

BEAVER RIVER INTEGRATED WATERSHED MANAGEMENT PLAN

Engagement Session II: Indicators, Targets and Thresholds, Preliminary Recommendations

What We Heard Summary Document



Prepared by: Palliser Environmental Services Ltd.

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Acknowledgements

The Beaver River watershed is located within the traditional lands of the Dene, Cree, and Métis. This recognition represents respect and gratitude to share in the land and honours our responsibility to truth and reconciliation as members of Treaty 6, 8, and 10 territories and the Métis Homeland.

LICA's IWMP Committee would like to thank everyone who participated in the Beaver River Integrated Watershed Management Plan Engagement Session II. Your comments and feedback are important to help shape a plan that is locally relevant and implementable in the long-term. We would also like to thank the Government of Alberta for providing funding to support this initiative, and Cold Lake First Nations for assisting in the development of the interactive map survey.

Note: Front cover image taken during Engagement Session II, Bonnyville C2.

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Executive Summary

The Beaver River Integrated Watershed Management Plan (IWMP) Engagement Session II was held March 3 and March 7, 2022. Two in-person engagement sessions were hosted on March 3, 2022, and one virtual engagement sessions was held for stakeholders and Indigenous communities on March 7, 2022. A total of 55 people participated in the engagement sessions. Thirteen people completed the survey that was used to evaluate engagement session quality. Four individuals completed the online response form aimed at determining the level of support for the Beaver River IWMP Draft #1 goals and objectives, indicators, targets and thresholds, and preliminary recommendations.

The following represents a general summary of feedback related to the Draft #1 IWMP for each main watershed value. The summary considers the discussion held during the engagement sessions and the feedback received through the online response form.

Water Quantity Much of the discussion was related to increasing local understanding of natural variability in water levels to better plan for development. Participants indicated a need for floodplain mapping. Participants discussed future groundwater well developments and the need to assess the benefits of new individual well developments versus community water supplies. A need for improved streamflow measurement at rivers and lake tributaries was identified. Additional monitoring of water withdrawals associated with traditional uses (agricultural use and household use) should also be considered.

Water Quality It was suggested that the goal “Surface water and groundwater quality ... meet end-use criteria” was not attainable and should be revised since water quality may not be suitable for all desired uses naturally. There were many concerns raised regarding private septic disposal and community treated effluent discharge to surface water and its impact on water quality. More direction and regulation are sought to manage these systems. Engagement session participants also highlighted the need to improve management of agricultural runoff and municipal stormwater to prevent contamination of surface water, and generally agreed with the target to reduce external phosphorus loads to lakes. Participants stressed the need to assess other sources of contamination that were not addressed in Draft #1, including heavy metals, and potential impacts of jet fuel wasting. The number of abandoned wells were also a concern for groundwater quality.

Riparian Areas and Wetlands In every discussion, it was clear that there is a strong desire to maintain riparian and wetland condition to support healthy aquatic systems. Tools to maintain and restore healthy riparian areas were discussed, and included a combination of consistent policy, and the application of beneficial management practices for development and industry. Engagement session participants were seeking clarity regarding terminology and existing rules related to riparian setbacks, buffers, bed and shore, environmental reserve and municipal reserve. The use of incentives to achieve riparian goals was recommended.

Biodiversity It was suggested that the Beaver River IWMP should focus on aquatic species, rather than terrestrial species. There was discussion regarding how biodiversity may be increased in agricultural areas through cover crops, use of perennial forages, and producer participation in the Environmental Farm Plan program.

Land Management Recommendations in the plan should align with the Cold Lake Subregional Plan. Some thought that this was somewhat out of scope. Opportunity to influence the future Recreation Management Plan within the Cold Lake Subregion through recommendations in the Beaver River IWMP was noted.

Overall, there was strong agreement for the Beaver River IWMP goals and objectives, and for the indicators, targets and thresholds that have been established. Further effort should be focused on clarifying existing riparian setback requirements and proposed recommendations. Next steps will focus on refining recommendations and drafting an implementation strategy that outlines roles and responsibilities, timeline priorities and opportunities. A summary of how feedback was considered in the final IWMP will be prepared at the end of the planning process.

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1.0 Introduction

An Integrated Watershed Management Plan (IWMP) is a guidance document and planning tool for resource managers, including governments, planners, Indigenous communities, other stakeholders, and landowners who manage water and land resources. The IWMP identifies goals for improving and/or maintaining watershed health, and puts forward recommendations on how to reach those goals. As a designated Watershed Planning and Advisory Council, LICA is facilitating the development of the IWMP for the Beaver River watershed with the vision of “A healthy Beaver River watershed for the future”.

LICA and LICA’s IWMP Committee are committed to engaging with stakeholders, First Nations, and Métis at key points in the planning process to achieve planning success. To facilitate engagement, in-person engagement sessions were scheduled as well as a virtual session to review the Draft #1 Beaver River IWMP indicators, targets and thresholds, and preliminary recommendations and seek feedback from stakeholders, First Nations, and the Métis. An online response form was distributed to provide additional opportunity for input, and confirm agreement with the direction of the Draft #1 IWMP.

This document provides a summary of feedback provided during Engagement Session II, which will be considered by the IWMP Committee in support of Draft #2. Information on the Beaver River Watershed IWMP and supporting documents including the Beaver River State of the Watershed Report (2013), the Beaver River IWMP Terms of Reference (TOR) and Summary Document, and the Draft #1 IWMP and Summary Document can be found at www.lica.ca/watershed/iwmp.

2.0 Methods

2.1 Engagement Sessions

LICA and the IWMP Committee hosted three engagement sessions in support of the Draft #1 Beaver River IWMP. An in-person engagement was held at the Bonnyville Centennial Centre (C2) on March 3, 2022 from 10:00 am to 3:00 pm. All First Nations and Métis were contacted to determine interest in a private in-person engagement session. Cold Lake First Nations (CLFN) scheduled a meeting that was then hosted by CLFN on March 3, 2022 from 6:30 pm to about 9:00 pm.

