State of the ENVIRONMENT

2018 Report

LACOMBE COUNTY

THE STATE OF THE ENVIRONMENT 2018 REPORT

Lacombe County would like to acknowledge the contributions of the following people in preparing this report on the state of the environment:

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- All One Sky Foundation
- Alberta Lake Management Society (ALMS)
- Lacombe Regional Waste Services Commission (LRWSC)
- Alberta Biodiversity Monitoring Institute (ABMI)
- Sylvan Lake Management Society (SLMS)
- Alberta Environment and Parks (AEP)

Front Page Photo Credit: V. Heidt (2018 Lacombe County Photo Contest Winner)

To obtain additional copies of the report:

On the web:

- The 2013, 2014, 2015, 2016, and 2017 State of the Environment in Lacombe County Supplemental Reports are available on our website: wwww.lacombecounty.com

Paper copies:

- Please contact Lacombe County directly at 403-782-6601

First printing <INSERT DATE> 2018

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INTRODUCTION

The State of the Environment (SOE) report is an important tool for Lacombe County as it provides a snapshot of the current conditions of the environment and the stresses that impact it. This report examines the state of the environment in Lacombe County through a scientific and socio-economic planning structure. The first SOE report was released in the winter of 2013 and supplemental reports followed in 2014, 2015, 2016, and 2017. The original purpose of this 2018 report was to develop another full-scale State of the Environment, similar to what was produced in 2013. Unfortunately, over the last five years there has been an insufficient amount of new environmental data released. Therefore, this report will focus on providing information on how Lacombe County has progressed with environmental stewardship and management in the last five years.

Lacombe County is making progress in environmental management, while also balancing social and economic needs. The first few years of the SOE were focused on setting up the framework for the system, whereas this report is intended to exemplify the hard work that is being undertaken by Lacombe County staff and Councillors. It is therefore anticipated that this will inspire residents to take a proactive approach to reducing their footprint on the environment.

It is hoped that this document will help support Lacombe County's Environmental Management Plan which provides a broad strategic direction of where the County would like to be in the next 5, 10, 20 years.

Gull Lake. Photo Credit: R. Prins

ENVIRONMENTAL & PROTECTIVE SERVICES

CLIMATE RESILIENCY ACTION PLAN

Introduction

In February 2018, Lacombe County completed a Climate Resilience Action Plan Workshop. This Climate Resilience Action Plan has been produced through the Climate Resilience Express project with financial support from the Municipal Climate Change Action Centre, the Calgary Foundation, Natural Resources Canada, All One Sky Foundation, and Alberta Ecotrust.

A key objective of the Climate Resilience Express project is to partner with communities across Alberta to complete a streamlined process aimed at developing a community-specific climate resilience action plan through a one-day workshop, and to develop and maintain an 'Action Kit' to support other communities in working through the process.

The effects of climate change are already apparent in Lacombe County, with observable changes in temperature, precipitation, and extreme weather events over the last century. The average annual temperature in the Lacombe County area has increased by about +1.5°C since the early 1900s, with winter months seeing greater warming than summer months.

Photo Credit: J. Sharp

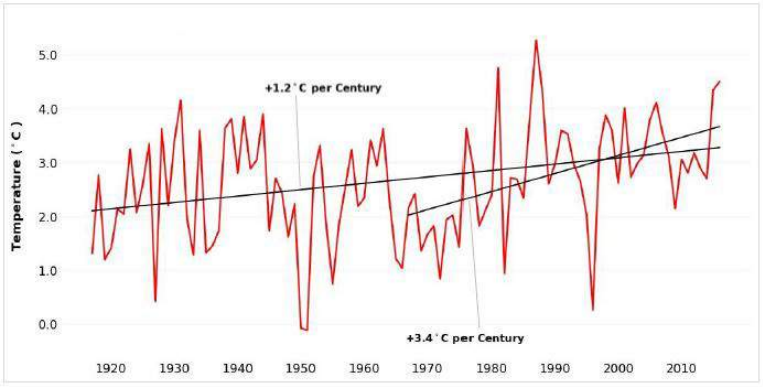


Figure 1. Mean annual temperature in Lacombe County (1917-2016).

