
Big Shell Lake



Lake Stewardship Plan

September 2015

Prepared for the Resort Villages of Big Shell and Echo Bay, and for the communities and residents around Big Shell Lake, Saskatchewan.

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Executive Summary

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1.0 Introduction

1.1 What is a lake stewardship plan?

A lake stewardship plan differs from an Official Community Plan as described in *The Planning and Development Act, 2007*.ⁱ Lake Planning is “a strategic process that provides the opportunity to engage all people, governments and business operators to develop and implement actions to maintain or improve the natural and social qualities of life on our lakes, rivers and shoreline communities.”ⁱⁱ This situates a Lake Stewardship Plan as a community-based initiative rather than a legislated process.

Stewardship is a “focus on actions that individuals take to improve or sustain our natural systems and on the actions of organizations that support those individuals.”ⁱⁱⁱ Thus, the purpose of Lake Stewardship Planning is “to engage community members to identify and protect the unique characteristics of a specific shoreline community and to recommend land use policy and/or stewardship approaches to ensure long-term protection, sustainability, maintenance and restoration of natural, social and physical features. It results in ‘consensus-based’ actions and extends the responsibility of implementation to all people in the community.”^{iv}

1.2 Vision

Our vision for the future of Big Shell Lake is a place where water quality, wildlife habitat, natural beauty, recreational opportunities, and peace and tranquillity are maintained and improved for present and future generations to enjoy while living in harmony with agricultural and economic activities.

1.3 Purpose and Objectives

The purpose is to ensure a collaborative and cooperative effort by the affected communities to foster the future management and protection of Big Shell Lake.

The objectives of the Big Shell Lake Stewardship Plan are:

1. To identify risks or threats to the health of Big Shell Lake;
2. To develop management actions to reduce or eliminate identified threats;
3. To increase awareness and understanding of various issues related to lake stewardship;
4. To facilitate communication and relationship building between individuals and organizations around the lake;
5. To encourage and promote cooperative environmental stewardship; and
6. To provide recommendations in keeping with the purpose of this Lake Stewardship Plan.

1.4 Geographic Boundary

The focus of this Plan are the activities that occur on and near Big Shell Lake. As such, the area under consideration is approximately 7 km around the edges of Big Shell Lake. This encompasses most major land users, as well as a number of businesses whose patrons may frequent the lake for recreational use.

1.5 Summary of Management Areas

Table 1: List of management areas, concerns, and risk ranking

Area	Concern	Risk ranking	Priority	# of actions
Community Cooperation and Awareness	Communication between individuals, communities, and local governments	15	High	2
	Lack of respect for resort village property lines	8	Medium	1
Environmental Awareness	Lack of communication and education about the lake environment	20	Very high	2
Land Use and Development	Potential social and environmental impacts of local development	15	High	3
Responsible Lake-based Recreation	Increased boat traffic leading to decreased human safety	25	Very high	2
	Negative social impacts from recreational lake use	10	High	1
	Negative environmental impacts from recreational lake use	16	High	4
Responsible Land-based Recreation	Trespassing on agricultural land	12	High	2
Roads and Traffic	Boat trailer parking on grid roads	16	High	2
Water Levels	Drainage modification	6	Medium	1
	Impacts of fluctuating water levels	20	Very high	3
Water Quality and Aquatic Habitat	Perceived fluctuation of fish populations in the lake	6	Medium	2
	Enforcement of regulations in the protection of riparian and littoral zones	20	Very high	2
	Potential for declining water quality	20	Very high	5

- i Government of Saskatchewan, *The Planning and Development Act*, 2007 (Saskatchewan: 2007).
- ii Federation of Ontario Cottagers' Associations (FOCA), *Lake Planning Handbook for Community Groups* (Ontario: n.d.) p. 1.
- iii FOCA p. 13.
- iv FOCA p. 2.

2.0 Context

2.1 Big Shell Lake

Big Shell Lake and the surrounding area has been well-described in previous studies. The lake is nested within the North Saskatchewan River Watershed, and the Sturgeon Sub-drainage basin. An unnamed creek drains upland areas within the Thickwood Hills into Big Shell Lake; water then flows from the lake's outlet in the north-east, meeting with with Mistawasis Creek

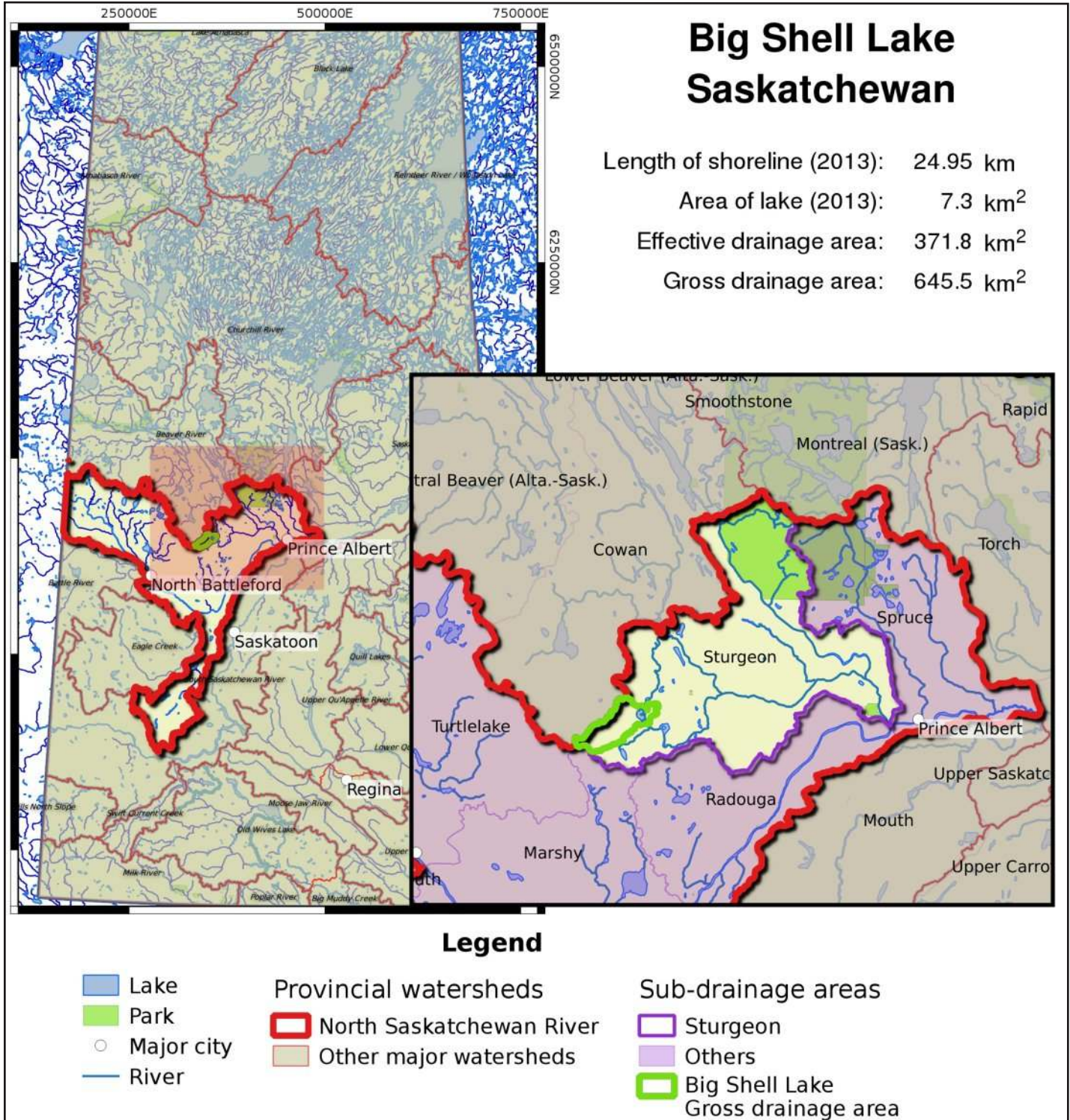


Figure 1: Overview map of Big Shell Lake, Saskatchewan

to become Shell Brook. Ultimately, Big Shell Lake contributes to the Sturgeon, North Saskatchewan, and the Saskatchewan River.