The engagement sessions included a presentation of background information on the IWMP process and an overview of the Draft #1 Beaver River IWMP that was delivered by Palliser Environmental Services Ltd (PESL). Discussion was facilitated by PESL throughout the presentation with time allocated to discuss the issues of water quantity, water quality, riparian areas and wetlands, biodiversity, land management, climate change, and knowledge and understanding. During each workshop, links were provided to the LICA IWMP website where participants could find background information, the Engagement Session II response form directed toward indicators, targets and thresholds, and preliminary recommendations, and the Engagement Session evaluation. Notes were taken by LICA staff during each session and compiled by PESL. Key comments were drawn from the discussion notes and summarized into main feedback points. Key discussion points and feedback is provided in Section 3.1.1.

The virtual engagement session was hosted on March 7, 2022. The session followed a similar but condensed format as the in-person session format.

An online response form was created to receive feedback on the Draft 1 IWMP, and assess agreement with the overall direction of the plan. The response form was available from March 3, 2022 to March 21, 2022.

2.1.2 Discussion Guide

For each watershed value (water quantity, water quality, riparian areas and wetlands, biodiversity, land management, climate change, and knowledge and understanding), participants were asked to consider the following questions while referring to the Key Contents Summary Document for details pertaining to each question.

- Q1.** Are the main concerns regarding watershed management represented?
- Q2.** Goals and objectives- Are all goals and objects reflected at this time? Can you suggest additions?
- Q3.** Are the indicators and measures suitable? (Is there consensus at the table?) If not, suggest additional or more suitable indicators.
- Q4.** Are targets and thresholds appropriate? If not, indicate why and suggest additional targets and thresholds.
- Q5.** What key recommendations would you make to achieve goals? (Try to think of 2-3 key recommendations per value)
- Q6.** Consider knowledge and understanding in each section – what messages need to be developed/shared?

2.2 Survey and Response Form

2.2.1 Engagement Session Evaluation

The engagement session evaluation included questions on the quality of the engagement session and areas for improvement. The survey was distributed to all engagement session participants at the end and/or following completion of each session. Survey Monkey was used to create the session evaluation. This software automatically generates a summary of the results describing the data in simple bar graphs depicting frequency distribution, pie charts, and text displays of participant responses. Results were compiled based on responses to questions using the Likert scale (strongly agreed, agreed, neutral, disagreed, strongly disagreed) (Likert 1932). Key comments were extracted from written answers, and summarized in Section 3.1.2 with complete responses provided in Appendix B.

2.2.2 Beaver River IWMP Response Form

The response form was created using Google Forms and included a brief introduction to the IWMP, and questions regarding goals and objectives, indicators, targets and thresholds, and preliminary recommendations identified in the Draft #1 IWMP. Questions regarding the quality of the response form were included. Generally, participants were asked to rate their level of agreement with each watershed issue using a Likert scale (Likert, 1932), and to provide additional comments if they disagreed with the information presented. The response form was made available on the LICA IWMP website for three weeks, and was sent to all engagement session participants and individuals on the IWMP contact list. Survey and response form data was analyzed using descriptive statistics. Data were described using frequency distributions, which displays the number of times each value on the Likert scale was selected. The mode (or most frequent response) was used to determine the general level of agreement

associated with each issue (Sullivan and Artino 2013). All comments were extracted from written answers and summarized in Section 3.2.2.

2.2.3 Interactive Map Survey

An interactive map survey was developed using ArcGIS Survey 123 software (LICA 2022). The intent of the survey was to identify areas in the watershed people visit for a variety of reasons. Participants were asked to use a legend to complete a statement:

EXAMPLE: I _____ at this spot because...

I like to swim at this spot because the water is clean & healthy, and the area is accessible.

The legend included the various ways people may interact with the watershed, including swimming, boating, hunting, fishing hiking, harvesting/gathering, use of off-highway vehicles, camping, among others. The complete legend used for the interactive survey is found in Appendix A.

3.0 Results

3.1 Participation

Overall, 55 people participated in the IWMP Engagement Session II (Table 1). The Virtual session had the highest number of participants (21) and the in-person sessions had a similar number of participants at each session. Eighteen people attended the Bonnyville C2 session, and 16 people attended the session at Cold Lake First Nations. Specific affiliations of engagement session participants are found in Appendix A.

One person participated in the in-person interactive map survey that was mounted on the wall during the in-person engagement at the Bonnyville C2.

Table 1. Summary of participation in IWMP Engagement Session II, March 2022.

Date	Location	Participants
March 3, 2022	In-person, Bonnyville C2	18
March 3, 2022	In-person, Cold Lake First Nations	16
March 7, 2022	Virtual	21
	Total Participation	55

3.2 Summary of Key Feedback and Discussion

***Note feedback from Cold Lake First Nations (collected during the private engagement session) is not included in this summary document. Key feedback is summarized and available to Cold Lake First Nations and will be considered alongside all feedback received during Engagement Session II.**

3.2.1 Bonnyville C2. March 3, 2022

Morning Presentation Discussion

- Question regarding the benefits of the IWMP to municipalities
 - The IWMP establishes common goals for watershed management across jurisdictional boundaries, prioritize recommendations, leverage funding and share resources to benefit watershed resources long-term
- There is an updated Fiera report for the Upper Beaver River watershed (Fall 2021)
- Question regarding the application of setbacks and if they should differ if there is one cottage vs. a full residential development
 - Consistency is key moving forward in the future, one cottage can lead to more development; also, cumulative footprint of multiple “one cottage” lots
- Floodplain studies and mapping should be completed for areas considered for development; full degree of natural variation in water levels should be understood
- Are there regulations against allowing cattle/livestock to drink from rivers/creeks to protect riparian areas?
 - Not really for cow/calf operations; aspects of the Water Act and Environmental Protection and Enhancement Act (EPEA) may apply, but must report and prove impacts; there are regulations within the Agricultural Operations Practices Act (AOPA) that regulate intensive livestock operations (depends on animal numbers and type of operation)
- Other incentive programs available for funding for agriculture (e.g., ALUS program, Environmental Farm Plan, Watershed Resiliency and Restoration Program)
- Keep Our Lakes Blue is a local, LICA campaign that should be promoted rather than Love Your Lakes