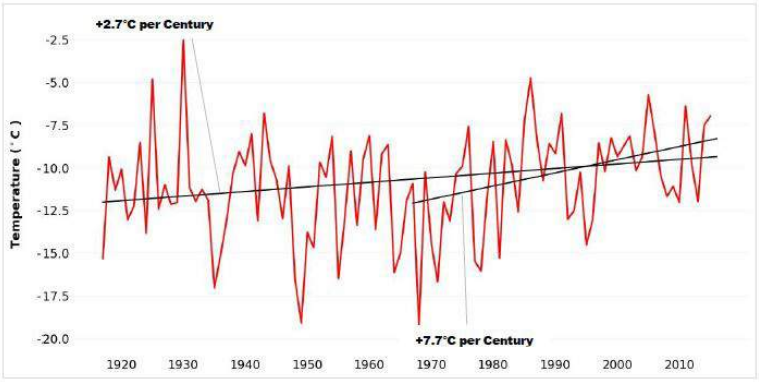
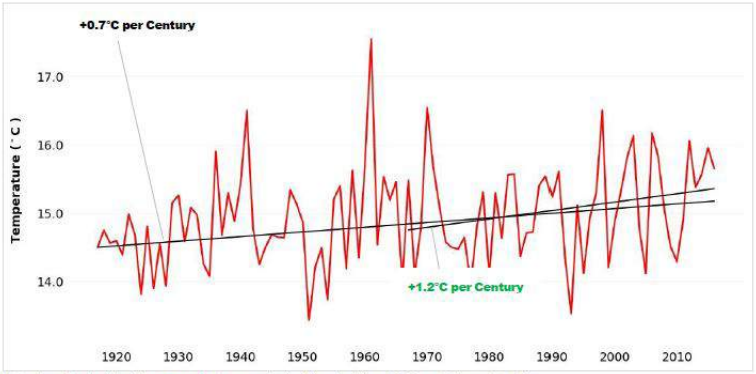
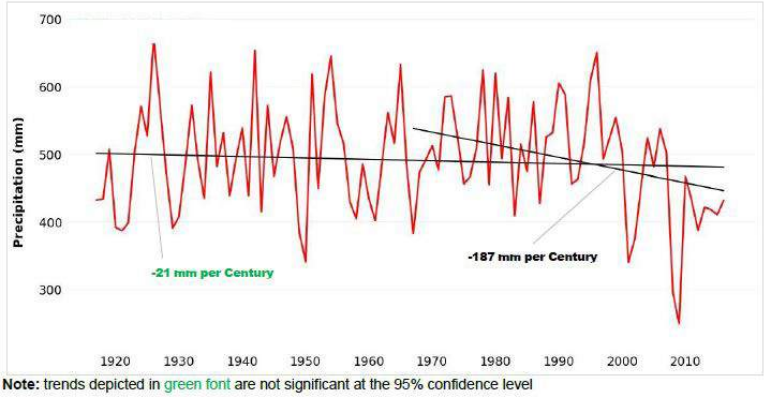


Figure 2. Mean winter temperature in Lacombe County (1917-2016).



Note: trends depicted in green font are not significant at the 95% confidence level

Figure 3. Mean summer temperatures in Lacombe County (1917-2016).



Note: trends depicted in green font are not significant at the 95% confidence level

Figure 4. Mean annual precipitation in Lacombe County (1917-2016).

Local Climate Trends

Temperature trends:

- Temperature records for the area over 1917-2016 show that mean annual temperature has increased at a rate of +1.2°C per century (Figure 1), which is approximately 50% faster than the observed global rate of warming over the same period.
- The rate of warming observed over the last 50 years is higher still, at +3.4°C per century.
- The largest seasonal increase in temperature in Lacombe County occurred during the winter (December-February). The observed rate of warming in winter over the last 100 years is +2.7°C per century (Figure 2).
- Warming during the summer (June-August) over the last 100 years occurred at a slower rate of +0.7°C per century, and +1.2°C per century over the last 50 years (Figure 3).
- Similar warming trends are also observed for mean spring and fall temperatures over the last 50 and 100 years.

Precipitation trends:

- Over the last 100 years, mean annual precipitation in Lacombe County decreased at a rate of 21 mm per century (Figure 4).
- Over the last 50 years, mean annual precipitation has increased at a rate of 187 mm per century (Figure 4).

Climate Projections for Lacombe County

The results produced from global climate models provide us with projections of how the Earth's climate may change in the future. Global climate models are a mathematical representation of the climate that divide the earth, ocean and atmosphere into millions of grid boxes. Predicting the future is inherently uncertain. To accommodate this uncertainty, projections of future climate change consider a range of plausible scenarios.

For this assessment, All One Sky Foundation considered climate model projections for Lacombe County under two pathways: a 'business as usual' scenario where little additional effort is made to curtail factors contributing to climate change; and a 'strong mitigation' scenario where considerable effort is made to mitigate factors contributing to climate change.

Temperature projections:

- **Mean annual temperature** in Lacombe County is anticipated to increase by +3.0°C (yellow line, 'strong mitigation' scenario) and +3.5°C (red line, 'business-as-usual' scenario) above the 1961-1990 baseline.
- **Mean winter temperature** in Lacombe County is anticipated to increase by +3.4°C and +4.0°C for the 'strong mitigation' and 'business-as-usual' scenarios, respectively (Figure 6).

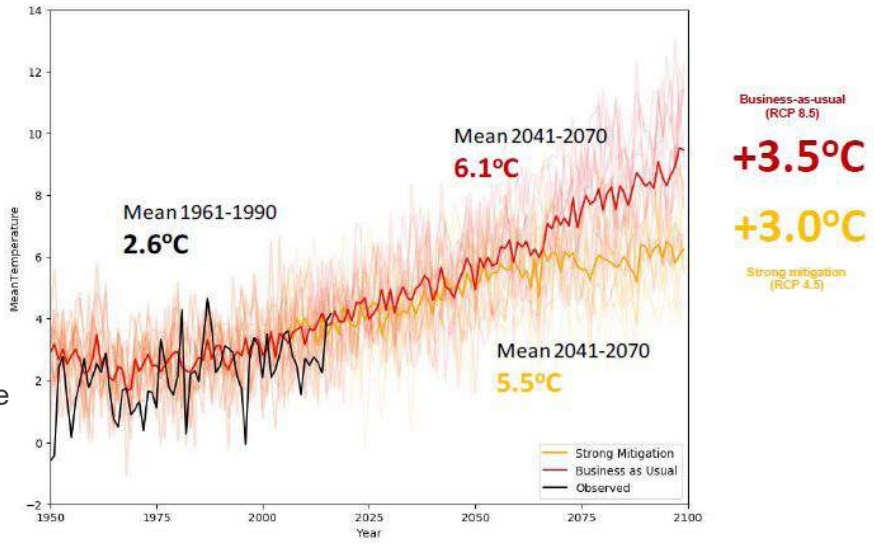


Figure 5. Projected mean annual temperature in Lacombe County.