Centrally located within Saskatchewan (see Figure 1), the lake is accessible to a number of diverse communities, listed in Table 2 below.ⁱ Access to Big Shell Lake is by grid road, approximately 5 km west of Provincial Highway 12. While offering recreational services to those communities near-by, it is also a frequent destination for visitors from larger cities as well.

Table 2: Communities of note near Big Shell Lake, SK

<i>Name</i>	<i>Population (2011)</i>	<i>Travel distance</i>	<i>Highway access (from Big Shell)</i>
Village of Shell Lake	99	15 km	12N
Town of Spiritwood	916	49 km	12N, 3W
Town of Shellbrook	1,433	66 km	12N, 3E
Town of Blaine Lake	510	54 km	12S
City of Prince Albert	35,129	110 km	12N, 3E
City of Saskatoon	222,189	136 km	12S
City of North Battleford	13,888	157 km	12S, 40W
		170 km	12N, 3W, 378S, 4S

2.2 Natural Environment

This planning process continues on a series of previous environmental management activities focused on Big Shell Lake and its geographic watershed. In 1987, a Lakeshore Management Planⁱⁱ was completed, with a focus on land use planning in the Resort Villages. In 1996, the Big Shell Lake Watershed was selected for inclusion in an AgriFood Innovation Fund pilot program focused on Watershed Stewardship. A number of studies were undertaken as part of this program, including a Fish Habitat Assessmentⁱⁱⁱ, a Water Quality Assessment^{iv}, and sediment analysis of core samples from Big Shell Lake^v and Echo Bay^{vi}.

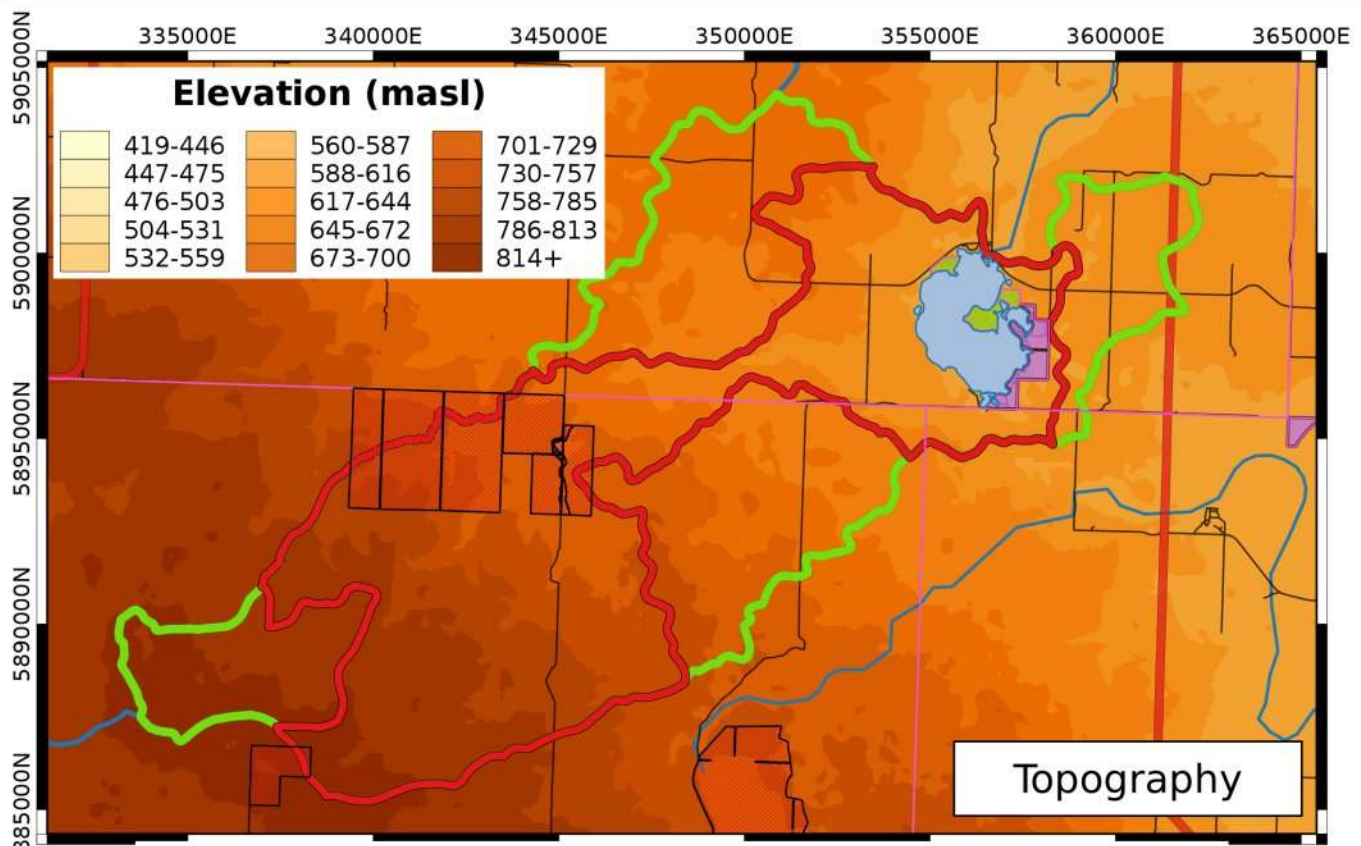
The AgriFood Innovation Fund program also spawned the Big Shell Lake Watershed Stewardship Association (BSLWSA), which was most active from 1997 until some time in 2008. Support from the Saskatchewan Watershed Authority also came through their Lake Stewardship Program from 2005-2008.^{vii} Activities supported by the Association, as well as provincial and federal governments, included education and outreach in the community, a community-based water quality monitoring

Big Shell Lake Watershed Stewardship Association

Mission Statement

The Big Shell Lake Watershed Stewardship Association Inc. was formed for the preservation and enhancement of the water quality within the Big Shell Lake Watershed for present and future generations.