Afternoon Group Discussion and Reports

Group 1

- Worked through in a round table
- Things not discussed, and targeted how recommendations could be implemented

Water Quality

- Septic management, heavy metals and target loads in groundwater
- Consider *E. coli*, fuel stations

Riparian Areas and Wetlands

- Environmental Reserve (ER) and Municipal Reserve (MR) for riparian management – state the actual rules
- Education – knowledge and understanding
 - Define bed and shore and communicate this
 - There should be a clear distinction between lake lot owners and municipalities
 - Target audience could be reached via development permits and real estate agents
- Wetland inventories should be undertaken
 - Wetland loss, restored wetlands remain within the estimated area that has been lost(?)

- Livestock watering and management considerations to maintain riparian areas and wetlands
- Riparian restoration: encourage planting and naturalization
- Identify other ways to encourage development setbacks
- Promote shoreline restoration – no incentives

Groundwater

- Number of water wells abandoned and active
- Create zones to stipulate wells being drilled for water source vs. existing sources
 - Example, if near regional lines, should tie in rather than dig new well
- Septic management, no grandfathering, look into provincial regulations
- Concerns with contaminants, leads to increased monitoring
- Drinkability, more education on abandoned wells

Riparian Areas and Wetlands

- Wetland restoration – encourage wetland compensation should occur in the same watershed – to target net loss
- Encourage plantings, education missing piece and mapping wetlands and floodplains
- Mapping of Environmental Reserve – Crane Lake is the only example in the MD where ER and MR is mapped and communicated to the public; targets could be new lake lot owners, realtors,
- Planning and development group – when people purchasing lake lots, need to send package to potential new owner what they can and can not do on their new lot

Biodiversity

- Invasive species
 - Need for regulations and more education
- Transfer of disease – whirling disease
- Woody vegetation can assist with water quality and erosion control
 - Promote shelterbelts, maintain current vegetation
- Firesmart practices
- Endangered species
- Environmental Farm Plan – Habitat management tool to increase sensitive species habitat
- Education program
- Cover crops adding biodiversity of uplands, adding and increasing perennial forages
- Boat wash stations
- Grebes – sensitive species mapping
- Cormorants

Land Management

- Watercourse crossings, gravel paved roads – limiting the amount of water course crossings
- Floodplain and upland management, agricultural BMPs, aggregate development of sand and gravel – and resources in riparian areas, reclamation targets
- Sand, snow and salt management
- Trash off bridges and other plans – train trestles – human health hazards

Group 2

- Discussion around the cohesion of all categories and how they are integrated
- Biodiversity – controlled boat launches to manage people creating own paths

Water Quantity

- Discussion around water flows into SK (68%), requirements for collaborations for tracking and water management
 - Is there measures in place to track flows, is there collaboration with SK?
 - Are there any measurement stations to record inflows? There should be – consider evaporation losses at Cold Lake
- Are there graphic comparisons we can view (website)?
 - Linkages to historical data
 - Water balance and evaporation
- Are all tributaries being monitored? Cooperation and communication is needed between regions; Data gap, more collaboration needed to collect data
- Gauging stations to monitor inflows (in addition to outflows)
- Recommendations
 - Greater collaboration and communication of conditions
 - To be more reflective of inflows and outflow measurements
 - Tracking turbidity (colours of water)
 - Municipalities contribute their effluent into the Beaver River; Jessie Lake Outlet into Charlotte Lake; lagoons pump treated water
 - Stormwater flows into the Beaver River via surface flow (Palmer Creek); stormwater bylaws for Cold Lake is that it must be separate from grey water
 - Municipal stormponds
- There is a need for additional floodplain mapping, for areas not currently delineated by the province
- A need for more regulations around building in the floodplain; municipalities on the hook should floods occur
- It is important to know floodplain history (i.e., cycles)
- Beavers provide benefits! Floods and droughts
 - Beaver management should be assessed based on individual scenarios
 - Re-instate assessor (Fish and Wildlife) for in-person assessments
 - More education
- Temporary diversion licenses
- Land Management
 - Wetland inventory
 - Upland management, agricultural bmps
 - Reclamation targets for aggregates
 - Silviculture

Water Quality

- Concerns regarding:
 - Water well abandonment
 - Septics and septic abandonment
 - Sewage leaks/septic leaks into lakes (Moose Lake/Crane Lake) from older homes

- Need for reporting leaks as there is a lack of reporting
- Have inspectors assess sewage leaks and have broken septic systems required to be fixed
- Increase in AHS finding issues with sewage leaks
 - Grandfathering old requirements – at what stage should grandfathered properties be brought into new requirements – at sale? Not possible if inherited
 - Recommendations: If septic is found to be failing, has to be brought up to code; has to be reported AHS – are visible in winter as frozen icefields
- Radon, jet fuel, heavy metals
 - CCME guidelines (Federal)
 - AHS guidelines
- Total and suspended solids targets
- Set targets for watercourse crossings in recreation areas
- Bird impacts – *E.coli*
- Boat fueling stations
- Want to monitor pH, acidity, alkalinity, oxygen, temperature as they are important for the health of fish and other aquatic species
- A lot of cattle activity on shoreline of the Beaver River. Concern regarding their bi-products contaminating water
- Runoff going into water carrying contaminants (e.g., pesticides, fertilizers)
- Recommendation – Adequate buffer zones from agricultural production/pollution; Wetlands are important as they act as filters
- Ability to develop ponds to act as filter and reduce flow
- Importance to heavily enforce development setbacks
 - Land balancing requirement (you can wipe out a slough as long as it is replaced)
- Municipalities – how treated effluent is discharged to Beaver River
- Stormwater discharge through surface drainage (ponds at the golf course)
- More regulations on floodplains and mapping
- How can beaver help with flood and drought
 - Discussion on recommendations can be made from a Fish and Wildlife assessment