- **Mean summer temperature** in Lacombe County is anticipated to increase by +2.8°C and +3.9°C for the 'strong mitigation' and 'business-as-usual' scenarios, respectively (Figure 7).

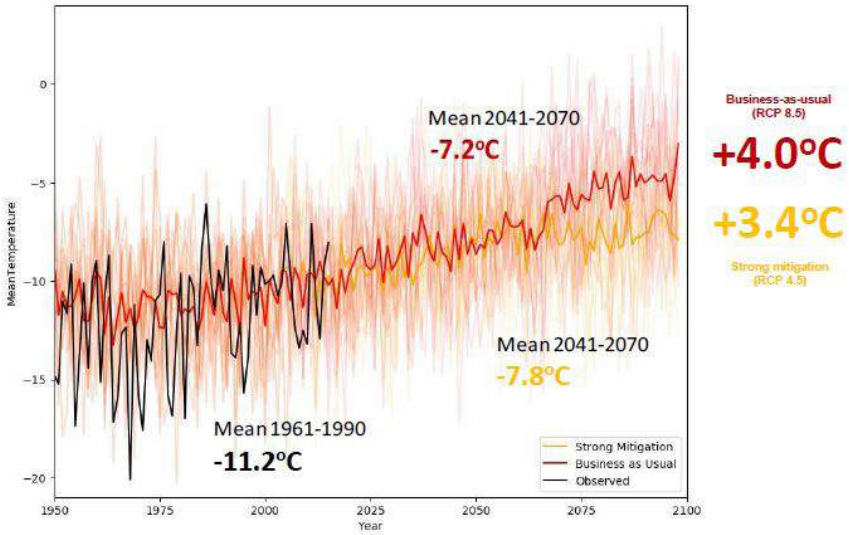


Figure 6. Projected mean winter temperature in Lacombe County.

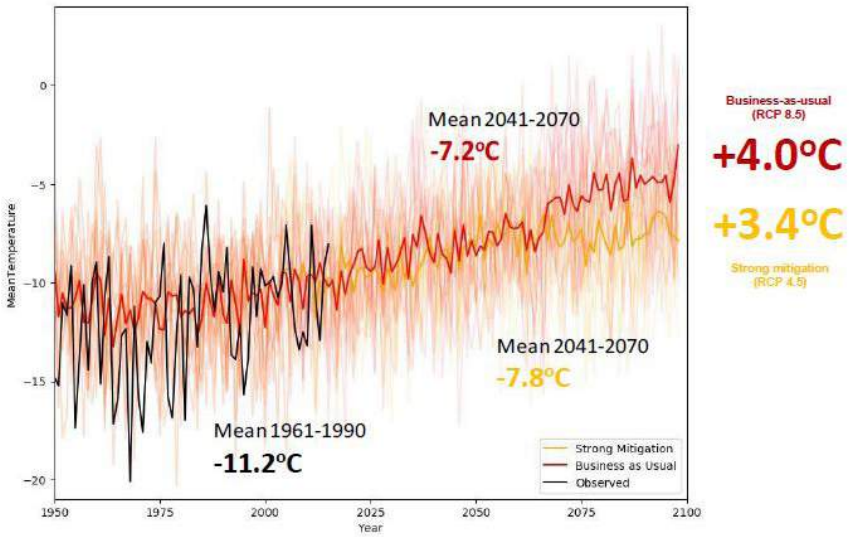


Figure 7. Projected mean summer temperature in Lacombe County.

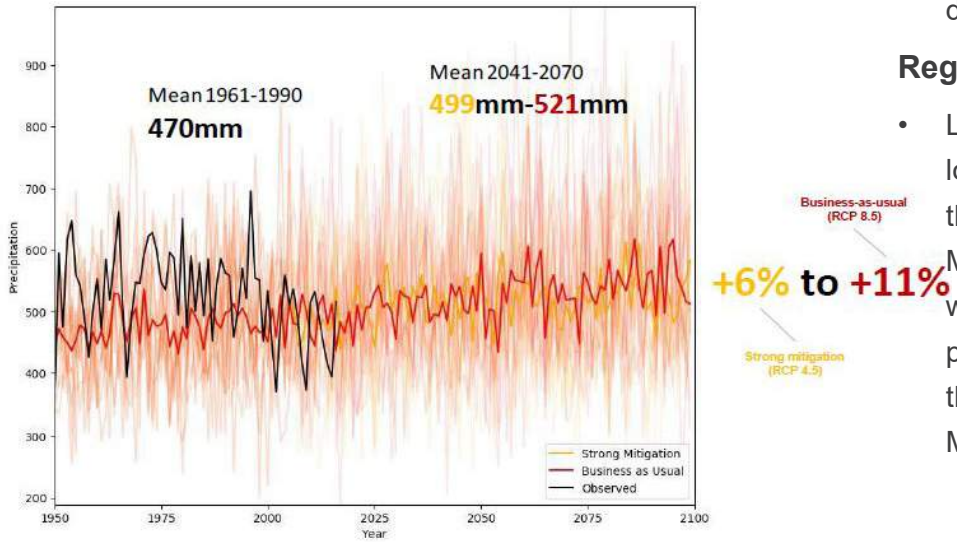


Figure 8. Projected mean annual precipitation in Lacombe County.

