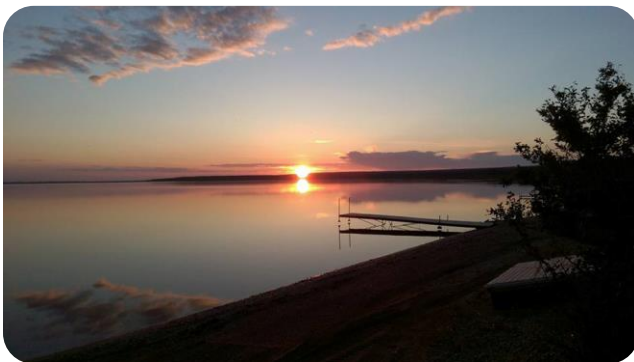
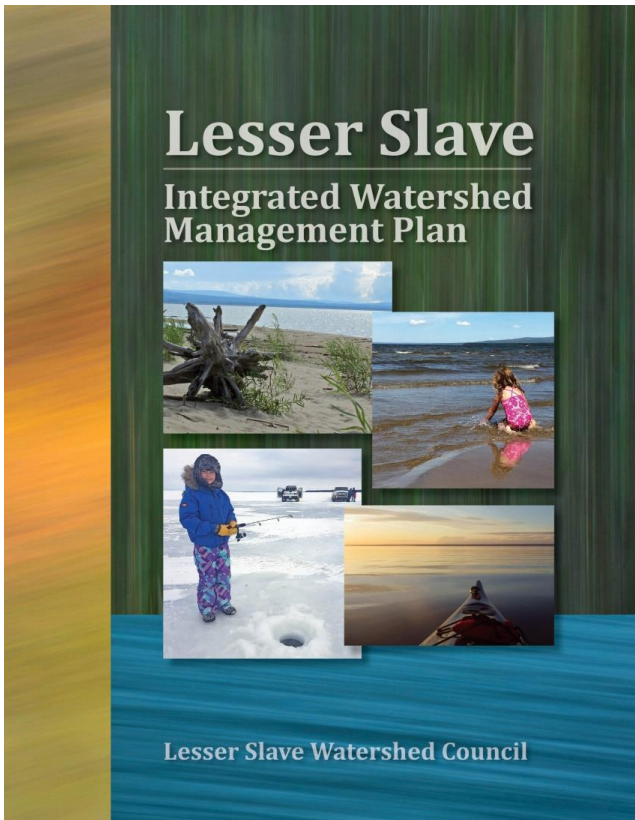


Lesser Slave

Integrated Watershed Management Plan

Implementation Update (2018-2019)



August 2020

Acknowledgments

The Lesser Slave Watershed Council would like to thank all individuals and organizations who contributed to this Lesser Slave Integrated Watershed Management Plan Implementation Update. Your effort to collaborate in the implementation of the Lesser Slave IWMP and work to steward the Lesser Slave watershed for future generations is appreciated.

Contributions to this report were received from

- Alberta Environment and Parks
- Big Lakes County
- Town of Slave Lake
- Industry
- Local Non-Government Organizations

Photo Credits

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- LSWC Members



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Find the complete Lesser Slave Integrated Watershed Management Plan at
www.lswc.ca/iwmp



Background

In 2018, the Lesser Slave Watershed Council (LSWC) completed the Lesser Slave Integrated Watershed Management Plan (IWMP or Plan) (PESL 2018) as a guidance document and planning tool for resource managers. It identifies issues, and establishes common goals and objectives for the long-term management of land and water resources in the basin. Recommendations are made to meet goals and objectives. The IWMP addresses local concerns regarding water quantity, water quality, riparian areas and wetlands and biodiversity. The Lesser Slave IWMP was supported by all partners. See www.lswc.ca/iwmp for more information.

Figure 1. Map of the Lesser Slave watershed.