Legend

- | | | |
|-------------------------|--------------------|--------------|
| Big Shell Lake | Indian reserve | River |
| Effective drainage area | Resort Village | Highway |
| Gross drainage area | Rural Municipality | Unpaved road |

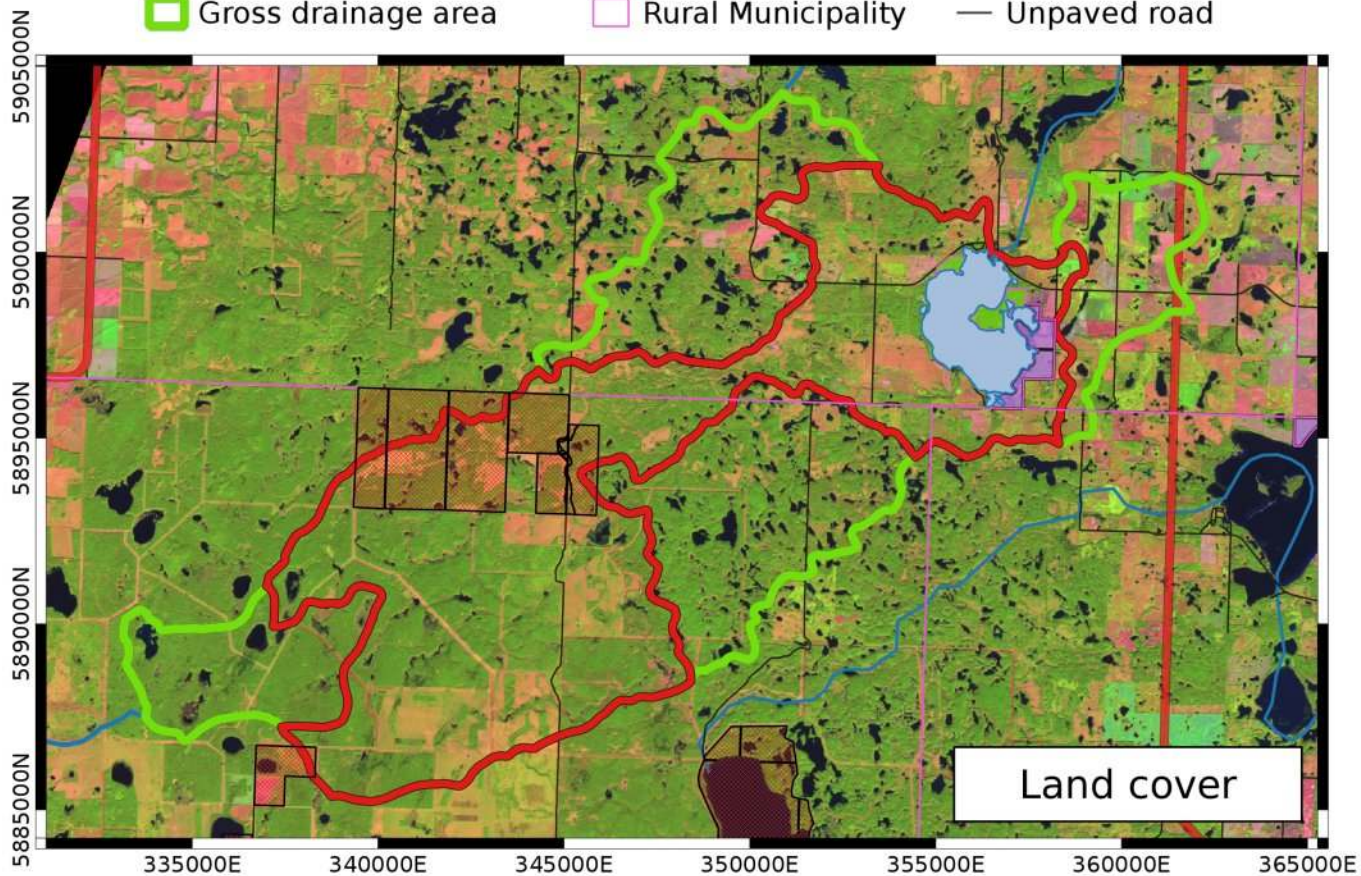


Figure 2: Topography (above) and land cover around Big Shell Lake, SK

program, implementation of on-farm beneficial management practices (new dug-outs for cattle watering, fencing), the construction of a new sewage lagoon (Thickwood Hills Liquid Sewage Association), and the construction of a weir to maintain predictable lake levels.

The most recent water quality study for Big Shell Lake was completed by the Saskatchewan Watershed Authority (now Water Security Agency) in 2008. The report was based on data from a volunteer water quality monitoring program coordinated by the BSLWSA, as part of the Lake Stewardship Program. Recommendations from the report were “that recreational users and watershed stakeholders minimize nutrient and contaminant additions to the lake. Fertilizer use and disruption of natural vegetation and shoreline should be kept to a minimum to protect the natural habitat of Big Shell Lake as well as the water quality. Enhancement of shoreline buffer zones to slow erosion and the flow of surface runoff to Big Shell Lake will help reduce the amount of nutrients and other contaminants entering the lake as well as improve potential fish spawning habitat.”^{viii} The most recent fishery stock assessment was undertaken by the Ministry of Environment in 2009; according to the assessment, “natural reproduction is maintaining the walleye and pike populations. No future stocking program is anticipated.”^{ix} See Figure 2 for a depiction of topography and land cover in the watershed.

2.3 Social

In December 2014, a small group of local individuals met with Dr. Robert Patrick of the University of Saskatchewan. Dr. Patrick described a potential watershed planning framework that we might use. A working committee of stakeholders from on and around the lake would undertake an assessment of characteristics, issues and concerns. Required actions would be identified along with who would be responsible for them. An implementation strategy would put the plan into action and monitor its progress. The plan itself would be reviewed on a five-year cycle to ensure ongoing relevance. The process is further detailed in Section 3. We believe this would be a useful approach for us to take and like the idea of including a broad range of stakeholders with different views and interests in the future of the lake. We also like the idea that the approach seeks to deal with a wide range of issues relating to sustainability, including, but not limited to, on-going development. The councils of the Resort Villages of Echo Bay and Big Shell have already expressed their support for this initiative.

2.4 Legislative

The Resort Villages of Echo Bay and Big Shell, as well as the Rural Municipality of Spiritwood have an interest in the management of Big Shell Lake. Provincially legislated authority for control over land use, development, and other aspects of growth comes from the Municipalities Act, 2006 and the Planning and Development Act, 2007. Property owners and businesses have a separate set of responsibilities and obligations as laid out in various pieces of legislation at the provincial and federal level. Of particular significance would be: the federal Fisheries Act, the provincial Environmental Management Act, 2010; the Watershed Associations Act, 2010, and the Water Security Agency Act, 2013.

Recommendations from this plan will be made in consideration of the legislative context noted above. The Working Group recognizes that the Resort Villages and Rural Municipality are not bound to these recommendations, but requests that the respective Councils will consider the various ways that they can address the concerns identified by stakeholders through this process.