Precipitation projections:

- Mean annual precipitation is projected to increase by 6% to 11% for 'strong mitigation' and 'business-as-usual' scenarios, respectively (Figure 8).
- Larger increases in precipitation are projected for the winter (Figure 9), while summer precipitation is projected to decrease slightly (Figure 10).

Available moisture and growing season:

- Even though mean annual precipitation is projected to increase in Lacombe County by the 2050s, the area is projected to become drier overall. Due to the warmer temperatures increasing the rate of evaporation from vegetation and soils.
- Growing degree days are projected to increase from 1327 to 1633, approximately 306 growing degree days on average

Regional ecosystems:

- Lacombe County is currently located at an interface between the Central Parkland and Dry Mixedwood Forest regions. The warmer and drier conditions projected for the 2050s will make the area more favourable for Mixed Grassland Ecosystems

Action Items

Risk and opportunities were identified for Lacombe County from these potential climate projections. These risks and opportunities were prioritized to identify areas for action planning. The priorities selected for action planning were:

- Wildfire
- Water quality and water availability
- Agricultural impacts (a combination of decreased agricultural productivity, and a longer growing season)

As a result of this workshop, “providing educational opportunities to Council and staff on the climate trends for the County” has been added as an action item in our 2018-2023 Strategic Plan. The climate projections have also given us another crucial aspect to consider when planning for the future of Lacombe County.

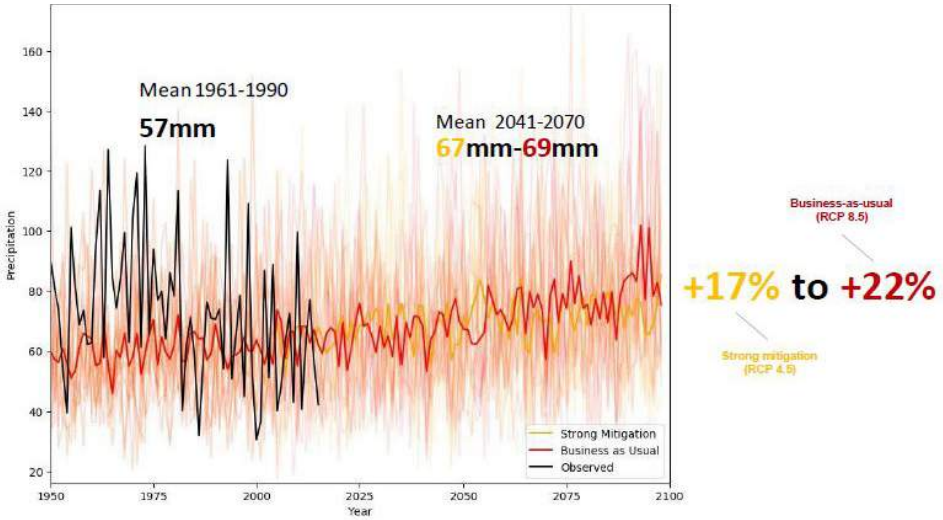


Figure 9. Projected mean winter precipitation in Lacombe County.

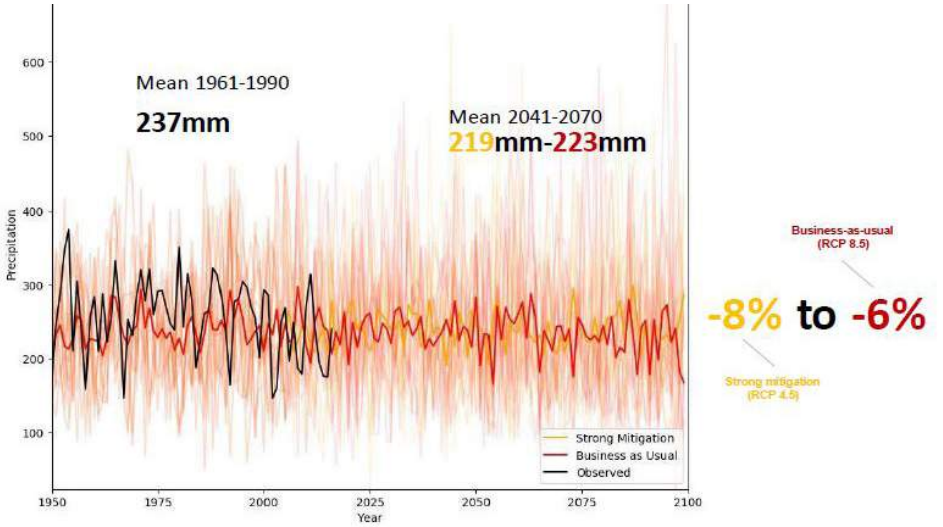


Figure 10. Projected mean summer precipitation in Lacombe County.

Environmental Policy

Our Environmental Policy was adopted in 2013, it states that Lacombe County is committed to a healthy environment for current and future generations. The Environmental Policy is intended to unify Lacombe County's vision in order to guide the actions of the County, the staff, the Councillors and the consultants that works for us to ensure the environment is conserved, protected, and enhanced as well as in balance with social and economic needs.

Photo Credit: D. Laitila

> "Lacombe County's vision is to ensure...the environment is conserved, protected, and enhanced as well as in balance with social and economic needs."