Lesser Slave IWMP Implementation and Priorities

A strategy guides the implementation of the Lesser Slave IWMP. The strategy lists specific actions needed to implement recommendations, indicates who is responsible for implementing the recommendation and suggests timelines. A short-list of actions was prioritized by the LSWC and IWMP Steering Committee to initiate the implementation of the Plan. Priorities were directed to recommendations that had watershed-wide benefits, filled urgent needs or data gaps, and aligned with current goals and objectives. Key administrative and project priorities for 2018-2020 are listed below.

Administrative Priorities

1. Work with partners to identify priorities and refine implementation actions according to short-term, medium and long-term timelines.
2. Identify and seek funding and in-kind resource support.
3. Review plan implementation progress annually.

Project Priorities

1. Design and implement a water monitoring program for rivers and lakes.
2. Collaborate with partners to develop the watershed-scale hydrologic model to better understand watershed hydrology.
3. Implement recommendations that relate to stewardship of water and the aquatic environment.

Watershed management is a shared responsibility. The common goals outlined in the Lesser Slave IWMP can only be achieved through the collective action of all partners and stakeholders. The LSWC encourages implementation of the Lesser Slave IWMP, and continues to helping with implementation wherever possible, by:

- Providing resources (e.g., tools, information) that support implementation
- Identifying and address data gaps (e.g., monitoring, new science)
- Developing common, watershed-scale resources (e.g., maps, model)
- Reporting on watershed condition (e.g., How are we doing?)
- Supporting collaboration, education and stewardship in watershed management (e.g., inter-municipal share-forums, workshops)

While priorities may change in the future depending on provincial and municipal direction, emerging issues, resource availability, and staff changes, achieving the desired outcomes for the Lesser Slave watershed remains the focus of the plan implementation.

The main implementation highlights for the period 2018-2019 are summarized by major themes in this report.

Tracking Implementation Progress

A tracking spreadsheet was developed to monitor progress and successes in the implementation of the actions related to Lesser Slave IWMP recommendations. The implementation tracking sheet

was updated regularly by LSWC staff. Actions were documented for each recommendation by the organization who undertook the action. One action resulted in score of 1 in the spreadsheet. The key outcomes for the IWMP recommendations are colour-coded in the diagram below to represent actions related to watershed stewardship, research and monitoring, planning and policy, education and literacy, administration. These same colours are applied to implementation highlights in the following sections to indicate how the actions relate to key outcomes.

Key Outcomes



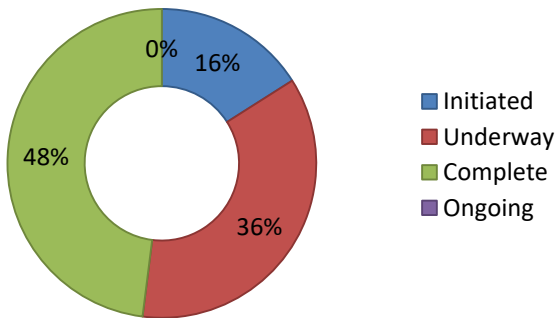
Water Quantity

Water is a fundamental element of all living things. Maintaining water supplies is critical for human consumption, and to support riparian and wetland functions, aquatic life, waste assimilation, and recreation opportunities.

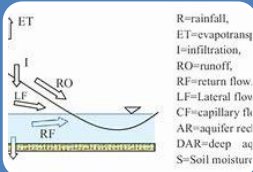
Surface water and groundwater are managed in ways that support vibrant communities, healthy aquatic ecosystems, recreation, fish and wildlife, and economic opportunities.

There are 14 recommendations related to water quantity in the Lesser Slave IWMP. Twenty-five implementation actions were undertaken for 9 of the recommendations during the reporting period. Most effort by the LSWC was focused on the initiation of a more robust water balance model. A Model Team was established with staff from AEP and a Terms of Reference was developed.