2.5 Provincial and Federal Interests

This Lake Stewardship Plan recognizes that the provincial and federal governments both have interests and jurisdiction over certain aspects of the lake environment and surrounding area. Provincially, land use decisions are made with consideration of the Statements of Provincial Interest. These Statements “link provincial and municipal objectives for land use planning and, as a result, directly affect the use of land and impact community development, economic growth and environmental stewardship. These Statements of Provincial Interest reflect the diversity of issues affecting Saskatchewan’s communities and regions, recognizing that wise management of development involves facilitating, promoting and sustaining growth, based on cooperative planning principles.”^x Where possible, the recommendations in this plan are relevant to the following Statements of Provincial Interest:

6.2 Biodiversity and Natural Ecosystems

1. Consider the ecological value, integrity and management of wetlands, riparian areas, significant natural landscapes and regional features, and provincially designated lands;
2. Minimize, mitigate or avoid development impacts to safeguard the ecological integrity of wetlands, riparian areas, significant natural landscapes and regional features, and provincially designated lands;
3. Consider dedication of critical or threatened habitat and environmentally sensitive areas as environmental reserve;
4. Recognize Crown rights and responsibilities to regulate activities related to the utilization and protection of forest resources on Crown forest lands; and
5. Recognize and support provincial planning initiatives contributing to ecological integrity.

6.5 Inter-municipal Cooperation

1. Establish inter-municipal processes for managing land in areas of common interest;
2. Recognize opportunities for strategic, flexible and innovative partnerships;

6.7 Public Safety (Flooding, fire protection)

3. Prohibit the development of new buildings and additions to buildings in the flood way of the 1:500 year flood elevation of any watercourse or water body;
6. Consider community and regional fire protection measures adjacent to forests.



6.9 Recreation and Tourism

5. Consider development impacts on existing or planned recreational and tourism areas.

6.10 Residential Development

1. Locate residential development to be compatible with other land uses;
4. Allow for a range of housing options appropriate for development in the community

6.12 Shore Lands and Water Bodies

1. Consider the impacts of development on associated water bodies and shore lands, aquatic life and habitat;
2. Minimize, mitigate or avoid potential development impacts to waterways, watersheds, water bodies, wetlands, shore lands, aquifers and groundwater;
3. Integrate provincial watershed management planning considerations into local and regional planning; and
4. Preserve and enhance public access to water bodies, shore lands and reservoirs for recreational use.

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- i Statistics Canada. 2011 Census of Canada: Saskatchewan Population Report.
 - ii UMA Engineering Ltd. and J.D. Mollard and Associates Ltd., Big Shell Lake Lakeshore Management Plan (Saskatoon, 1987).
 - iii Saskatchewan Environment and Resource Management (SERM), Big Shell Lake Fish Habitat Assessment: Fisheries Report 96-5 (Saskatoon, 1996).
 - iv SERM, Big Shell Lake Water Quality Assessment (Saskatchewan, 1998).
 - v James Rusak and Leavitt, Peter, Historical Trends in the Production and Water Quality of Big Shell Lake, Saskatchewan (University of Regina, 2001).
 - vi Peter Leavitt, Analysis of past water quality in Echo Bay of Big Shell Lake, Saskatchewan, Canada (University of Regina, 2002).
 - vii Saskatchewan Watershed Authority (SWA), Big Shell Lake Water Quality Report 2005-2008 (Saskatoon, 2008).
 - viii SWA, Big Shell Lake Water Quality Report 2005-2008, p. 11
 - ix Saskatchewan Ministry of Environment, Fishery Stock Assessment – Big Shell Lake (Saskatchewan, 2009), p. 6.
 - x Government of Saskatchewan, The Statements of Provincial Interest Regulations, 2012 (Saskatchewan, 2012), p. 3.



3.0 Plan Development

3.1 Planning Process

There are six stages to the planning process, as depicted in Figure 3 on the next page.

STAGE 1: Working Committee

Establish a Working Committee of broad stakeholder interests. In an initial meeting consider details of terms of reference including meeting schedule, quorum, decision-making process (majority or consensus model), chairperson appointment, relationship to government agencies. Identify goals and objectives of the future watershed plan through broad public engagement.

STAGE 2: Watershed Assessment.

Undertake an assessment of watershed characteristics (physical, social, technical, institutional, etc.). Identify issues and concerns from all stakeholders including park visitors, residents, farmers, government, etc.

STAGE 3: Set Goals

Set a vision for the plan. Set overall goals and objectives, develop indicators to measure progress, set targets to be reached.

STAGE 4: Management Actions

Identify management actions that are required to address the issues and concerns identified in the watershed assessment consistent with the goals and objectives of the plan (Stage 3).

STAGE 5: Implementation Strategy

Develop an implementation strategy that will bring action to each of the identified management actions noted in Stage 4.

STAGE 6: Plan Review

On a five year cycle the plan will be reviewed to update all aspects of the plan (Stages 1-5). Membership of the Working Committee to be updated; any new or revised information concerning the watershed assessment to be noted; revision or addition to management action to be made; any changes to the implementation strategy to be noted. Generally, the goals and objectives of the plan will be reviewed for their accuracy, appropriateness, any major changes or additions will require public notice and engagement prior to adoption.