Environmental Management Plan

The Environmental Management Plan (EMP) was adopted in 2014 and it outlines a specific framework on how Lacombe County will carry out environmental stewardship. The EMP is important because it provides the staff and Council with a clear direction for the County's goals and targets for environmental management. This is an internal document, which means all goals, targets, and expectations are placed on the County to adhere to. The EMP has five priority areas; water quality, waste creation and disposal, efficient use of water, energy consumption, and land use in the built and natural environment. Initially the Environmental Steering Committee focused on energy consumption and efficient use of water.

Water Quality

- Currently this priority area has not been directly addressed in the EMP.

Waste Creation and Disposal

- A printing awareness campaign was implemented in 2017.
- A compost program was implemented in the Administration building in 2017.

Efficient Use of Water

- Water consumption data is constantly being collected for the Administration and Public Works Buildings.
- A survey was completed by staff to collect data on employee perceptions, attitudes, and behaviours regarding efficient use of water.

5 EMP PRIORITY AREAS

Lacombe Lake. Photo Credit: J. Schafer

Remote Lacombe County Shop location

9 PROJECTS IDENTIFIED

Energy Consumption

- An energy audit was completed in September 2014 for the Administration and Public Works Buildings. The audit identified nine projects that would reduce our overall energy consumption and greenhouse gas emissions. All of the projects were completed, with the exception of one that was deemed to not be feasible.
- A fleet vehicle consumption audit was completed in 2015.
- An Idle Reduction Committee was formed and implemented an idle reduction program.

Land Use in the Built and Natural Environment

- Currently this priority area has not been directly addressed in the EMP.

Environmental Improvement Grant

In 2014, Lacombe County introduced the Environmental Improvement Grant. The grant program aims to provide financial assistance to community groups and schools to develop or deliver community-based environmental services and programs within the County. The grant program which is based on a competitive selection process involves an application form, regular reporting, and the ability to demonstrate environmental benefits through the proposed project. Since 2014, Lacombe County has given out $45,500 in grants to various groups with a wide array of environmental projects. Recipients over the last five years include:

- Alberta Riparian Health Management Society
- Ecole Lacombe Junior High School
- Ellis Bird Farm
- Friends of Chain Lake Society
- Gull Lake Community League
- Lacombe 4H District
- Lacombe Lake Stewardship Society
- LCHS EcoVision Club
- Medicine River Watershed Society
- Pheasants Forever
- Red Deer River Watershed Alliance
- Village of Alix
- Wilson's Beach Community League

Lacombe Compsite High School EcoVision Bee Wise Program

Through the 2017 program, Lacombe County supported five community organizations with environmental projects.

- Ellis Bird Farm received $2000 through the grant program. Their 2017 project involved upgrading their purple martin colony by replacing deteriorated boxes with gourds, and by refurbishing existing purple martin nesting boxes.
- The Gull Lake Community League received $2000 through the grant program. Their 2017 project involved constructing 20 large cavity nesting boxes for bird breeding and providing accompanying education messages about this project.
- The Lacombe 4H District received $450 through the grant program. Their 2017 project involved establishing a gardening project for youth.
- The LCHS EcoVision Club received $3000 through the grant program. Their 2017 project involved implementing a “bee wise” program. This included the establishment of five pollinator gardens, starting a green certificate bee technician course, installing two bee hives, and offering pollinator related workshops to community members.
- The Wilson’s Beach Community Association received $2550 through the grant program. Their 2017 project involved creating a pollinator garden and the installation of bee/insect hotels throughout the neighbourhood.

Fox. Photo Credit - J. Pfenghanssl

FIVE PROJECTS SUPPORTED IN 2017

Sylvan Lake

Sylvan Lake Communal Sewer System

Lacombe County has completed the Communal Servicing Project at Sylvan Lake, which connected the communities of Blissful Beach, Kuusamo Krest, Yuill, and Palm Bay. A total of 69 lots are now serviceable and homeowners have until October 30, 2020 to connect to this system. Currently, twelve lots have connected to the system.

A set of holding tanks and low-pressure piping makes up each system and allows homeowners to connect their current sewage systems simply by the addition of a low-pressure grinder pump and tank where needed. The operation of this system is governed by a County Bylaw and the project was funded by a Federal Building Canada Fund Grant, Lacombe County and the residents affected by this project.

The Effects of Septic System Wastes on Lakes and Streams

Nutrients (particularly phosphorus) from inadequate septic systems play a major role in causing excessive weed and algae growth in lakes and ponds. Just a small amount of additional phosphorus in a lake or pond can increase the growth of algae and/or aquatic weeds. When overgrown algae and plants die rapidly and decompose, oxygen is removed from the water, which threatens fish and other aquatic animals. Excessive weed growth also makes boating, fishing, and swimming less enjoyable. Wastewater from septic systems that reaches adjacent surface waters also increase the chance that wildlife, swimmers, and downstream users are exposed to infectious bacteria and viruses that are associated with wastewater.

AGRICULTURE

Weed Control

The Alberta Weed Control Act has continued to be administered in Lacombe County. The Act is intended to protect agricultural lands from prohibited noxious weeds causing economic impacts to the area's producers. It also protects natural ecological areas from invasive species. Six noxious weeds continue to be the concentration of Lacombe County's efforts including: Yellow Toadflax, Scentless Chamomile, Leafy Spurge, Common Tansy, Tall Buttercup and Canadian Thistle.