Status of Water Quantity Related Actions



Implementation Highlights



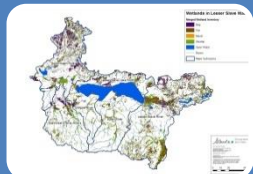
Develop a more robust water balance model (10.2.3 c)

- Model Team established (LSWC, AEP)
- Meetings held to discuss modeling goals, objectives, and priorities. (LSWC, AEP)
- Project Terms of Reference complete (LSWC, AEP)



Technical and scientific basis to inform a Water Conservation Objective (Instream Flow Needs (IFN) Study) (10.2.3 g)

- Investigated the status of past IFN related work completed on the Lesser Slave River to inform current work (AEP)
- Modelling group discussed IFN needs and data requirements (AEP)



Prioritize flood hazard mapping (10.2.3 j)

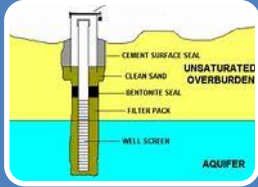
- Flood hazard mapping study complete for Sawridge Creek (AEP)
- Information shared with the flood forecasting group to highlight the need for flood forecasting and an early warning system at Marten Beach (LSWC)

Implementation Highlights continued...



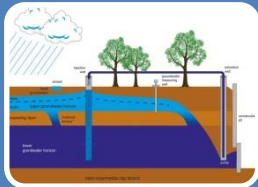
Better understand the role of forest harvesting in watershed hydrology (10.2.3 l)

- Meeting to discuss concerns about changes in water yield due to forest harvest practices (LSWC, AEP and Forest Industry)



Establish a well within the Groundwater Observation Well Network (GOWN) (10.2.3 n)

- Discussed a GOWN well for the Lesser Slave Lake watershed and other groundwater related actions (AEP, AER and LSWC)



Use the groundwater data to update the water balance model (10.2.3 p)

- Groundwater Team meeting held to discuss roles and data needs (AEP)

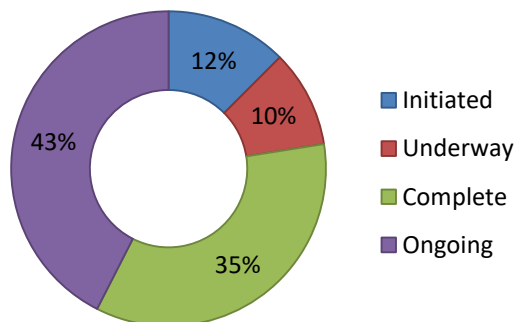
Water Quality

Good water quality is necessary for communities that rely on the Lesser Slave Lake and its tributaries for their water supply. It is also important to the local sport fishing and tourism industry.

Water quality is maintained or improved to support communities, aquatic ecosystems, recreation, fish and wildlife, and economic opportunities for future generations.

There are 31 recommendations related to water quality in the Lesser Slave IWMP. Forty implementation actions were undertaken for 16 of the recommendations during the reporting period. Many recommendations were initiated and are underway to support understanding of water quality in tributaries to Lesser Slave Lake, and to protect and improve water quality.

Status of Water Quality Related Actions



Implementation Highlights



Adopt agricultural Beneficial Management Practices (BMPs) (10.3.3 h, 10.3.3 i)

- Worked to implement watershed resiliency and restoration projects that will lead to reduced sedimentation (LSWC, Landowners, Big Lakes County)
- Worked with Municipal Agriculture Departments to promote BMPs (LSWC)
- Shared resources and provided learning opportunities (LSWC)



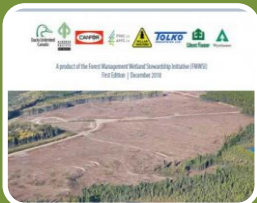
Increase collaboration among agricultural organizations to promote use of Beneficial Management Practices (10.3.3 j)

- Partners met quarterly to share work plans and projects (LSWC)
- Staff training for Environmental Farm Plan delivery (LSWC, Big Lakes County)
- Assisted producers to complete Environmental Farm Plans (LSWC)
- Hosted Dugout and farm water management information session (LSWC and Big Lakes County)



