flooding local producers between the community of Martensville and Highway 11 and areas further east of Highway 11.

Currently, the community of Martensville, the Rural Municipality of Corman Park and the Saskatchewan Watershed Authority are working together to resolve the flooding issue in this area.

### Objective:

To support the restoration of Opimihaw creek's natural flow capacity.

### Recommendation:

- Monitor future land use activities along Opimihaw Creek to reduce future flooding events.
- Look for program funding in the future to assist in restoring areas of the creek back to a "natural" runoff channel.

### 6.18.1 Key Action: To provide moral support for the local committee to restore the natural flow capacity of the creek.

Implementation date	Completion date	Responsibility
March 31, 2007	April 1, 2009	North Watershed Advisory Committee





## 6.19 Federal Lands

Federal lands in the watershed include First Nations Reserves, Treaty Land Entitlement (Cabri Sandhills), Canadian Forces Bases near Dundurn, and the National Historic Park at Batoche as examples. These federal lands are not subject to provincial environmental laws because they fall under federal jurisdiction. Watershed residents know very little about what laws are in place to protect source water in these areas and what is done on federal land to protect water.

### Objective:

To educate watershed residents on the laws and responsibilities for protecting the environment, including water, on federal lands.

### 6.19.1 Key Action: To provide information to watershed residents on the environmental protection of federal lands.

Implementation date	Completion date	Responsibility
March 31, 2007	April 31, 2009	Environment Canada



## 7. Implementation Strategy

A key element of any plan is its implementation. Without it, the plan is no more than a list of good intentions. Of key importance for implementation of the Source Water Protection Plan is local direction. Local leadership is key in the implementation of the Source Water Protection Plan. This would promote a strong sense of direction, purpose, ownership, and ultimately provide the impetus to meet the identified goals and objectives.

A local watershed coordinator provides exclusive focus on issues and initiatives and serves as the “go-to” contact for stakeholders, organizations, and all levels of government.

### **Objective:**

To promote and implement a healthy watershed strategy.

### **Recommendation:**

The formation of a formal South Saskatchewan River Watershed Source Water Protection Board

#### **7.1 Key Action:**

With members from the three Watershed Advisory Committees, form the South Saskatchewan River Watershed Source Water Protection Board.

Implementation date	Completion date	Responsibility
January 1, 2007	Completed – April 17, 2007	South Saskatchewan River Watershed Stewards Inc.

#### **7.2 Key Action:**

Continue to work with the South Saskatchewan River Watershed Technical Committee and meet annually with the Watershed Advisory Committees.

Implementation date	Completion date	Responsibility
March 31, 2003	Ongoing	South Saskatchewan River Watershed Stewards Inc.

### 7.3 Key Action:

Explore and secure funding sources for the implementation of the South Saskatchewan River Watershed Source Water Protection Plan.

Implementation date	Completion date	Responsibility
April 17, 2007	Ongoing	South Saskatchewan River Watershed Stewards Inc. Saskatchewan Watershed Authority

### 7.4 Key Action:

Hire a full-time Watershed Coordinator who will report to the South Saskatchewan River Watershed Source Water Protection Board

Implementation date	Completion date	Responsibility
May 22, 2007	Fall, 2007	South Saskatchewan River Watershed Stewards Inc.



## 8. Measuring Plan Success - The Yearly Report Card

The Saskatchewan Watershed Authority will continue to support Watershed Planning through the Plan's implementation phase by committing at least one planning team member to be involved with the South Saskatchewan River Watershed Stewards Inc. Consistent with the State of the Watershed Reporting Framework, a yearly watershed report card will be prepared to report on the progress of the action items, objectives and goals of the Plan. This report card will report on the achievements, opportunities and challenges of meeting the overall vision and make any adjustments to the Plan that have been recommended by the Watershed Advisory Committees.

### Measurements of Successes:

Successes can be categorized into three time periods:

- Short-Term (1-5 years) successes: Completion of tasks in timeframe stipulated.
- Medium-Term (5-20 years) successes: An observable change in attitudes.
- Long-Term (20+ years) successes: Realize changes in the watershed.

Once completed, many of the key action items will be a milestone achievement. The effects of those action items on the watershed's health may not necessarily be immediate. It may take decades to see a change in fish wetland or riparian habitat, and it may even take generations to see the changes in water quality or the change in attitude to protect source water.

In addition to the measurements of success included here, there will be other ways to measure success. These include tracking improvements of certain indicators found in the State of the Watershed Reports and improvements in the Water Quality Index where reported. The State of the Watershed Reports are based on a conceptual, but simplistic, model of a watershed that explicitly recognizes relationships between human activities (stressors), the state of the watershed (condition), impacts on the ecosystem, and associated management activities (responses). The Reports also reflect how we look at watersheds (structure and function) in the context of source water protection.



## 9. Conclusion

This Source Water Protection Plan is the start of making a difference in protecting source water for the Saskatchewan portion of the South Saskatchewan River Watershed. The development of this plan has already resulted in a heightened awareness of source water protection among watershed residents. This plan does not ask all the questions, nor does it have all the answers, but it is the start for local people to make a difference in their own watershed. This is not the end, but rather a beginning. The work has just begun, and success of this plan depends on watershed residents.

If you are interested in becoming involved, contact your local Watershed Advisory Committee member or rural or urban municipality about making a difference in protecting source water.

The Government of Saskatchewan, through the Saskatchewan Watershed Authority, is committed to supporting the implementation of watershed plans through programming, mentorship, and encouragement.