Riparian Areas

- A need for more education and funding to fence off livestock from accessing the water and protect the riparian area
- Active programs to plant trees in riparian areas
- Is there any indicators re- calcium – runoff from winter roads and monitoring on its effects (salt water management plans)
- Increase in beaver activity in Cold Lake taking down the trees in riparian areas
- Paths etc. should stop destroying riparian areas
- Should be more discussion on development setbacks
 - Quantity of developments should impact widths – 1 cottage vs. subdivision;
 - Balancing compensation and loss
- Ice movement
- Municipalities and province could purchase property from those who wish to sell – land swap
- Carbon Credit System
 - Oil and gas can purchase land/trees

- Working with the land that we have
- Similar to caribou protection program
- Need for a comprehensive wetland inventory
- More education and funding for agriculture and livestock management
- Land swap with province for areas requiring protection

Biodiversity

- Controlled (managed) boat launches that prevent people from creating their own; will help to control invasive species
- Stream crossings
 - How to maintain one controlled crossing?
- Stream crossings, 9.5.3. include bridges and crossings; need for more enforcement
- A need for enforcement for motorized crossings

Land Management

- Are there thresholds or capacity requirements for livestock feedlots that access water? Is there monitoring in place?
 - Depends on cattle herd sizes. There are capacity requirements for livestock feedlots in place, this is regulated by the Agricultural Operations Practices Act. Cow/calf operations are managed differently
- Upland management, agricultural BMPs
- Reclamation targets for aggregates
- Silviculture

3.2.2 Virtual Engagement Session, March 7, 2022

Notes that were taken during the virtual engagement session captured the following discussion:

Water Quantity

- All culverts should be assessed, not only hanging culverts
- Specific to Agriculture: there are a number of water sources developed that have not been approved or licensed, including dugouts and spring developments
- Refer to the Green Crossing Project
- TSAG is a science and advisory group that has completed Source Water Protection Plans

Water Quality

- A question regarding the goal that water quality should support end uses; if the system is already eutrophic naturally, the goal would be difficult to attain
- Speak to Ducks Unlimited Canada, spoke about the Sand River and north-east water flow.

Riparian Areas

- Setbacks should be dependent on the intensity of disturbance. Forests: zero setbacks for ephemeral watercourse when dry or frozen during operations. Should look at ways to identify setbacks. AB forestry summary of harvest for the province. Suggest discussion around longevity of the setback; sites should immediately be returned to their natural state
- Discuss legislative standards, and discretionary use
- Municipalities generally apply smaller setbacks compared to industry setbacks

- Zero setbacks for ephemeral systems, trees harvested up to waters edge during dry or frozen condition
- Summarize and report on remediation efforts (success rate of reforestation activity)
- Smoky Lake uses riparian setback matrix that requires geo-technical investigation
- Lac La Biche applies a 6 to 30 m maximum width setback
- The Beaver River Plan should identify ways to incentivize riparian restoration where it has been impacted
- Climate Change and the effect on the riparian reports. SOW Reports

Biodiversity

- Species at Risk, should use stronger language around invasive species, direct; consider language around invasive species – no new introductions, eradication of threats
- Plan should speak to the importance of habitat connectivity in the watershed
- Include species-at-risk; there is a vascular plant book that has been published and may provide some insight
- Few lakes are stocked with fish due to low water levels
- Need to limit spread of invasives; currently there are no decontamination stations in the north, and highway check stop programs ended; there is a gap in protection - ALMs is asking Province to re-instate the check stops as this management gap creates a high risk to aquatic systems

Climate Change

- A climate study was completed for the Battle River Watershed Alliance – as a prairie watershed example
- Interest in Lac La Biche County – Boreal climate change based on certain areas where development has occurred
- Province has data, but this needs to be shared

Land Management

- Refer to the SubRegional Plan, align recommendations to be sure there is consistency in approaches

3.2.3 Interactive Map Survey

One response was received at the in-person engagement session at the Bonnyville C2, and 10 addition responses were provided following the in-person and virtual engagement. Results are summarized in Table 3.

Table 3. Interactive map survey results.

Location	I like to...	Because...
Ardmore	Wildlife watching (birds, other)	There is a visible wildlife presence
Beaver Lake	Swim	The water is clean and healthy (i.e., no sediment, algae, litter, etc.) The water quality has been and is consistently good
	Boat (unmotorized)	The shoreline appears healthy and plant species are diverse, with no erosion
	Hunt	There is a healthy diversity of wildlife