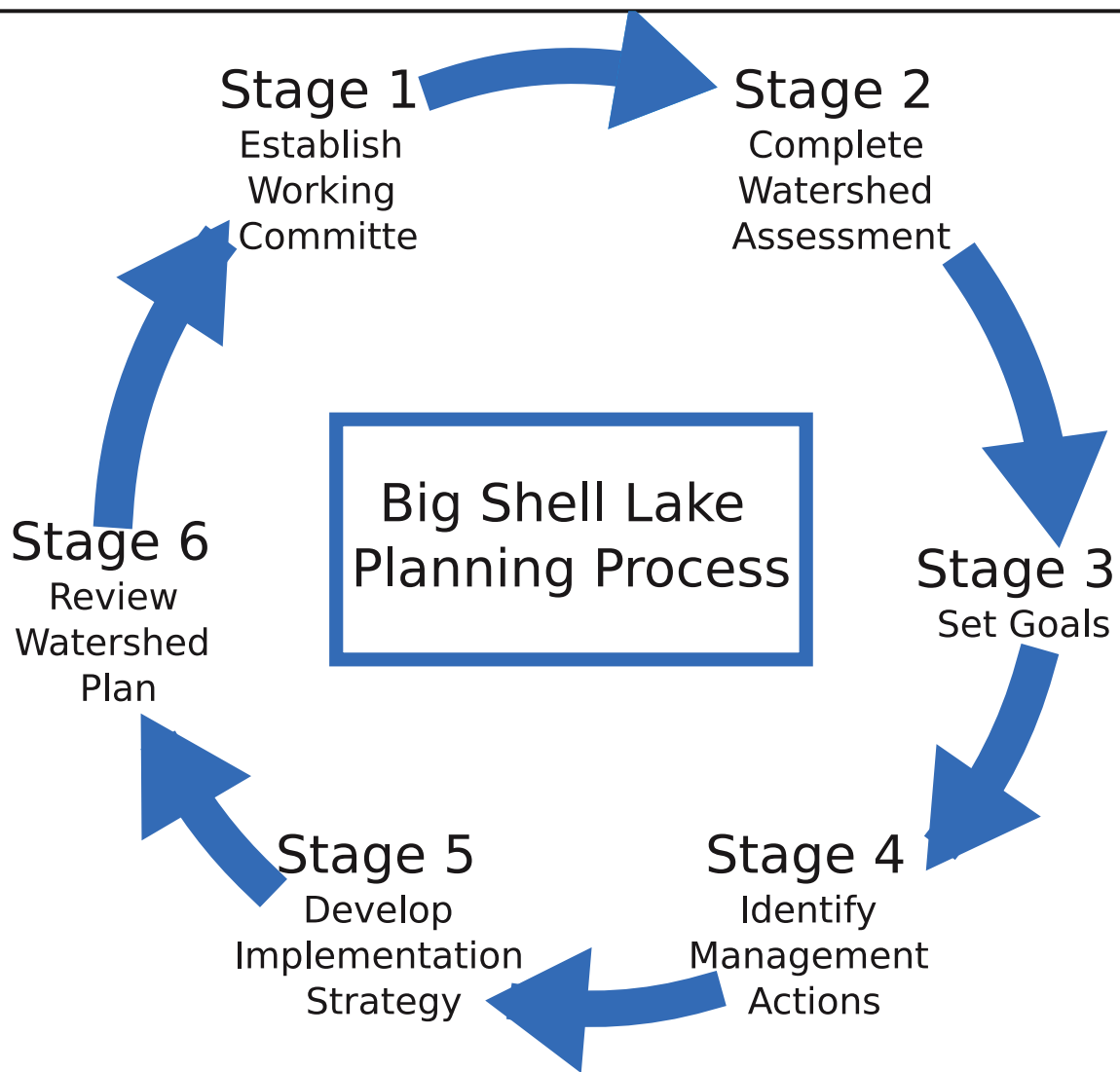


Figure 3: Big Shell Lake Planning Initiative Framework

3.2 Working Group Meetings

Meetings with the community were held on May 7 and May 23 in order to build a list of concerns and identify working group members. The working group progressed through the process in six meetings, detailed in Table 3 below. A draft plan was presented to the community for feedback on November 1.

Table 3: Schedule of working group meetings

<i>Date</i>	<i>Attendance</i>	<i>Length</i>	<i>Accomplishments</i>
June 12	9	3.5 hrs	Introductions and setting of Terms of Reference
June 16	10	2.5 hrs	Review Terms of Reference, begin Risk Assessment
June 29	10	2.5 hrs	Continue Risk Assessment
July 7	4	2.5 hrs	Review and discuss Risk Assessment
July 28	4	2.5 hrs	Refine Management Areas, begin identifying Management Actions
August 19	7	4.5 hrs	Continue refining Management Areas and identifying Management Actions with help of advisers

4.0 Management Areas

Issues identified by stakeholders have been grouped into eight management areas, listed in Table 4. The groupings are meant to provide a framework for understanding and mitigating management issues; the groups are not exclusive, as some of the issues touch on multiple management areas. An explanation of the acronyms for Relevant Stakeholders is provided in section 5.4.

Table 4: Thematic groupings of Management Areas

<i>Theme</i>	<i>Management Area</i>	<i>Priority</i>	<i>Number of Actions</i>
Community Cooperation and Awareness	Communication between individuals, communities, and local governments	High	2
	Lack of respect for Resort Village property lines	Medium	1
Environmental Awareness	Lack of communication and education about the lake environment	Very high	2
Land Use and Development	Potential social and environmental impacts of local development	High	3
Responsible Lake-based Recreation	Increased boat traffic leading to decreased human safety	Very high	2
	Negative social impacts from recreational lake use	High	1
	Negative environmental impacts from recreational lake use	High	4
Responsible Land-based Recreation	Trespassing on agricultural lands	High	2
Roads and Traffic	Boat trailer parking on grid roads	High	2
Water Levels	Drainage modification	Medium	1
	Impacts of fluctuating water levels	Very high	3
Water Quality and Aquatic Habitat	Perceived fluctuation of fish populations in the lake	Medium	2
	Enforcement of regulations in the protection of riparian and littoral zones	Very high	2
	Potential for declining water quality	Very high	5

4.1 Community Cooperation and Awareness

4.1.1 Communication between individuals, communities, and local governments

Priority: High

Issue: A general lack of communication, miscommunication, and mixed messaging is leading to conflict between people on and around the lake.

Objective: To develop cooperative and collaborative relationships between stakeholders.

Action 1: To form an ongoing lake association that actively engages partners and the local community, with representation from all communities around the lake

Timing: Spring 2016

Measures of success: Formation of association; routine conduct of meetings; attendance of representatives from communities

Action 2: To hold annual meetings, separate from those of the lake association, with representatives from all communities around the lake to build relationships and discuss new and ongoing concerns.

Timing: Annual, starting Spring 2016

Measure of success: Attendance of representatives

Lead: Working group

Relevant stakeholders: Local communities, NSRBC, WSA, PARCS

4.1.2 Lack of respect for resort village property lines

Priority: Medium

Issue: Residents and cottage owners within resort villages are not respecting property lines. This includes the cutting of trees adjacent to properties for storage of personal vehicles or items, as well as encroachment on neighbouring lots.

Action 1: To refer this issue to the RV Councils in order to enforce boundaries

Timing: Fall/winter 2015

Lead: Working group

Relevant stakeholders: Resort Villages of Echo Bay and Big Shell



Building a bridge between Big Shell and Echo Bay



4.2 Environmental Awareness

4.2.1 Lack of communication and education about the lake environment

Priority: Very high

Issue 1: Due to recent changes in ownership and usage patterns of the Lake, residents, cabin owners and recreational users may be unaware of the potential for negative impacts on fisheries, wildlife and the environment.

Issue 2: Stakeholders are concerned that there is insufficient protection of riparian areas on the feeder creek and littoral zone around the lake, leading to loss of or damage to aquatic habitat. Specific concerns include sand dumping, reed cutting, and lake shore modification.

Objective: To raise awareness of existing regulations surrounding shoreline modification and removal of aquatic vegetation.

Action 1: To develop a communication strategy to educate and raise awareness about lake-based issues in a variety of formats.

Timing: Spring 2016

Measure of success: Completion of the strategy; establishment of measurements for distribution or access of information.

Action 2: To organize a volunteer-led education campaign to implement the communication strategy.

Timing: Spring 2016

Measure of success: Completion of a communications package; delivery numbers (total and per community); numbers of packages picked up from other distribution points (local campgrounds, provincial and private; Village of Shell Lake); inclusion of brochures, pamphlets, and information identified as important by this plan; distribution in multiple formats (web, print, signage).

Lead: Working group

Relevant stakeholders: Campgrounds, RV Echo Bay, RV Big Shell, representatives from developments around the lake, local residents.

4.3 Land Use and Development

4.3.1 Potential social and environmental impacts of local development

Priority: High

Issue: There is no overarching plan and long-term vision for future development, the future of Crown pasture land in the area and along the lake shore is uncertain, and benchmarks (both social and environmental) for development metrics do not exist. Stakeholders are concerned that continued and uncoordinated lake shore and area development will place pressure on the lake, and may result in negative impacts to the character of the lake.

Objective: To develop a long-term vision for the area that incorporates social and environmental concerns identified in this plan.

Action 1: To identify partnership opportunities with non-government organizations and other lake associations

Timing: Fall 2015, ongoing

Measure of success: paid membership and active participation in PARCS; partnership with lake associations; paid membership and active participation in other organizations identified.

Action 2: In collaboration with partners, identify or develop a method that will establish a factual foundation of current levels of lake and area development, types and sources of lake usage, and both social and environmental impacts of development.

