



LESSER SLAVE
WATERSHED COUNCIL

WORK BOOK

1 Water for Life

In the past, Alberta has been able to manage the water supply while maintaining healthy aquatic ecosystems due to the relative abundance of water to the demand. However, as populations and industries continue to grow and the water supply becomes more unpredictable, the need to actively manage the provinces water is apparent.

In 2003, in an effort to define its commitment to wise water management, the Government of Alberta released *Water for Life: Alberta's Strategy for Sustainability*. *Water for Life* has three primary goals:

- Safe secure drinking water supply
- Healthy aquatic ecosystems
- Reliable, quality water supplies for a sustainable economy

In order to fulfill the goals of the strategy and meet specific targets, the actions outlined in *Water for Life* revolve around three key areas, knowledge and research, partnerships, and water conservation. All Albertans use and affect water resources within their watershed. As a result, all citizens, industry, and government share the responsibility in developing and participating in provincial *Water for Life* strategy.

While the government oversees the Water for life strategy there are three key partnerships that are imperative to the sustainability and stewardship of our water resources.

These groups include the Provincial Water Advisory Council, Watershed Planning and Advisory Councils (WPACs) and watershed stewardship groups like the Lesser Slave Watershed Council.





Water for Life

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2 Watershed Management Planning

Watershed management planning is an important tool used to ensure the long term sustainability and health of aquatic ecosystems within a watershed. This is a unique opportunity to develop a plan that describes the goals for the watershed and defines specific actions to achieve these goals. In addition, the plan determines reporting and monitoring requirements to measure the success and progress of the plan. Watershed management plans are developed in a collaborative manner with the participation of all stakeholders within the watershed. These stakeholders have an interest in the long-term sustainability of the watershed and include all levels of government, stewardship groups, general public, industry, agriculture, First Nations and non-government environmental organizations. Watershed management plans are designed to be adaptive and flexible to address new challenges or goals within the watershed over time. The watershed management plan will encompass the entire watershed from major rivers, lakes, wetlands, groundwater and land use impacts that affect the aquatic ecosystem. Three key topics will be addressed within the watershed management plan: Water Quality, Water Quantity and Healthy Aquatic Ecosystems.





Planning

3 Map of the Lesser Slave Watershed

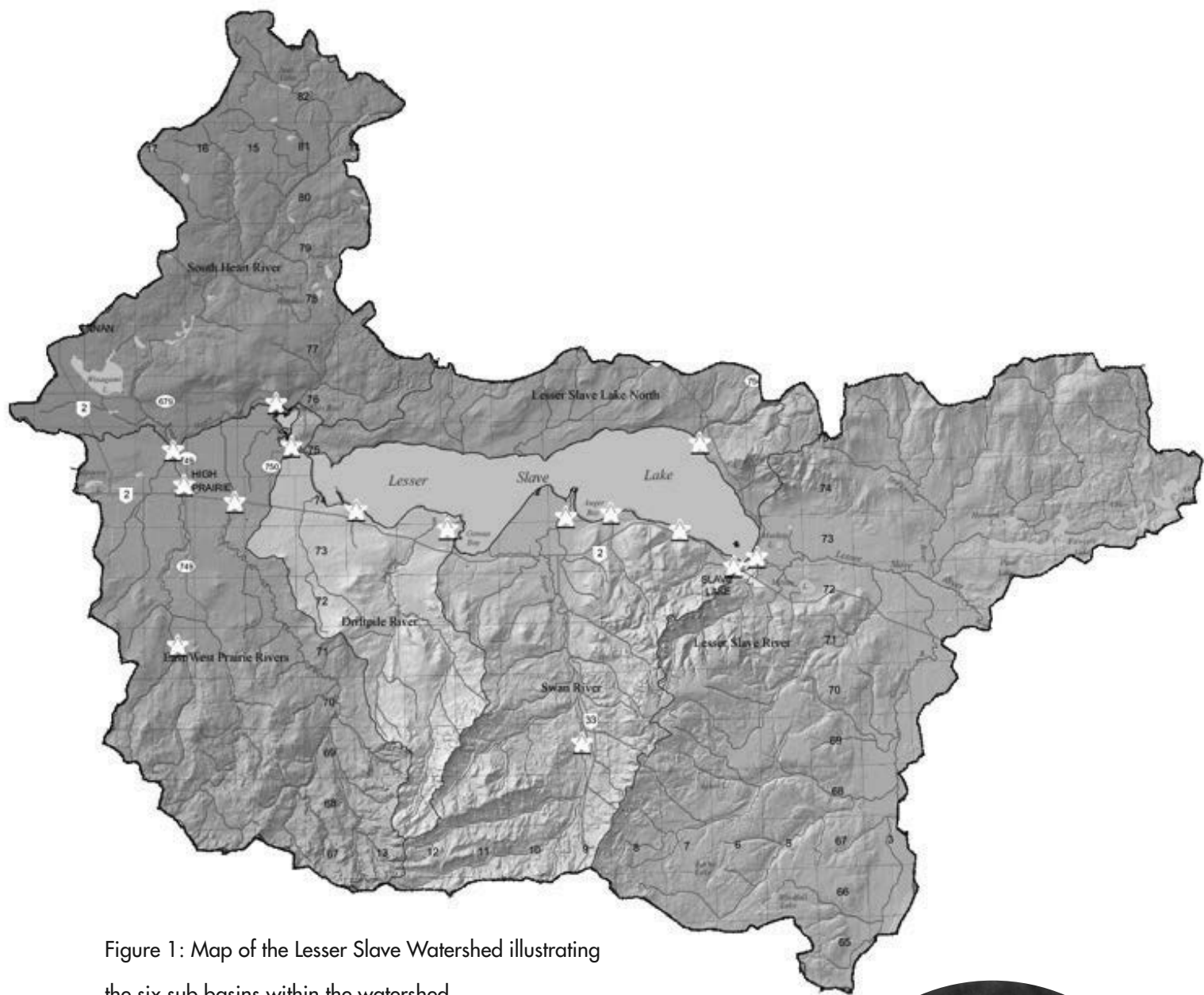
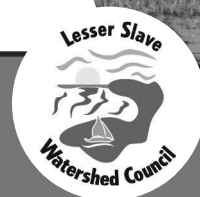


Figure 1: Map of the Lesser Slave Watershed illustrating the six sub basins within the watershed.