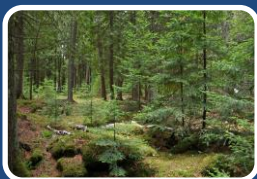
Consider an ecological goods and services incentive program (10.3.3 k)

- Passed motion at Council to implement ALUS Canada program (Big Lakes County)
- ALUS Coordinator hired in March 2020 (Big Lakes County)



Apply forestry Beneficial Management Practices (10.3.3 l)

- Shared the new Ducks Unlimited Canada Forest practitioners guide for wetlands (LSWC)



Adopt detailed Forest Management Plan (FMP) strategies that align with the outcomes of the IWMP (10.3.3 m)

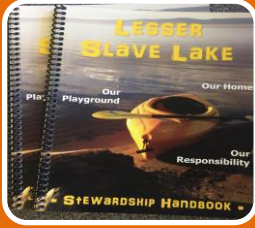
- Second meeting held with forest companies and AAF staff to discuss the FMP strategies (LSWC)



Communicate with communities prior to weed spraying (10.3.3 v)

- Notified residents via local paper and social media regarding weed control program (Big Lakes County)

Implementation Highlights continued...



Develop and disseminate stewardship resources to tourists and recreational users (10.3.3 x; 10.3.3 ff)

- Distributed Lesser Slave Lake stewardship handbooks at the High Prairie Gun and Sportsman Show (2018 & 2019), fishing tournament briefings, and local campgrounds and boat launches in summer (LSWC)
- Disseminates lake stewardship resources at trade shows, and other local events (LSWC)



Implement a tributary water quality monitoring program (10.3.3 z); Refer to historic water quality when evaluating water quality condition in tributaries (10.3.3 aa)

- Tracked source s of fecal coliform bacteria at West Prairie River using DNA analysis (LSWC, Big Lakes County, University of Alberta)
- Year 3 metals monitoring at the Swan River; SRFN staff joined LSWC staff in the field (LSWC, SRFN)
- Year 3 of tributary monitoring program completed at 15 sites (LSWC)
- Requested and received Lesser Slave River data at the station 8 km upstream of the confluence with the Athabasca (LSWC)
- Historic water quality summary referred to in annual water quality reports



Refine the BATHTUB model using new data, or identify a more appropriate model (10.3.3 bb)

- Meeting to discuss modeling goals and objectives and whether water quality can be incorporated into existing modeling tools (LSWC, AEP)



Monitor unique pollutants that pose a risk to public health (10.3.3 dd)

- A consultant was hired to collect and analyze sediment samples for toxic pollutants in the sediment at the mouth of the Swan River; a project report is available (SUEZ)



Public education for sediment and erosion control (10.3.3 ee)

- Disseminated Cows and Fish riparian resources to producers and landowners (LSWC)
- Lesser Slave Lake stewardship handbook distributed across the watershed (LSWC)
- Presentations to local schools and community groups (LSWC)

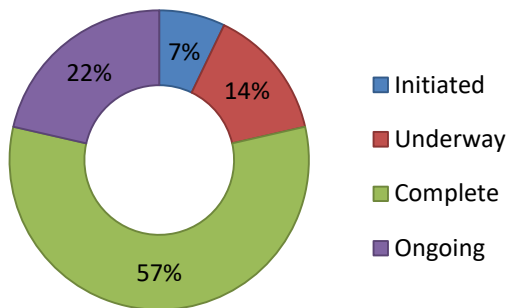
Riparian Areas

Healthy riparian areas associated with rivers, creeks, wetlands and smaller lakes, are important features in the watershed. They provide a variety of functions that maintain conditions for a variety of users. Riparian areas contribute to better water quality, stable stream banks, they mitigate impacts of flood and drought, as well as provide important habitat for wildlife.

Healthy riparian areas stabilize banks and shorelines, improve water quality, reduce sedimentation, provide habitat, and promote biodiversity.

There are 12 recommendations related to riparian areas in the Lesser Slave IWMP. Fourteen implementation actions were undertaken for 5 of the recommendations during the reporting period.