Timing: Spring 2016, ongoing

Measure of success: identification or development of method; application of method in a study of the lake and area

Action 3: To make recommendations to the Rural Municipalities of Spiritwood and Meeting Lake that their Official Community Plans incorporate the considerations for social and environmental impact on Big Shell Lake, as identified in Action 2, that result from lake shore and area development.

Timing: Winter 2017

Measure of success: submission of recommendations to the RM councils.

Lead: Working group

Relevant stakeholders: PARCS, RM Spiritwood, RM Meeting Lake, RV Echo Bay, RV Big Shell, Lake communities



4.4 Responsible Lake-based Recreation

4.4.1 Increased boat traffic leading to decreased human safety

Priority: Very high

Issue: Stakeholders are concerned that increased levels of boating, including greater numbers of boats and types of boating activities, is increasing the likelihood of collisions.

Objective: To educate and promote awareness of safe and responsible boating activities.

Action 1: To establish a database and method of recording near-misses

Timing: Spring 2016

Measure of success: creation of database and template for reports; distribution of template (web, print).

Action 2: To include information about safe boating, including near-shore speed limits, licensing requirements, and options for reporting boating issues, in the communication campaign.

Lead: Working group

Relevant stakeholders: Lake communities, recreational users/visitors

4.4.2 Negative social impacts from recreational lake use

Priority: High

Issue: Operation of boats in an aggressive manner is degrading the quality of the lake experience for residents and recreational users, specifically in terms of noise pollution and high wake from speeding boats leading to rocking of stationary or non-motorized crafts.

Objective: To promote the conduct of water craft in consideration of all lake users.

Action 1: To include information about safe boating, including near-shore speed limits, licensing requirements, and options for reporting boating issues, in the communication campaign.

Lead: Working group

Relevant stakeholders: Recreational users, campground lessee, RVs

4.4.3 Negative environmental impacts from recreational lake use

Priority: High

Issue: Stakeholders are concerned that the operation of power boats near to the shore and water fowl habitat is leading to shoreline erosion from boat wake and degradation of water quality and aquatic habitat through suspension of sediment. There is also the potential for boat operation that disturbs the nesting behaviour of water fowl, and the introduction of alien invasive species by visiting boats.

Objective: To raise awareness of the environmental impacts of operating motorized boats.

Action 1: Identify and establish contact with partners to explore opportunities for studying environmental impacts of lake use

Timing: Spring 2016

Measure of success: Email communication established; options disseminated to Working Group

Action 2: Undertake social and environmental impact assessment of lake use (see 4.3.1, Action 2)

Timing: Fall 2017

Measure of success: Completion of report

Action 3: Include results and recommendations from impact assessment in communication campaign, and in recommendations to RM's of Spiritwood and Meeting Lake for lake shore and area development (see 4.3.1 Action 3)

Timing: Winter 2017/Spring 2018

Measure of success: Submission of letter to RM's of Spiritwood and Meeting Lake

Action 4: Organize workshops/presentations on invasive species w/ NSRBC

Timing: Summer 2016

Measure of success: Attendance numbers at workshops

Lead: Working group

Relevant stakeholders: CWS, SWF, DUC, WSA – Aquatic habitat (potentially), NSRBC, PARCS, RMs Spiritwood and Meeting Lake



4.5 Responsible Land-based Recreation

4.5.1 Trespassing on agricultural land

Priority: High

Issue: Trespassing on agricultural land, specifically with the operation of motorized recreational vehicles, leads to multiple economic impacts on farmers and a concern for human safety. Fences are being cut for access to fields, crops damaged by motorized vehicles, and farm gates left open with the potential for animal release. Human safety is also a concern due to unknown conditions in the fields, including location of rocks, dips, and low visibility fences.

Objective: To reduce negative impacts of recreation on local landowners.

Action 1: Create a database and documentation for reporting trespasses and property damage for local landowners.

Timing: Summer 2016

Measure of success

Action 2: Include a component about safety and respect of property in the communication campaign.

Lead: Working group

Relevant stakeholders: Local landowners, campgrounds, RVs, RM Spiritwood



4.6 Roads and Traffic

4.6.1 Boat trailer parking on grid roads

Priority: High

Issue: Stakeholders are concerned about safety on main grid roads. Specific concerns include: increased recreational traffic on grid roads, with boaters parking trailers and trucks on the sides of the road near the provincial campground/boat launch; and speeding vehicles leading to increased concerns for human safety and damage to windshields.

Objective: To promote safe conduct on public roads.

Action 1: Establish and maintain communication with the RM of Spiritwood and Department of Highways to discuss these concerns.

Timing: Winter 2015/Spring 2016

Action 2: Request that the appropriate authorities place signs for motorists to slow down near the campground.

Timing: Summer 2016

Measure of success: Installation of signage

Lead: Working group

Relevant stakeholders: SK Department of Highways, campground lessee, RM Spiritwood



4.7 Water Levels

4.7.1 Drainage modification

Priority: Medium

Issue: Stakeholders are concerned about drainage modification in upland areas potentially leading to water quality and quantity fluctuations in the lake.

Objective: To promote awareness of the impacts of drainage in the watershed.

Action 1: Include relevant information on drainage in wet climate cycles (Water Security Agency) and water retention in dry climate cycles (North Saskatchewan River Basin) in the communication campaign.

Lead: Working group

Relevant stakeholders: WSA, NSRBC, upland landowners, local communities

4.7.2 Impacts of fluctuating water levels

Priority: Very high

Issue: Stakeholders are concerned about the environmental and recreational impacts of significant fluctuations in lake levels. Specific concerns include: high water levels causing erosion of the lake shoreline, flooding, and high water killing trees and damaging roads; low water levels reducing the recreational capacity of the lake, and increasing the growth of aquatic vegetation and algae.

Objective: To improve the resilience of the lake ecosystem to changes in climate.

Action 1: Encourage the RM of Spiritwood to maintain the outlet creek to maintain or improve flow during periods of high precipitation.



Action 2: Request that the RM of Spiritwood participate in the culvert mapping project with the North Saskatchewan River Basin Council.

Timing: Spring 2016

Measure of success: Submission of a letter to RM of Spiritwood;
participation of RM in culvert mapping

Action 3: Encourage the RM of Meeting Lake to explore opportunities to retain water in the inlet creek to maintain flow during periods of low precipitation.

Timing: Spring 2016

Measure of success: Submission of a letter to RM of Meeting Lake;
establishment of partnership with Working group or Lake
Stewardship Association to explore options for water retention

Lead: Working group

Relevant stakeholders: RM Spiritwood, RM Meeting Lake, WSA





4.8 Water Quality and Aquatic Habitat

4.8.1 Perceived fluctuation of fish populations in the lake

Priority: Medium

Issue: Stakeholders perceive that there has been a decline in the quantity of fish in the lake.

Objective: To maintain and improve the health of the Big Shell Lake fishery.