Table 2 - Summary of Noxious Weeds in Lacombe County

Common Name	Other Names	Life Cycle	Common Features
Yellow Toad Flax	Butter and eggs, wild snap dragon, common toadflax	Perennial	• Creeping Roots • Narrow lance-shaped leaves • Yellow snap dragon like flower
Scentless Chamomile	Mayweed, barnyard daisy, wild chamomile, corn feverfew	Annual, Perennial, Biennial	• White, daisy-like flowers • Finely divided, fern-like leaves
Leafy Spurge	Green Spurge	Perennial	• White latex in all parts of the plant • Deep and spreading roots with buds • Green to yellow flowers with 4 crescent shaped glands
Common Tansy	Bitter buttons, cow bitter, golden buttons	Perennial	• Fern-like leaves • Button-like heads in clusters, yellow flowers • Glands on stems give a dotted appearance
Tall Buttercup	Meadow buttercup, common buttercup, giant buttercup	Perennial	• Bright yellow flowers with 5 petals • Flowers on long stalks • Upper leaves divided into 3 or 4 narrow segments and hairy

Table 3 - Noxious Weed Cases Handled in 2015-2017

	2015	2016	2017
Yellow Toad Flax	60	117	55
Scentless Chamomile	190	85	67
Leafy Spurge	35	71	32
Common Tansy	170	45	121
Tall Buttercup	65	31	30

Table 4 - Clubroot Inspections and Cases 2015-2017

	2015	2016	2017
Total Clubroot Inspections	155	78	62
Confirmed Clubroot Locations	19	10	3

Alternative Land Use Services

Introduction

ALUS Canada is a national not-for-profit organization that supports the delivery of the ALUS – Alternative Land Use Services – program across the country. Active in six provinces to date, the ALUS program provides a financial incentive for producing valuable ecological services on Canadian farmland. Specifically, ALUS helps farmers and ranchers restore wetlands, plant windbreaks, install riparian buffers, manage sustainable drainage systems, create pollinator habitat and establish other ecologically beneficial projects on their properties. ALUS provides per-acre annual payments to ALUS participants to recognize their dedication to managing and maintaining all ALUS projects on their land.

Medicine River

8 PROJECTS SUPPORTED

2018 ALUS Tour

In 2017, Lacombe County partnered with ALUS Canada making it the 22nd ALUS community in Canada and the 10th in Alberta. Recognizing the value of the agriculture industry in the economic, social, and historical fabric of local communities, yet also understanding that agricultural activities have an impact on land and water resources. ALUS Lacombe County will establish innovative projects that produce ecosystem services, such as cleaner air, cleaner water, and more biodiversity, to benefit the environment and everyone in the community.

ALUS Lacombe County has four specific Priority Areas, which include:

1. Riparian Zone Conservation & Enhancement Along Waterways
2. Create Eco-Buffers & Improve Traditional Shelterbelts
3. Lake Water Quality Conservation & Enhancement
4. Wetland Conservation & Enhancement

ALUS Lacombe County is overseen by a Partnership Advisory Committee (PAC), comprised of local agriculture producers. The role of the PAC is to review and approve agricultural producer and landowner delivered projects and provide recommendations to Lacombe County Council in regards to agriculture conservation programming within Lacombe County.

Current Projects

ALUS Lacombe County currently has eight projects underway, four accepted in 2017 and four accepted in 2018. Currently there is a total of 83 acres worth of ALUS projects within Lacombe County.

Project 1 - Eleven acres seeded to hay around a wetland and five acres of enhanced wetland including the incorporation of hen houses and a duck platform.

Project 2 – Creation of five acres of eco-buffer and the fencing off of 21 acres of woodlot to remove cattle pressure and allow for natural encroachment.

Project 3 – Fifteen acres of hay land being converted back into a forested area near the Red Deer River. Multiple tree species have been and will continued to be planted, including white spruce, Colorado spruce, balsam poplar, maple, yellow twig dogwood, green ash, etc.

Project 4 – Along the Medicine River, 15 acres of annual cropland will be converted to hay land and willows will be planted in riparian areas.

Project 5 – To control soil erosion, eight acres to be converted from annual crop to hay land.

Project 6 – Complete cattle exclusion on 25 acres along the Medicine River, which was heavily grazed in the past. A solar powered off-site watering system was installed to provide an alternate source of water for cattle.

Project 7 – Two acres of annual crop land was seeded to grass around a wetland, in order to reduce the agricultural pressure on the wetland. There are 12 acres of wetland and native grassland being protected.

Project 8 – Four acres of annual cropland was seeded to hay around a wetland and four acres of enhanced wetland including the incorporation of hen houses and a duck platform.

ALUS project along the Medicine River

Shelterbelt planting project: ALUS

83 ACRES WORTH OF ALUS PROJECTS

OPERATIONS

Seeding Crooker Wetland 2016

Crooker Wetland 2017

Crooker Wetland

Lacombe County's aggregate pit, Crooker Pit, which is now known as Crooker Wetland is located 8 km northeast of the town of Lacombe (NW4-41-27 W4M) in the Blindman River sub-drainage of the Red Deer River drainage basin. The initial development for aggregate extraction began around 1966. Prior to development, this area was characterized as an upland landscape under agricultural production with no defined wetlands or drainage/watercourses.