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Location	I like to...	Because...
		The desired wildlife species are present
		There is access to a waterbody
		There is access to a waterbody
		Where there is access to a water body, the water is consistently clean
	Fish	N/A
	OHV Use (Summer)	The area is remote, fewer people
		There is good sightseeing and wildlife
	Camp	The area is undisturbed/in a natural state, and well kept
		The area is remote, fewer people
		There is access to a waterbody
Where there is access to a waterbody, the water is clean, accessible, and is consistently good		
Where there is access to a waterbody, the shoreline is healthy, no erosion		
	The plant species appear healthy and diverse	
Beaver River	Boat (Un-motorized)	Other
	Hunt	N/A
	Fish	N/A
	Hike	N/A
Cold Lake	Boat (Motor)	N/A
	Hunt	The desired wildlife species are present
	Fish	Tags are not required
		Other
	Hike	The area is undisturbed/in a natural state
		The area is remote, so fewer people
	Harvest	The area is undisturbed/in a natural state
	OVH Use (Summer & Winter)	The area is easily accessible
	Camp	There is access to a waterbody
Wildlife watching (birds, other)	There is a visible wildlife presence	
	There is access to a waterbody	
	Other	
Crane Lake	Swim	The water is clean & healthy (i.e., no sediment, algae, litter, etc.)
		The water quality has been and is consistently good
		The area is accessible
		The shoreline vegetation is healthy and diverse, with no erosion
	Boat (Un-motorized)	The water is clean (i.e., no sediment, algae, litter, etc.)
		The water quality has been and is consistently good
		The area is accessible
		The shoreline appears healthy and plant species are diverse, with no erosion
	Hike	The area is undisturbed/in a natural state
		The area is remote, so fewer people
		This area is easily accessible
		There is access to a waterbody
	X-country Ski or Snowshoe	N/A
Hike	The area is remote, so fewer people	
	This area is easily accessible	

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Location	I like to...	Because...
Kikino Métis Settlement		There is good sightseeing and wildlife sightings
	Harvest	The area is remote, so fewer people
		There is access to a waterbody
	Camp	The area is easily accessible
		There are amenities
There is access to a waterbody		
Muriel Lake	Hike	There is access to a waterbody, the water is consistently good
	Harvest	The desired plants are present and healthy
	Use OHVs Summer and Winter	The area is easily accessible
		There is good sightseeing and wildlife
	Camp	There is access to a waterbody
	Wildlife watching (birds, other)	There is a visible wildlife presence
	OVH Use (Summer & Winter)	The area is easily accessible
		There is good sightseeing and wildlife
	X-country Ski or Snowshoe	The trails are marked and groomed
		This area is easily accessible
Good sightseeing and wildlife sightings		

Location	I don't like to...	Because...
Beaver Lake	Camp	The area is too touristy
Beaver River	Swim	The water is not clean (i.e., sediment, algae, litter, etc.)
		The water quality has degraded over time
		There are known algal blooms
		The area is too busy/touristy
		This area needs proper amenities
		The shoreline vegetation is not healthy and/or there is erosion
Cold Lake	Swim	The water quality has degraded over time
	Hunt	Other
	Fish	The water is not clean (i.e., sediment, algae, litter, etc.)
	Hike	Other
	Harvest	The desired plants are present but unhealthy
	OHV Use (Summer & Winter)	Other
	Camp	There are no amenities
Crane Lake	Boat (Un-motorized)	The water is not clean (i.e., sediment, algae, litter, etc.)
Kikino Métis Settlement	Harvest	The area is too touristy
		The desired plants are present but unhealthy
		Where there is access to a waterbody, the water is not clean, and the quality has degraded over time

3.2.4 Online Response Form Results

About the Participants

Only four people completed the online response form titled “Beaver River IWMP Draft #1 Indicators, Targets, Thresholds and Preliminary Recommendations”. All respondents indicated that they had read the Beaver River IWMP Draft #1 Key Content Summary Document and had participated in Engagement Session II.

The community that respondents best associated with were Cold Lake First Nations (1), Lac La Biche County (1), the MD of Bonnyville (1), and Town of Bonnyville (1). The survey respondents ranged in ages from 35-44 (1), 45-54 (1), and 65+ (2), and belonged to the following agency, group or sectors:

- First Nations
- General Public
- Industry, Oil and Gas
- Agriculture, Forestry and Rural Economic Development

Goals

Q. Seven goals were developed for the Beaver River IWMP. Do you agree with these goals?

Objective	Yes Responses	No Responses
Secure, reliable water supplies are available for desired uses (i.e., environmental, First Nations and Métis, municipal, agricultural, industrial and recreational).	4	0
Surface water and groundwater quality that is protected from contamination, maintained within the range of natural variability, and meets end-use criteria.	4	0
Healthy riparian areas and wetlands contribute to watershed resiliency with respect to flood and drought, quality water, and critical habitat.	4	0
Fish, wildlife, and plants are healthy and resilient to changing environmental conditions. Their ecological, social, and cultural roles in the watershed are sustained.	4	0
Cumulative effects of diverse land uses are reduced or mitigated to maintain and/or improve ecosystem health.	3	1
Climate change considerations are central to all watershed-related planning and decision-making processes.	4	0
Indigenous Knowledge and scientific research guide decision-making.	4	0

Q. If you answered "No" to any of the goals listed above, please explain.

R. The land use goals are likely quite a bit out of scope for what the IWMP can reasonably be expected to achieve. I would suggest integrating expectations with the CLSRP once it is released. In addition, the IWMP is probably not the right planning document to attempt to address non-aquatic species at risk, or overall terrestrial habitat and biodiversity outcomes.

Q. Do you think there should be additional goals for the Beaver River IWMP (please specify)?

R. Through discussion and engagement, additional goals may emerge and or existing ones may change.

Objectives

Q. Each of the seven goals has a set of objectives. The objectives for Goal 1. Water Quantity are listed below. Please indicate your level of agreement with these objectives.

Objective	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Don't Know
Review and determine status of existing Water Conservation Objectives in the original Cold Lake Beaver River Water Management Plan.	3	1				
Review the need to establish Water Conservation Objectives for streams and lakes outside of the original CLBR WMP planning area.	2	2				
Recommend strategies to address fluctuating water levels at priority lakes where human impacts contribute to flooding or low water levels.	2	2				
Recommend strategies that encourage water conservation.	2	2				
Understand the status of current surface water and groundwater initiatives and recommend strategies to better manage the resource.	3	1				

Q. The objectives for Goal 2. Water Quality are listed below. Please indicate your level of agreement with these objectives.