## 10. Appendices

### **Watershed Advisory Committees**

#### **North** Watershed Advisory Committee

<b>Member</b>	<b>Organization</b>
Pat Lorje	City of Saskatoon
Ben Buhler	Town of Osler
Craig Riddell	RM of Corman Park #344
Harold Mueller	Town of Cudworth and Cudworth Wildlife Federation
Dean Bear	Muskoday First Nation
John Shutlak	RM of Grant #372
Paul Tschetter	Riverview Hutterite Colony
Raymond Blanchard	RM of Duck Lake #463
Kendall Shram	Town of Warman
Bernie Kramchynsky	RM of Fish Creek #402
Duane Mohn	RM of Birch Hills #460
Rob Court	City of Saskatoon
Denis Poirier	Town of Duck Lake
John Gerstmar	Meewasin Valley Authority
Real Hamoline	RM of Aberdeen #373
Betty Fiolleau	Town of Duck Lake
Leonard Wudrich	Town of Hague
Tyson Chillog	Town of Martensville
Doug Knoll	Town of Rosthern

## **West** Watershed Advisory Committee

<b>Member</b>	<b>Organization</b>
Al Heron	Town of Eston
Jeannine Schmaltz	Village of Prelate
Robert Oldhaver	Town of Cabri
Bernie Radies	RM of Newcombe
Dwight Holstein	Chesterfield Irrigation District and RM of Deer Forks
John Irwin	RM of Snipe Lake
Wayne Murch	Great Sandhills Wildlife Federation
David Booker	RM of Chesterfield
Gary Meier	Town of Leader
Kerry Wrishko	Saskatchewan Environment
Kelly Labroski	Miry Creek Irrigation District
Justin Duncan	Cabri Regional Park
Glen Reynolds	Cabri Regional Park
Eugene Eslinger	RM of Clinworth
Ron Watson	RM of Miry Creek
Doug Weedon	Town of Cabri
Lyndon Horvey	RM of Riverside
Terry Ostrander	Sask Stock Growers Association
Ted Koester	RM of Snipe Lake
Keith Day	RM of Lacadena
Leah Cooper	RM of Chesterfield
Gordon Wilson	RM of Kindersley

## **Lake Diefenbaker** Watershed Advisory Committee

<b>Member</b>	<b>Organization</b>
Harold Martens	RM of Excelsior #166
Russ McPherson	RM of Rudy
Clayton Ylioja	RM of Coteau #255
Tony Peter	Town of Outlook
Garry Stone	RM of Loreburn #254
Roger Pederson	South SK River Irrigation District #1
Donald Shirliff	RM of Victory #226
Gregory Stranden	South SK River Irrigation District #1
Tony Kuchapski	Whitecap Dakota/Sioux First Nation
Les Redden	RM of Canaan #225
Floyd Thunstrom	RM of Coteau #255
Trevor Henderson	RM of King George #256
Lorne Anholt	RM of McCraney #282
Sandra Bathgate	Grainland Irrigation District
Murray Purcell	RM of Montrose #315
Rex Friend	RM of Rosedale #283
Wayne Vaxvick	RM of Rudy #284
Stewart Sawyer	RM of Milden #286
Don Munro	RM of Fertile Valley #285
Gery Harris	Town of Conquest
Keith Lensen	Village of Vanscoy
Willie Funk	RM of Morse
Brian Knight	RM of Saskatchewan Landing
Jim Tucker	Mid Sask REDA/CFDC

## South Saskatchewan River Technical Committee

Member	Organization
Kevin Graham	Saskatchewan Watershed Authority
Kerry Wrishko	Saskatchewan Environment
Rob Court	City of Saskatoon
Krista Connick	Saskatchewan Watershed Authority
Girma Sahlu	Environment Canada
Gerry Millette	Sask Power
Barry Taylor	Saskatchewan Watershed Authority
Len Erickson	Saskatchewan Agriculture & Food
John Fahlman	Saskatchewan Watershed Authority
Lars DePauw	Canadian Association of Petroleum Producers /Penn West Energy Trust
Bruce Clark	City of Saskatoon
Frank Fox	Saskatchewan Watershed Authority
Paul Holtkamp	Ducks Unlimited Canada
Kevin Wingert	Saskatchewan Watershed Authority
Jennifer Nelson	Partners FOR the Sask River Basins
John Linsley	Saskatchewan Agriculture & Food
Wilf Kaiser	Agriculture & Agri-Food Canada
Brian Matheson	Saskatchewan Industry and Resources
Joanne Sketchell	Saskatchewan Watershed Authority
Dave McAllister	Fisheries and Oceans Canada
Dwayne Djkowich	Saskatoon Health Region
Don Dill	Saskatchewan Watershed Authority
Jeremy Brown	Saskatchewan Watershed Authority
Gary Papic	Saskatchewan Environment
Brent Bowerman	Canadian Association of Petroleum Producers
Sheldon Barsi	Saskatchewan Watershed Authority

## **South Saskatchewan River Watershed Planning Team**

<b>Member</b>	<b>Organization</b>
Jeff Olson	Saskatchewan Watershed Authority
Collin McGuire	Saskatchewan Watershed Authority

## **South Saskatchewan River Watershed Stewards Board of Directors**

<b>Member</b>	<b>Organization</b>
Harold Martens, Interim Chair	RM of Excelsior
Clayton Yloija, Treasurer/Secretary	RM of Coteau
Pat Lorje, Director	City of Saskatoon
Russ McPherson, Director	RM of Rudy
Al Heron, Director	Town of Eston
John Gerstmar, Director	Meewasin Valley Authority
Rob Court, Director	City of Saskatoon

[www.southsaskriverstewards.ca](http://www.southsaskriverstewards.ca)