Crooker Aggregate Pit came to an end in 2013 with AMEC Environment and Infrastructure (AMEC) hired by Lacombe County in the same year. AMEC undertook field assessments and information review in order to characterize existing conditions within Crooker Pit and they identified potential wetland development opportunities. A wetland creation concept plan was developed based on the review of information, field surveys of existing conditions, and a reference natural wetland inventory. It was proposed that one large wetland complex be developed, with three separate open water areas. The implementation of the proposed plan has resulted in the formation of 9.2 ha of created wetland.

Grading and contouring of Crooker Wetland was completed in 2014 to develop successive transition zones corresponding to a natural wetland. Gravel beaches were installed in all three basins to create shorebird breeding habitat. In 2015, 16,000 cubic metres of topsoil was trucked to Crooker Wetland and distributed evenly over the ground surface of the graded complexes of the riparian, low prairie and wet meadow zones. Seeding for both low prairie wetland and upland areas occurred in 2016. Upland forest was incorporated to enhance wildlife habitat and facilitate habitat linkages to surrounding landscapes. Forty-five trembling aspens and ten white spruce trees were planted along the south and east boundary. In 2018, 450 sedge plugs were planted along the wetland, three different native species were used. Both naturally and with human inputs Crooker Wetland is progressing towards a functioning wetland.

Wetland Assessments

The Alberta Wetland Policy was released in 2013, this document is essential for the conservation and management of Alberta's wetlands. Ensuring that the ecological, social, and economic benefits of wetlands are maintained for present and future generations. An important part of this policy is Wetland Mitigation. The Government of Alberta understands the importance of development in this province and that these developments may have impacts on wetlands. Therefore, they created mitigation options for when a proposed action might cause the loss or degradation of a wetland. The mitigation hierarchy is (in descending order of preference):

1. Avoid
2. Minimize
3. Replace

Lacombe County annually hires a consulting company to complete wetland evaluations on road construction projects to determine how wetlands could be affected and how we could avoid, mitigate or compensate for wetland impact due to road construction. In 2017, biophysical and wetland assessments were conducted on 44 wetlands on five road segments slated for construction in 2018. The environmental assessments outlined environmental sensitivities on each road alignment, and recommended mitigation measures to reduce potential impacts.

In the event that Lacombe County has to permanently impact a wetland, we use hectares from our created wetland, Crooker Wetland, for compensation.

Planting sedges in Crooker Wetland 2018

Crooker Wetland 2016

Nova Nature Trails. Photo Credit: S. Chinski

Recreational Spaces

Kuhnen Park

Frank and Rosalie Kuhnen gifted Lacombe County 120 acres of natural area around Lacombe Lake, to be preserved as a public natural/recreational area. In 2015, Kuhnen Park was opened, it boasts 6.3 km of nature trails that make their way through the forest.

Community Nature Trail

In 2015, Nova Chemicals completed their Community Nature Trail. This trail demonstrates how wildlife habitat, industry, and recreational areas can co-exist among one another. Amenities available at this recreational space are 5 km of looped trails, parking area, picnic area, pollinator garden, and a bridge crossing.

Anderson Park

Located on the east side of Gull Lake, Anderson Park was opened in 2017. Anderson Park is a unique recreation area that includes a playground, a junior paleontology dig site, musical play instruments, a basketball court, beach volleyball, walking trails, a disc golf course, a gazebo, and pollinator gardens. The property is 26 acres and was donated by Jack Anderson to the County for the space to be used for recreational and natural amenities.

Sandy Point Beach

Located on the west side of Gull Lake, Sandy Point was opened in 2017. Sandy Point Beach is nearly 6.5 acres of lakeside recreational area. The development concept for Sandy Point RV Resort required the developer and municipality to work closely together to provide public amenities that will be left for the County to maintain. The beach, parking lot and playground equipment were funded and constructed by the developers, but Lacombe County will continue the maintenance on them as well.

Soper Natural Area

The land for the Mary & Cliff Soper Natural Area was donated by the Soper's in early 2017. Cliff, a Lacombe County Councillor from 2001-2013, was passionate about the environment and about creating natural spaces for residents and visitors to enjoy. The gifted land is approximately 25 acres, and is located east of Blackfalds. It will remain in its natural state and it will be open to the public for passive recreational purposes. Lacombe County has constructed a parking area for the Mary & Cliff Soper Natural Area leading to trails for everyone to enjoy.

Grand Opening Celebration at Sandy Point Beach

Entrance of Mary & Cliff Soper Natural Area

Remote Shops

Remote shops for the east side and west side of Lacombe County were completed in 2016. General growth in the west side of Lacombe County near the Sylvan Lake area have created additional demands on the operations department. The east remote shop, around the area of Tees, has not seen the same development pressure as the western portion of Lacombe County but does have numerous paved roads in the area along with an extensive gravel road system. The remote shops reduce travel time for snowplows and other equipment substantially, and allow for better servicing and maintenance of equipment without hauling equipment back to Lacombe.

Both of the remote shops were outfitted with a solar energy system. On average, together these systems produce 24,900 kWh annually. This is enough electricity to power approximately 10 average Alberta homes for a year. It also reduces the County's carbon emissions by 18.5 tons per year.

24,900 KwH OF SOLAR ENERGY PRODUCED ANNUALLY

Lacombe County Remote Shop

PLANNING

Municipal Development Plan

In 2017, the Lacombe County Planning Department updated the Municipal Development Plan (MDP) and the Land Use Bylaws. The MDP is a long-term planning document that sets out a vision for the future development of the County. The MDP provides a comprehensive long term land use policy framework within which current and projected growth and development may take place over a ten year period. It contains policies on land use, transportation, utilities, recreation, economic development, community services, the environment, quality of life and intermunicipal planning and cooperation.