Map

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4 Water Quality

Water quality is important not only to the surrounding environment and ecosystems, but for people as well. In regards to water quality, nitrogen, phosphorus and bacteria are the main parameters of concern. Nitrogen and phosphorus are essential nutrients for most aquatic plants. As a result, excess nutrients can lead to eutrophication, which causes an excessive amount of aquatic plant and phytoplankton growth. Associated with increased plant and phytoplankton growth, oxygen levels may become significantly reduced in the water column, which may negatively impact aquatic organisms, including fish. In addition, excessive phytoplankton growth, particularly of cyanobacteria, can lead to the release of toxins into the water column, which may be harmful to aquatic organisms, waterfowl, livestock and humans. The input of nutrients into aquatic systems can occur naturally, but large amounts of nutrients typically originate from indirect anthropogenic sources; including, improperly treated wastewater, residential and industrial use of fertilizers, industrial activity and agricultural operations.

Bacteria can come from a wide variety of sources in the aquatic environment, including natural sources such as soil, decomposing plants, and animal waste, and from anthropogenic (human) sources such as raw sewage, manure runoff, and pet waste. Many types of bacteria found in the aquatic environment are harmless, but some can be pathogenic and cause human health issues.

Changes in water quality indicate either a deterioration or improvement in the condition of the watershed and demonstrate specific areas that require further attention or protection. Changes in water quality result from changes in land use or land management practices, landscape disturbance and natural events. The major anthropogenic impacts on water quality result from natural resource extraction and processing, wetland drainage, dredging, dam construction, agricultural runoff, industrial wastes, municipal wastes, land erosion, road construction and land development. While human activities in a region can have negative impacts on aquatic ecosystems, it is important to strive for a balance between socioeconomic growth and the sustainable management of these aquatic ecosystems to ensure their long-term health and enjoyment by future generations.





Water Quality

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5 Water Quantity

Water quantity is simply the amount of water available within a system, such as a river or watershed. The majority of Albertans and industry obtain their water from lakes and rivers. Each year these sources are replenished from snowmelt and rainfall. In some areas of the Province water can become scarce during the summer months due to a limited water quantity in lakes and rivers. During times of scarcity, water conservation becomes extremely important.

Water quantity is vital for the maintenance of aquatic habitat, it has functions related to water quality and it is essential for the production of drinking water to meet demands. Irrigation, industry and livestock production are highly dependent on a minimum amount of available water. Sufficient water quantity is necessary for many recreational activities, and in recent years many cottagers and recreational lake users across Alberta have voiced concerns about the decreasing volumes of water seen across the province.

Water discharge rates, allocations and minimum flow rates to maintain ecological integrity can reflect socioeconomic growth in a region. Human activities in a region frequently reduce available water quantities required to maintain healthy aquatic ecosystems. It is important to balance socioeconomic growth and the sustainable management of these aquatic ecosystems to ensure their long-term health and enjoyment by future generations.





Water Quantity

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6 Healthy Aquatic Ecosystems

Aquatic ecosystems include our rivers, lakes, streams, wetlands and the groundwater systems that connect them. These ecosystems also encompass all of the plants, animals and biological processes that depend on the water within these systems. The health of these ecosystems is imperative to all forms of life, including humans. If an ecosystem becomes unhealthy, everyone and everything will suffer. Water is necessary for sustaining life, as such; we are dependent upon the health of our aquatic ecosystems to provide safe, secure, clean water.

The Alberta Water Council defines a healthy ecosystem as “An aquatic environment that sustains its ecological structure, processes, functions, and resilience within its range of natural variability.” As a result, anthropogenic (human caused) disturbances in these ecosystems have not inhibited the natural function of the system. By maintaining a healthy aquatic ecosystem, the health of other surrounding ecosystems is also persevered. The majority of the world’s organisms directly depend on an aquatic ecosystem at some point in their lifecycle.





Ecosystems

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7 Appendix

Structured Decision Making

To move forward with developing their Integrated Watershed Management Plan (IWMP) for the Lesser Slave Watershed, LSWC has decided to take a phased approach. The first step in the phased approach is to hold a Structured Decision Making (SDM) workshop. SDM is an approach to making decisions that focuses on engaging stakeholders, experts and decision makers. Participants are invited to analyze and discuss proactively to identify and evaluate alternatives. SDM follows six steps: clarify the decision context, define objectives, develop alternatives, estimate consequences, evaluate trade-offs and then implement. A few benefits of following the SDM approach include transparency and accountability. It provides a road map to show where we are going and how we got there. It allows for stakeholders to make decisions upfront resulting in a streamlined implementation and support down the road. This will ultimately assist in meeting the objectives set out in the IWMP.

For more information on the SDM approach, please visit their website at www.structureddecisionmaking.org





Notes