Status of Riparian Area Related Actions



Implementation Highlights



Monitor riparian health (2016-2018) (10.4.3 b)

- Eight riparian health assessments completed at rural stewardship project sites (LSWC, Cows and Fish)



Municipal related setbacks (10.4.3 d)

- Established a setback of 30 m from top of bank to any slope or body of water (Town of Slave Lake, Land Use Bylaw)



Forestry related setbacks (10.4.3 f)

- Present the 2020 Regional Forest Management Plan (Forest Industry, LSWC)
- Meeting to discuss Values, Objectives, Indicators and Thresholds (VOITS) and Regional Forest Management Plan (LSWC, Forest Industry)



Implement restoration measures at South Heart, West Prairie, and Lower Swan rivers (2016-2018) (10.4.3 h)

- Received Watershed Resiliency and Restoration Program (WRRP) grant to support riparian projects (LSWC, Big Lakes County)
- Six riparian stewardship projects implemented (LSWC, Big Lakes County)

Implementation Highlights continued...



Improve community understanding of riparian areas (10.4.3 k)

- Watering system, beaver, and grazing tour held near High Prairie with Peace Country Beef and Forage Association (PCBFA) (LSWC)
- Lesser Slave Lake 101 Event - Riparian presentation (Cows and Fish); Stewardship presentations (PCBFA, Lakeland Agriculture Research Association & Moose Lake Watershed Society) (LSWC)

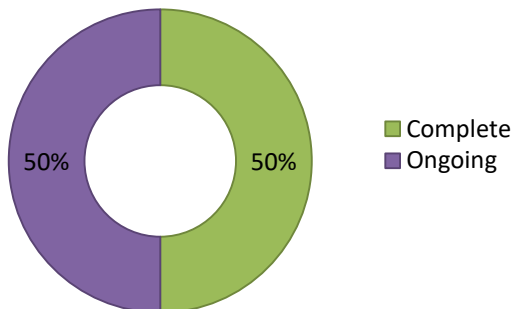
Wetlands

Wetlands provide flood protection and mitigate the impacts of drought through water storage, filter water to maintain water quality, and provide habitat for an abundance of wildlife in the watershed.

The hydrologic function of wetlands is kept intact to provide flood and drought mitigation, improved water quality, and fish and wildlife habitat.

There are 9 recommendations related to wetlands in the Lesser Slave IWMP. Two implementation actions were undertaken for 2 of the recommendations during the reporting period.

Status of Wetland Related Actions



Implementation Highlights



Apply minimum setback adjacent to wetlands (10.5.3 c)

- Applies a 30 m buffer around lakes, marshes and sloughs (Big Lakes County, Land Use Bylaw No 16-2010)



Provide education and awareness opportunities (10.5.3 l)

- Shared the new Ducks Unlimited Canada wetland forest practitioners guide with companies and operators (LSWC)
- Shared Cows and Fish factsheets (LSWC)
- School field trips with Grades K, 1, 3 and 5 (LSWC, Lesser Slave Forest Education Society, Boreal Centre for Bird Conservation)
- Pop-up engagement sessions at local campgrounds (LSWC)

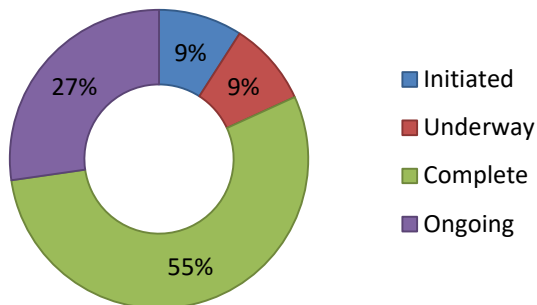
Biodiversity

Biodiversity is an important indicator of overall watershed health. While species diversity and abundance may change and/or fluctuate due to natural causes, human alteration and disturbance to habitat can impact local biodiversity.