Objective	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Don't Know
Water Quality Objectives for the Beaver River and select tributaries that are compatible with the Surface Water Quality Framework.	2	2				
Establish Water Quality Objectives for major recreational lakes.	2	2				
Identify stormwater management targets and Low Impact Development strategies to minimize development impacts to water quality (and quantity).	2	2				
Identify appropriate landuse, management and stewardship strategies to maintain and/or improve water quality.	3		1			

Q. Do you think there should be other objectives for the Water Quality goal (please specify)?

R. Identify and develop a strategy regarding poorly functioning septic systems near surface water bodies

R. See previous answer.

Q. The objectives for Goal 3. Riparian Areas and Wetlands are listed below. Please indicate your level of agreement with these objectives.

Objective	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Don't Know
Establish riparian setbacks and management objectives/targets that are applied consistently throughout the watershed.	2	1	1			
Recommend actions that contribute to healthy riparian areas and wetlands.	2	2				

Q. Do you think there should be other objectives for the Riparian and Wetland goal (please specify)?

R. Setbacks legislatively in place are generally from the edge of the waterbodies/watercourses and are not in fact setbacks from riparian areas. Further work should be done to understand the various legislative watercourse buffers and development setbacks in order that the report can more effectively recommend the appropriate levers to encourage better setbacks. Another objective should be ways to incentivize the restoration of riparian habitats where it has been fragmented or disturbed.

R. Maybe others will come to light through chatting

Q. The objectives for Goal 4. Biodiversity are listed below. Please indicate your level of agreement with these objectives.

Objective	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Don't Know
Identify appropriate land use targets and thresholds (e.g., stream crossings and linear features) to better understand and track cumulative impacts on aquatic and terrestrial habitat.	3			1		
Recommend best management practices and actions that improve wildlife habitat, health, and biodiversity.	3			1		
Recommend appropriate actions to address risks associated with invasive species.	3		1			

Q. Do you think there should be other objectives for the Biodiversity goal (please specify)?

R. These goals are a bit out of scope and better managed in the CLSRP.

R. Other objectives may come to light thru discussion

Q. The objective for Goal 5. Land Management is listed below. Please indicate your level of agreement with these objectives.

Objective	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Don't Know
Recommend appropriate water and land management practices that mitigate impacts of industry and development (i.e., urban, recreation, agriculture, oil and gas, forestry, and sand and gravel extraction), and maintain and/or improve ecosystem health.	3		1			

Q. Do you think there should be other objectives for the Land Management goal (please specify)?

R. This goal as well seems somewhat out of scope.

Q. The objective for Goal 6. Climate Change is listed below. Please indicate your level of agreement with these objectives.

Objective	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Don't Know
Recommend climate actions and climate change mitigation and adaptation strategies related to watershed management for consideration by decision-makers, resource managers and residents.	2	2				

Q. Do you think there should be other objectives for the Climate Change goal (please specify)?

No responses.

Q. The objectives for Goal 7. Knowledge and Understanding are listed below. Please indicate your level of agreement with these objectives.

Objective	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Don't Know
Assess and prioritize knowledge gaps in the Beaver River watershed.	3	1				
Recommend outreach materials and other tools to disseminate Indigenous Knowledge, and scientific research related to watershed health.	1	3				

Q. Do you think there should be other objectives for the Knowledge and Understanding goal (please specify)?

No responses.

Indicators, Targets and Thresholds

Indicators for Water Quantity are Water Supply, Water Allocation and use, and Groundwater. Five measures are suggested for these indicators. Please indicate your level of agreement with these measures.

Measures	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Don't Know
Streamflow volume (deviation from natural condition)	2	1	1			
Lake water Levels	3	1				
Water Conservation Objectives/Instream Flows	3	1				
Water licences and registration; water use reports	3		1			
Groundwater levels						

Q. Do you think there should be any other indicators or measures for Water Quantity (please specify)?

R. Actual water withdrawals very difficult to measure with extent of unreported agricultural and personal use.

Indicators for Water Quality are Lake Trophic Status, Water Chemistry, Aquatic Life, and Water Temperature. Five measures are suggested for these indicators. Please indicate your level of agreement with these measures.

Measures	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Don't Know
Phosphorus, chlorophyll a and secchi disk measurements	2	1				1
Dissolved oxygen, salt, nutrients, metals, pathogens, other toxins (arsenic). Concentration and/or load, spatial and temporal trends	2	2				
Number of parameters and frequency that parameters exceed established guidelines or objectives	1	2				1
Species diversity and abundance	3	1				
Optimum (range) and maximum (threshold) water temperature	2	1	1			

Q. Do you think there should be any other indicators or measures for Water Quality (please specify)?

No responses.

Q. Indicators for Riparian Areas and Wetlands are Riparian Function and Wetland Cover. Five measures are suggested for these indicators. Please indicate your level of agreement with these measures.

Measures	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Don't Know
Riparian health scores (condition)	3	1				
Intactness (condition, extent)	2	2				
Percentage wetland area	2	2				
Wetland loss	2	2				
Impact thresholds (i.e., footprint on each wetland type)	3	1				

Q. Do you think there should be any other indicators or measures for Riparian Areas and Wetlands (please specify)?

R. These are really solid indicators for an overall picture of riparian health and connectivity

Q. Indicators for Biodiversity are Fish, Wildlife and Vegetation. Six measures are suggested for these indicators. Please indicate your level of agreement with these measures.

Measures	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Don't Know
Species composition (variety of seasonal and resident species)	2	2				
Population estimates	1	3				
Index of Biological Integrity	2	1	1			
Regulated invasive plants, disturbance and rare plants	3	1				
Percentage change in land cover (footprint, linear disturbance, critical habitat)	2	1	1			
Watercourse crossings and stream connectivity.	3	1				

Q. Do you think there should be any other indicators or measures for Biodiversity (please specify)?

No responses.

Q. Indicators for Land Use are Change to Human Footprint, Population and Access. Three measures are suggested for these indicators. Please indicate your level of agreement with these measures.