Action 1: Include information on fisheries health and function, catch limits, and promote low-impact fishing in the communication campaign

Action 2: Distribute updated information on fisheries assessments to lake communities as it becomes available

Timing: Ongoing

Measure of success: Distribution of assessments; meetings or workshops with fisheries biologists to discuss findings and/or concerns

Lead: Working group

Relevant stakeholders: MoE/COs, SWF, CWS

4.8.2 Enforcement of regulations in the protection of riparian and littoral zones

Priority: Very high

Issue: Stakeholders are concerned that Conservation Officers and environmental agencies are under-resourced and restricted to responding reactively to environmental complaints. They feel that this leads to gaps in monitoring and enforcement of environmental regulations, leading to human-induced deterioration of the natural environment, wildlife populations, and habitat. Specific concerns relate to the perceived decrease in loon and heron populations.

Objective: To raise awareness of the regulatory processes surrounding activities on or near the shore.

Action 1: Include information about regulations, jurisdictions, how to file a complaint, and application processes (including the promotion of early application for Aquatic Habitat Alteration permits).

Action 2: Identify and collaborate with partners to lobby government agencies for an increase in resources for the enforcement of environmental regulations

Timing: Fall 2016

Measure of success: Membership in PARCS and other pertinent associations; attendance by a lake representative at PARCS meetings

Lead: Working group

Relevant stakeholders: MoE/COs, WSA, PARCS, local communities

4.8.3 Potential for declining water quality

Priority: Very high

Issue: Lack of data on current water quality is a concern for stakeholders. Specific concerns identified include: the potential seepage of older septic tanks into the lake; livestock along the lake shore or riparian areas; the impact of motorized boats, especially older or two-stroke engines, causing pollution in the form of exhaust, oil, and gasoline spills; and that a general lack of planning and development oversight is negatively effecting water quality.

Objective: To provide lake communities with up-to-date data on water quality To maintain and enhance the water quality in Big Shell Lake.

Action 1: Participate in a water quality monitoring program with NSRBC when it becomes available, including monitoring of boat docks and marinas

Timing: Contingent on NSRBC; Ongoing

Measure of success: Volunteer engagement of lake community members in monitoring program

Action 2: Include results of the testing program, and other pertinent information about water quality, in the communication campaign.

Big Shell Lake Water Quality Index (WQI) Scores from 2005 to 2007ⁱ

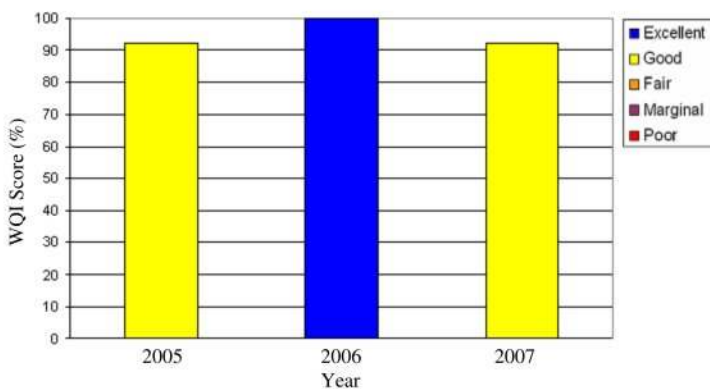


Figure 4: WQI scores for BSL: Baseline #1 South Lake

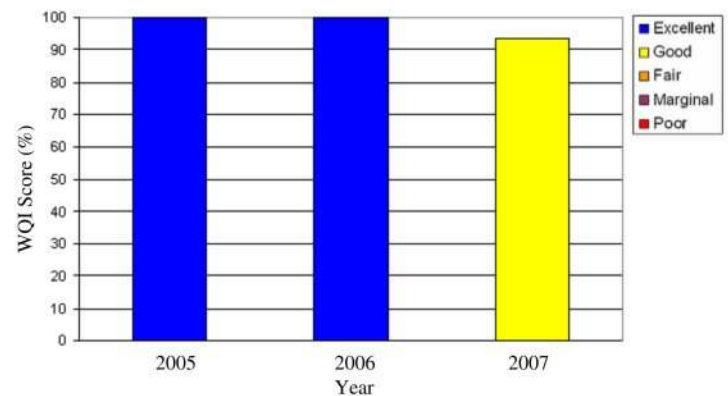


Figure 5: WQI scores for BSL: Baseline #3 North Lake

Action 3: Continue communication with septic haulers to ensure septic tanks are properly maintained

Timing: Ongoing

Measure of success: Identification of potential issues with septic tanks, or confirmation of compliance

Action 4: Explore the possibility that RV councils and RM Spiritwood require new septic installations to have concrete septic tanks

Timing: Fall 2016

Measure of success: Discussion at respective Councils, with members attending from each local government

Action 5: Relay information about the Agri-Environmental Group Plan (AEGP) programs to local producers.

Timing: Fall 2016

Measure of success: Provision of contact information for local producers to NSRBC; follow-up discussion at a Working Group meeting

Lead: Working group

Relevant stakeholders: Public Health (septic), MoE/WSA (water quality), NSRBC (water quality testing, AEGP), RV Echo Bay, RV Big Shell, RM of Spiritwood, septic haulers, recreational users, local farmers