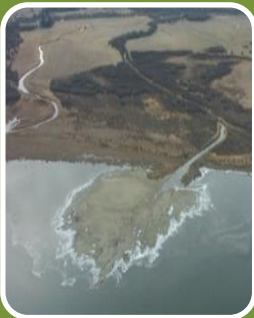
Sustainable land use practices take place in the watershed that maintain and support biodiversity.

There are 13 recommendations related to biodiversity in the Lesser Slave IWMP. Eleven implementation actions were undertaken for 3 of the recommendations during the reporting period.

Status of Biodiversity Related Actions



Implementation Highlights



Restore stream connectivity and reduce sediment inputs to streams and downstream areas (2018) (10.6.3 c)

- Hired consultant to complete a GIS Stream Crossing prioritization exercise for the Swan River Sub Basin using Alberta Conservation Association stream crossing inventories from 2015 (Swan River First Nation)
- Working to engage with stream crossing owners and develop plans to remediate out of compliance crossings (Swan River First Nation)
- Implemented 4 stream crossings in the Upper Swan watershed, and restored fish passage (Cardinal Energy Ltd.)



Implement strategies to mitigate potential for aquatic invasive species (AIS) (10.6.3 h)

- Approved an AIS policy and procedures (Big Lakes County)
- Plan and deliver an Invasive Species Workshop for stakeholders (Big Lakes County, LSWC, AEP, AISC)



Maintain critical habitat for Grizzly Bear (10.6.3 j) and Woodland Caribou (10.6.3 k)

- Implementation of Grizzly Bear Recovery Plan (AEP)
- Implementation of Provincial Woodland Caribou Range Plan (AEP)

Discussion

The level of effort to implement recommendations is summarized in Figure 2. The level of effort was calculated as the number of recommendations addressed as a percentage of the total number of recommendations addressed by theme. During the period 2018-2019, the greatest implementation effort was placed on improving water quality (44%), followed by managing water quantity (27%). About 12% of the implementation effort was placed on enhancing biodiversity, namely through work to improve fish habitat in Lesser Slave Lake tributaries, and implementation of provincial plans for Grizzly Bear and Caribou.

A number of partners continue to support the implementation of the Lesser Slave IWMP recommendations. Figure 3 shows the estimated contribution of partners in 2018-19 based on actions known to the LSWC. It is likely that additional work is underway that has not been included in this summary, as partners continue to work to maintain and improve watershed functions through stewardship and other activities.

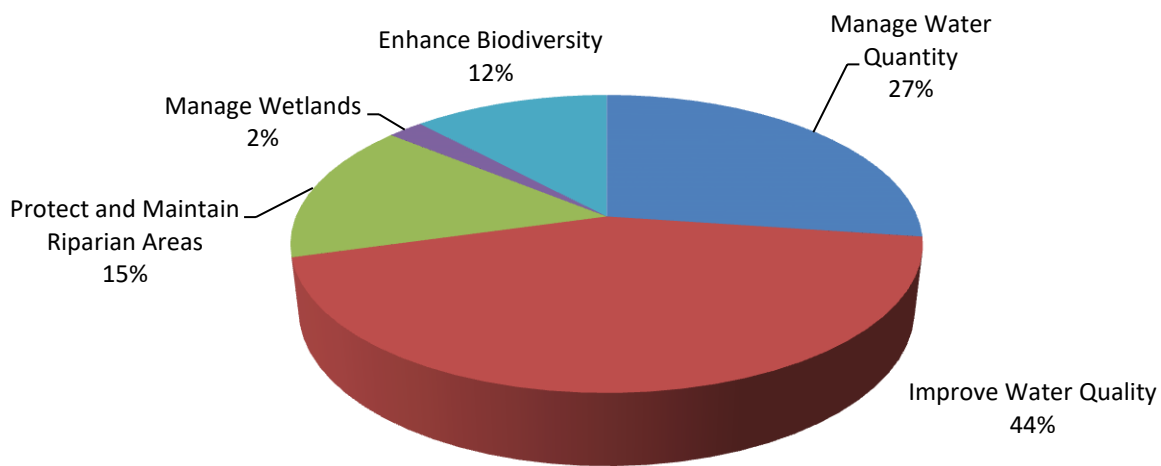


Figure 2. Lesser Slave IWMP implementation effort by watershed theme (percentage of actions taken).