Measures	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Don't Know
Percentage change in land use cover (agriculture, forestry, oil and gas)	3	1				
Number of people in the watershed	1	2		1		
Road density; traffic counts	2	1		1		

Q. Do you think there should be any other indicators or measures for Land Use (please specify)?

R. Number of people and traffic counts likely has an unknown correlation to watershed health. If managed appropriately the number of people and traffic counts could be irrelevant to overall ecosystem health, while conversely a small number of people conducting damaging activities can have a very large impact.

Preliminary Recommendations

Q. Preliminary draft leading recommendations to meet each of the goals were presented. Do you have any ideas for additional recommendations? Consider water quantity, water quality, riparian areas and wetlands, biodiversity, climate change, land management, and knowledge and understanding.

R. Incentivizing and improving disturbed riparian areas, and areas in which loss of natural vegetative cover is contributing to negative watershed impacts.

R. Septic contamination of surface water and potential contamination threats to groundwater from domestic water wells.

R. From an indigenous perspective, Treaty and Constitutional Rights must be emphasized more with the local non-indigenous population being provided more information and therefore educated as to the significance of this to indigenous peoples.

Final Thoughts

Q. Please provide any additional comments that you would like the IWMP Committee to consider.

R. Riparian setbacks and watercourse buffers should be appropriate for the tenure (i.e., duration), level of permanence and impact of the activity. A standard distance based upon all activity types or land uses is not particularly relevant.

R. Later

Help Us Improve Our Survey Quality

Q. The survey was an effective way to provide input regarding watershed goals and objectives, indicators, targets and thresholds, and preliminary recommendations to consider in the Beaver River IWMP.

	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
Response	2	1	1		

Please recommend ways to improve the quality of our next survey.

Better input is likely to come with focused interviews. For quantitative feedback, the survey is reasonable and I hope that many people will take the opportunity to contribute.

Q. If you would like to be added to the Beaver River IWMP email list, please provide your email below. You will only receive information regarding the IWMP progress.

No responses.

4.0 Engagement Session Evaluations

4.1 Bonnyville C2, In-Person Session

Thirteen session evaluations were returned by participants.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Not Applicable
Overall, this was a very useful workshop	8	5				
The workshop met or exceeded my expectations	6	6	1			
My areas of concern were addressed	7	5		1		
I had many opportunities to bring my ideas forward	10	3				
The presentation by S. Riemersma (PESL) on the watershed plan was informative and useful	8	3	1			
The questions/discussions following the presentation or during the break-out session were useful	7	6				
The agenda was well structured for covering the topics we needed to address	7	4	1			
Overall, the facilitation was appropriate and effective	6	7				
I clearly understand what the integrated watershed management plan will look like	5	7	1			
This is the right group of people to be involved in this workshop	5	8				

What was the most useful or helpful thing about the workshop?

- Discussion on watershed.
- Good facilitation.
- Discussion groups and question period.
- Very educational, I learned a lot. Being able to delve into issues to gain a better understanding.
- Discussion.
- The LICA facilitators were most useful.
- The discussion was most valuable.
- The afternoon discussion.
- Overall discussion. Education.

What was the least helpful or useful thing?

- Groups close together, hard to hear.
- Maps/charts- nobody used them.
- Too much info, could be condensed. A quick reference would be better.
- Being in-person.

What could be improved?

- More manpower to enforce stuff through the government
- Hard to get people out but it was a lively group.
- Shorter history to start, more succinct. Less use of acronyms. Put hyperlinks to possible funding sources (i.e., riparian fencing. Handout print too small.
- Longer or more.
- More time.
- Need more microbreaks and network conversation opportunity.
- More time, more background.

How did you hear about this workshop? Can you suggest a better way we might reach people?

Method	Response
Email	5
Facebook	2
LICA Executive Director	1
LICA	2
Newspaper	1

Do you prefer an in-person or virtual session for Engagement Session III?

Method	Response
In-person	12
Virtual	0
I like both. For indepth discuss face to face, presentation only online.	1

Other comments?

- Keep up good work.
- Very good presentation.
- Very good, thank-you.
- Looking forward to more.

Appendix A. Interactive Map Survey Legend (LICA 2022).

Interactive Map Survey Legend

**Mark a location on the map by following the legend below.
This will tell us why you do/do not like an area within the
Beaver River watershed.**

EXAMPLE: I _____ at this spot because...

I like to swim at this spot because the water is clean & healthy, and the area is accessible.

By following the legend below, you would write A:1,5 on the map to convey the above statement.

SWIM

A. I like to swim at this spot because:

1. The water is clean & healthy (i.e., no sediment, algae, litter, etc.)
2. The water quality has been and is consistently good
3. The area is remote, so fewer people
4. The area is touristy
5. The area is accessible
6. There are amenities nearby
7. The shoreline vegetation is healthy and diverse, with no erosion

B. I do not like to swim at this spot because:

1. The water is not clean (i.e., sediment, algae, litter, etc.)
2. The water quality has degraded over time
3. There are known algal blooms
4. The area is too busy/touristy
5. This area needs proper amenities
6. The area is too remote and should be upgraded for accessibility
7. The shoreline vegetation is not healthy and/or there is erosion

BOAT: Motorized or Un-motorized

C. I like to boat at this spot because:

1. The water is clean (i.e., no sediment, algae, litter, etc.)
2. The water quality has been and is consistently good
3. The area is more remote, quiet, and has wildlife

4. The area is touristy
5. The area is accessible
6. There are amenities
7. The shoreline appears healthy and plant species are diverse, with no erosion

D. I do not like to boat at this spot because:

1. The water is not clean (i.e., sediment, algae, litter, etc.)
2. The water quality had degraded over time
3. The area is touristy, no wildlife
4. The area needs proper amenities
5. The area is too remote and should be upgraded to increase access
6. The shoreline does not appear healthy, and there is erosion