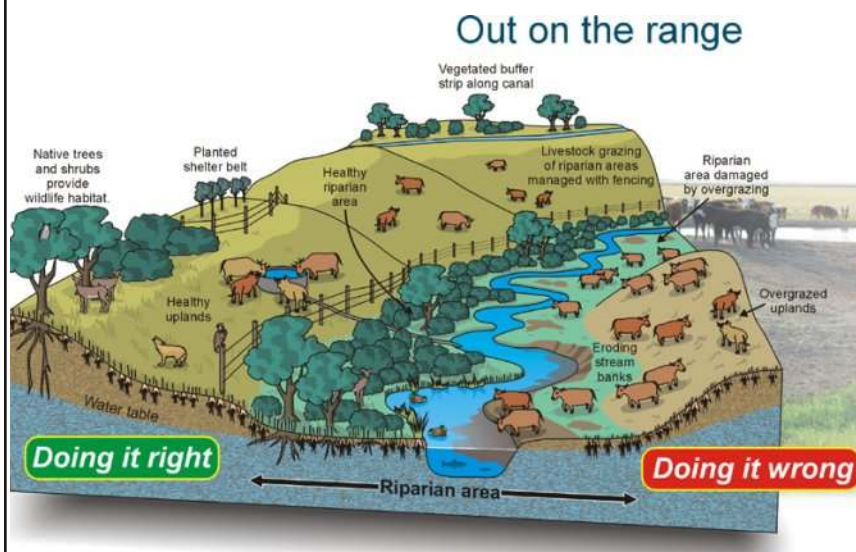


Figure 6 (above): Managing livestock and riparian areas for water quality.ⁱⁱ

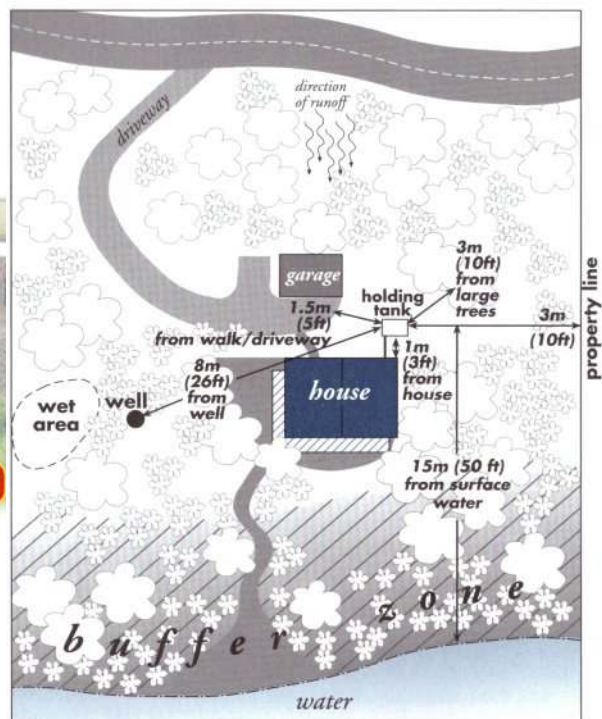


Figure 7 (right): Minimum setbacks for septic holding tanks.ⁱⁱⁱ

- i Saskatchewan Watershed Authority (SWA), Big Shell Lake Water Quality Report 2005-2008 (Saskatoon, 2008).
- ii Image retrieved online: Canadian Geosciences Education Network Archive: <http://www.cgenarchive.org/bow-river-clean.html>
- iii Sarah Kill and Clive Callaway, On the Living Edge: Your Handbook for Waterfront Living, (Nature Saskatchewan: 2003) p. 35.

5.0 Plan Implementation

5.1 Implementation Priorities

The Plan includes a number of Actions that can be undertaken immediately, as well some that are longer-term in nature. While there are some Management Areas that are identified as Very high and High priority, the Actions identified may require relationship and capacity building prior to implementation. The Actions are summarized in Table 5.

Table 5: List of management actions, timing, and partners

<i>Management Actions</i>	<i>Timing</i>	<i>Key Partners</i>
Community Cooperation and Awareness		
4.1.1 Communication between individuals, communities, and local governments		
1) Form an ongoing lake association	Short	Local communities, NSRBC, WSA, PARCS
2) Hold annual meetings to build community and discuss concerns	Short/ Ongoing	Local communities and residents
4.1.2 Lack of respect for resort village property lines		
1) Refer issue to RV Councils	Short	Resort Village Councils
Environmental Awareness		
4.2.1 Lack of communication and education about the lake environment		
1) Develop a communication strategy	Short	Local communities and residents
2) Organize an education campaign to implement the strategy	Short/ Ongoing	Local communities and residents
Land Use and Development		
4.3.1 Potential social and environmental impacts of local development		
1) Identify partnerships with non-government organizations and other lake associations	Short/ Ongoing	RVs, RM Spiritwood, PARCS
2) Identify or develop an assessment of development, and social and environmental impacts of development	Short	RVs, PARCS
3) Make recommendations to RMs based on assessment in Action 2	Medium	RVs, PARCS, RMs Spiritwood & Meeting Lake
Responsible Lake-based Recreation		
4.4.1 Increased boat traffic leading to decreased human safety		
1) Establish a near-miss database	Short	Lake communities, recreational users
2) Include boat safety information in the communication campaign	Short/ Ongoing	
4.4.2 Negative social impacts from recreational lake use		
1) Promote safe conduct on the lake	Short	RVs, Campground lessee
4.4.3 Negative environmental impacts from recreational lake use		
1) Identify partnerships to study environmental impacts of lake use	Short	PARCS, RVs, CWS, SWE, DU, WSA, NSRBC
2) Undertake impact assessment of lake use	Medium	
3) Include results from assessment in communications, and in recommendations to RMs	Medium	RMs Spiritwood & Meeting Lake
4) Organize workshops on invasive species	Short	NSRBC

Table 5: List of management actions, timing, and partners (cont.)

<i>Management Actions</i>	<i>Timing</i>	<i>Key Partners</i>
Responsible Land-based Recreation		
4.5.1 Trespassing on agricultural land		
1) Establish a database for reporting trespass and property damage	Short/ Ongoing	Local landowners
2) Include components about safety and respect of property in communication campaign	Short	
Roads and Traffic		
4.6.1 Boat trailer parking on grid roads		
1) Establish communications with Ministry of Highways and Infrastructure	Short/ Ongoing	SK Department of Highways
2) Request signage to slow traffic near the campground	Short	Camground lessee, RM Spiritwood
Water Levels		
4.7.1 Drainage modification		
1) Promote awareness of impacts of drainage in the watershed	Short	WSA, NSRBC
4.7.2 Impacts of fluctuating water levels		
1) Encourage RM Spiritwood to maintain outlet creek	Short/ Ongoing	RM Spiritwood, WSA
2) Request RM Spiritwood to participate in culvert mapping	Short	RM Spiritwood, NSRBC
3) Encourage RM Meeting Lake to explore water retention strategies for feeder creek	Short/ Medium	RM Meeting Lake, WSA, NSRBC
Water Quality and Aquatic Habitat		
4.8.1 Perceived fluctuation of fish populations in the lake		
1) Include fisheries related information in communication campaign	Short/ Ongoing	Ministry of Environment, SWE, CWS
2) Distributed updated fisheries assessments	Short	MoE
4.8.2 Enforcement of regulations in the protection of riparian and littoral zones		
1) Raise awareness of regulatory processes for on or near lake shore activity	Short	WSA, MoE
2) Identify partners and lobby to increase enforcement resources for environmental regulation	Short/ Medium	WSA, MoE/CO, PARCS, Local communities
4.8.3 Potential for declining water quality		
1) Participate in water quality monitoring program	Short/ Medium	NSRBC
2) Distribute results of Action 1 in communication campaign	Medium	NSRBC
3) Communicate with septic haulers regarding tank maintenance	Short	Septic haulers, RVs, RM Spiritwood
4) Explore possibility of RM Spiritwood and RVs requiring concrete tanks for new septic installs	Short	RVs, RM Spiritwood
5) Relay information about Agri-Environmental Group Plan to local producers	Short	NSRBC, Local agricultural producers

5.2 Measuring Progress

Most Actions within this Lake Stewardship Plan have measures of progress attached to them. The Working Group will use these measures as a way to assist their progression in achieving those Actions. Working Group members, or any other volunteer from within the community, can report on their progress at meetings hosted by the Working Group, or by the Lake Association should it be formed.

5.3 Plan Review

In accordance with the planning process followed for this Lake Stewardship Plan, a review of the plan should be conducted in 2019 or 2020. At this point, the Working Group or the Lake Association would aid in the formation of a committee to review and renew the Plan. A Plan Review will help to identify any changes in the management concerns identified through this iteration of planning, and will help guide further actions in the community. The Plan Review will give an opportunity for new or different community members to participate in discussions about the lake and their communities.

5.4 List of Partners

Below is a list of the key partners or stakeholders identified through the planning process. This is not a comprehensive list, as new agencies, associations, and organizations may become important partners in the implementation phase of this Lake Stewardship Plan.

CO	Conservation Officer
CWS	Canadian Wildlife Service
DUC	Ducks Unlimited Canada
MoE	Ministry of Environment
NSRBC	North Saskatchewan River Basin Council
PARCS	Provincial Association of Resort Communities of Saskatchewan
RM	Rural Municipality
RV	Resort Village
SWF	Saskatchewan Wildlife Federation
WSA	Water Security Agency