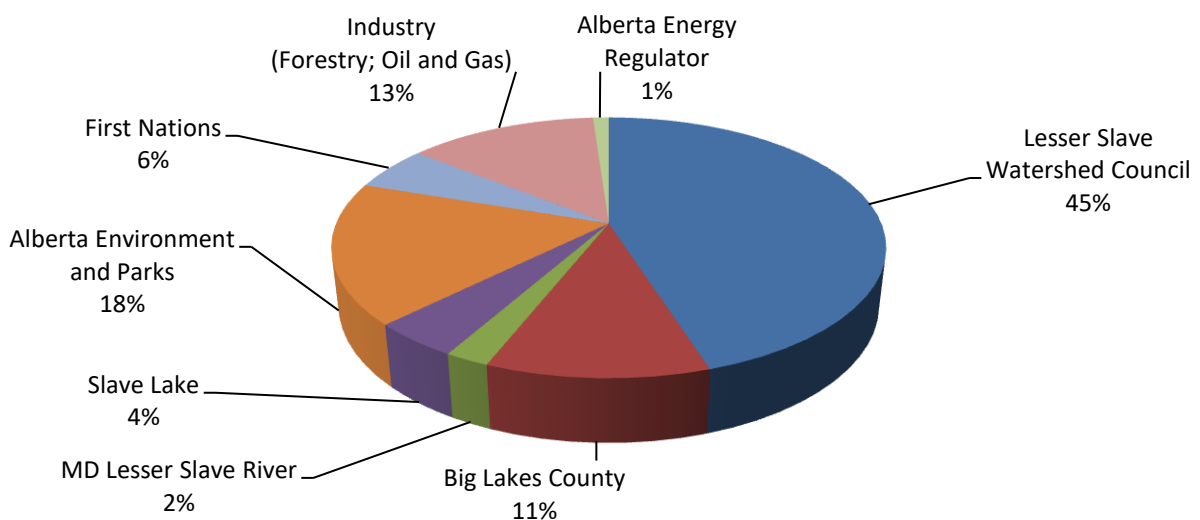


Figure 3. Lesser Slave IWMP implementation support from partners.

Looking Forward

The LSWC will continue to work to implement priority recommendations in the Lesser Slave IWMP in collaboration with partners and stakeholders.

Key actions planned for 2020-2021 include:

- Continuation of tributary monitoring program
- Focused, collaboration in the Swan River watershed to improve habitat connectivity, riparian health and water quality
 - Fall workshop planning is underway
 - Monitoring for specific water quality indicators, including metals will continue
- Exploring options to initiate a long-term lake monitoring program
- Continued implementation of rural BMPs in collaboration with municipalities and landowners
- Shoreline management and steps to address development concerns
- In the Town of Slave Lake:
 - Upgrades to the Town sewage treatment plant to be completed in 2020; will reduce effluent nutrient and sediment load
 - Use of the new flood mapping and Sawridge Creek Study (AEP 2019-2020) in land use planning
 - Updates to the Storm Drainage Master Plan (2020-2021) to include integrated stormwater management policies



Resources Available

Visit www.lswc.watershedresources for additional information on invasive species, lake stewardship, water quality, municipal resources, riparian areas and wetlands, and biodiversity, including links to:

- Alberta Environment and Parks – Respect Our Lakes. Brochure Series.
- CPP Environmental. 2019. Sediment Quality in Lesser Slave Lake Near the Mouth of the Swan River. Prepared for SUEZ.
- Ducks Unlimited Canada. 2019. Wetland Best Management Practices for Forest Management Planning and Operations Practitioner Guide. Online Resource.

FOR MORE INFORMATION

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