HUNT

E. I like to hunt at this spot because:

1. There is a healthy diversity of wildlife
2. The desired wildlife species are present
3. The area is remote with few people
4. There is access to a waterbody
5. Where there is access to a water body, the water is consistently clean
6. Where there is access to a waterbody, the shoreline is healthy with no erosion

F. I do not like to hunt at this spot, because:

1. It is too touristy, no wildlife
2. The area is degraded
3. The area is too remote
4. There is no access to a waterbody
5. Where there is access to a water body, the water quality has degraded over time
6. Where there is access to a waterbody, the shoreline is not healthy and is eroded

FISH (Summer & Winter)

G. I like to fish at this spot to fish at because:

1. The water is clean (i.e., no sediment, algae, litter, etc.)
2. The water quality has been and is consistently good
3. The area is remote, so fewer people
4. The area is accessible
5. There are amenities
6. Fish health is good
7. A variety of size slots can be caught
8. Tags are not required
9. Wildlife sightings

H. I do not like to fish at this spot because:

1. The water is not clean (i.e., sediment, algae, litter, etc.)
2. The water quality has degraded over time
3. The area is too touristy & busy

4. The area should be upgraded to increase access
5. There are no amenities
6. Fish health is poor
7. Tags are required
8. There are few to no slot sizes often caught

HIKE

- I. I like to hike at this spot because:
 1. The area is undisturbed/in a natural state
 2. The area is remote, so fewer people
 3. The trails are marked, and not remote
 4. This area is easily accessible
 5. There are amenities
 6. There is good sightseeing and wildlife sightings
 7. There is access to a waterbody
 8. Where there is access to a waterbody, the water is consistently good
- J. I do not like to hike at this spot because:
 1. The area is disturbed/in an unnatural state)
 2. The area is too remote, and trails are not marked
 3. The area is too touristy & too busy
 4. The area is not easily accessible
 5. There are no amenities
 6. There are no wildlife sightings or sightseeing areas
 7. There is no access to a waterbody
 8. Where there is access to a waterbody, the water quality has degraded over time

HARVEST/GATHER (Berries, Mushrooms, Medicinal Plants, Other)

- K. I like to harvest/gather at this spot because:
 1. The area is undisturbed/in a natural state
 2. The area is remote, so fewer people
 3. The area is touristy and not remote
 4. The desired plants are present and healthy
 5. There is an abundance of species to pick
 6. There is access to a waterbody
 7. Where there is access to a waterbody, the water is consistently good
- L. I do not like to harvest/gather at this spot because:
 1. The area is disturbed/in an unnatural state
 2. The area is too remote
 3. The area is too touristy
 4. The desired plants are not present
 5. The desired plants are present but unhealthy
 6. The species abundance is lacking
 7. There is no access to a waterbody

8. Where there is access to a waterbody, the water is not clean, and the quality has degraded over time

USE OFF-HIGHWAY VEHICLES (Summer & Winter)

M. I like to use OHVs at this spot because:

1. The area is undisturbed/in a natural state
2. The area is remote, fewer people
3. The area is touristy
4. The trails are marked
5. The area is easily accessible
6. There is good sightseeing and wildlife
7. There is access to a waterbody
8. Where there is access to a waterbody, the water is consistently good

N. I do not like to use OHVs at this spot because:

1. The area is disturbed/in an unnatural state
2. The area is degraded
3. The area is too remote
4. The area is too touristy
5. The area is not easily accessible
6. There is no sightseeing and no wildlife
7. There is no access to a waterbody
8. Where there is access to a waterbody, the water is not clean, and the quality has degraded over time

CAMP

O. I like to camp at this spot because:

1. The area is undisturbed/in a natural state, and well kept
2. The area is remote, fewer people
3. The area is not remote, more touristy
4. The area is easily accessible
5. There are amenities
6. There is access to a waterbody
7. Where there is access to a waterbody, the water is clean, accessible & consistently good
8. Where there is access to a waterbody, the shoreline is healthy, no erosion
9. The plant species appear healthy and diverse

P. I do not like to camp at this spot because:

1. The area is disturbed/in an unnatural state, and not well kept
2. The area is degraded, plant species are not healthy or diverse
3. The area is too remote
4. The area is too touristy
5. The area is not easily accessible
6. There are no amenities
7. There is no access to a waterbody

8. Where there is access to a waterbody, the water is not clean, and the water quality has degraded over time
9. Where there is access to a waterbody, the shoreline is degraded and eroded

X-COUNTRY SKI or SNOWSHOE

Q. I like this spot for x-country skiing or snowshoeing because:

1. The area is undisturbed/in a natural state
2. The area is remote, so fewer people
3. The trails are marked and groomed
4. This area is easily accessible
5. There are amenities
6. Good sightseeing and wildlife sightings
7. In areas near a waterbody, the shoreline vegetation is diverse and healthy

R. I do not like this spot for x-country skiing or snowshoeing, because:

1. The area is disturbed/in an unnatural state
2. The area is too remote, and trails are not groomed
3. The area is too touristy, too many people
4. The area is not easily accessible
5. There are no amenities
6. No sightseeing, no wildlife
7. In areas near a waterbody, the shoreline vegetation is not diverse or healthy

WILDLIFE WATCHING (Birds/Other)

S. I like this spot for wildlife watching because:

1. The area is undisturbed/in a natural state
2. The plant species appear healthy and diverse
3. The area is remote, with fewer people
4. The area is not remote and more touristy
5. The area is easily accessible
6. There are amenities
7. There is visible wildlife presence
8. There is access to a waterbody
9. Where there is access to a waterbody, the water is consistently good and clean

T. I do not like this spot for wildlife watching because:

1. The area is disturbed/in an unnatural state
2. The area is degraded, and plant species are not healthy or diverse
3. The area is too remote
4. The area is too touristy
5. The area is not easily accessible
6. There are no amenities
7. There are no visible signs of wildlife
8. Where there is access to a waterbody, the water quality has degraded over time