The six guiding principles of this plan are:

1. *Promote and encourage the County's strong agricultural community*
2. *Demonstrated responsible stewardship of the County's natural environment and provide a variety of recreational opportunities*
3. *Diversify and support economic growth*
4. *Ensure compatible and responsible development of the County's built environment*
5. *Support innovative and efficient infrastructure and technologies*
6. *Foster strong municipal leadership*

Joffre Cogeneration Plant. Photo Credit: S. Chinski

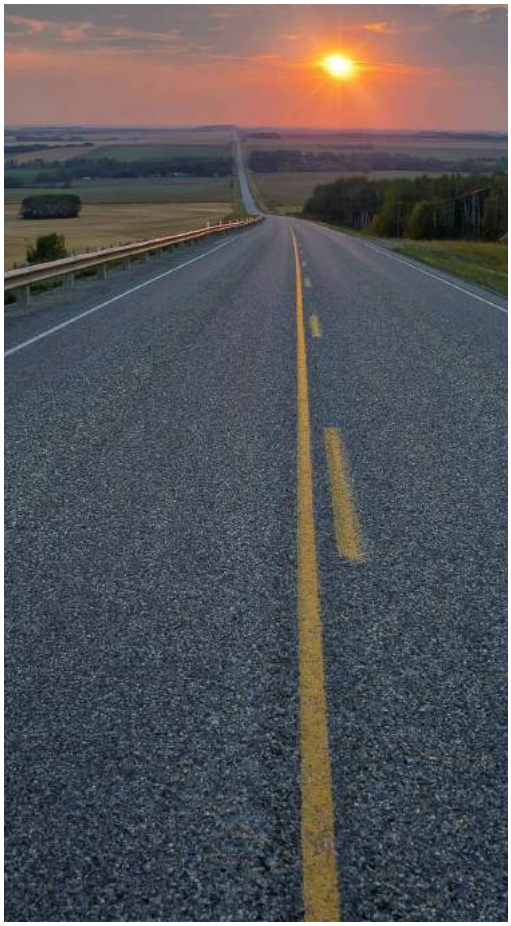


Photo Credit: D. Lavery

6
GUIDING
PRINCIPLES

While the whole document is agriculture and environment focused, section four deals directly with the natural environment and recreation. The guiding object of this section states:

"Demonstrate responsible stewardship of the County's natural environment and provide a variety of recreational opportunities

1. *Protect the rural landscape and natural environment*
2. *Demonstrate responsible and accountable use of the County's natural capital*
3. *Maintain and enhance community appeal by supporting recreational amenities*
4. *Promote recreational amenities that incorporate the natural environment*
5. *Encourage environmental stewardship among the community"*

There are many policies within the MDP that highlights Lacombe County's dedication to environmental stewardship. Below are updates to this section in the 2017 MDP:

- The development of a Parks and Open Space Master Plan will occur
- Findings in biophysical and/or geotechnical reports will determine the layout of developments
- Natural habitat corridors, biodiverse, and environmentally sensitive areas are to be protected
- Developers are required to promote the development of green infrastructure
- The incorporation of Dark Sky Compliance Standards is required for lighting associated with developments
- Policies were added in support of conservation easements, land donation, and Alternative Land Use Services (ALUS) Canada
- The County will aim to promote environmental education initiatives and recreational opportunities
- Developers will be required to place educational signage on important environmental, cultural, or historic features

Photo Credit: D. Laitila

One particularly important update to the MDP in 2017 was a change in the stormwater management policies. The County decided to make it a requirement for developers to create a naturalized wetland or utilize on site wetlands for stormwater management, rather than geometric stormwater rention ponds that were used in the past. Wetlands are productive environments that provide an array of ecological benefits and services. They have the ability to filter and retain stormwater, improving the quantity and quality of the water supply. They also provide habitat for several species, increasing the biodiversity of an area. Wetland conservation and creation are particularly important in Alberta, because it's estimated that 64% of wetlands in settled areas within the province no longer exist.

Photo Credit: S. Chinski

PARTNERSHIP ACCOMPLISHMENTS

Take it Off Program

Sylvan Lake Management Committee

The Take it Off Program was formed by the Sylvan Lake Management Committee, which consists of eight municipalities around Sylvan Lake including Lacombe County. The program is voluntary, in which fish huts are registered and are assigned a number, which is put on the ice huts. The registry is intended to reduce the number of fish huts left on Sylvan Lake after the March 31st deadline to remove them. Ice huts that were being left on the lake have the potential to cause serious environmental and health issues. The remaining debris included wood, gasoline and plastic and metal supplies. This unwanted debris had the potential to cause boating and swimming hazards and detrimental contamination to fish and waterfowl habitat. The program has been running for 6 years now and has seen the number of fish huts that have been abandoned on the lake go from 25 in 2011 to 1 in 2018. The long-term goal of this program is to have mandatory fish hut registry provincially wide.

1
ICE HUTS
REMOVED FROM
SYLVAN LAKE

Ponoka County, Summer Village of Gull Lake, and Summer Village of Parkland Beach

The Take it Off Program was launched on Gull Lake in 2017, through the partnership of Lacombe County, Ponoka County, the Summer Village of Gull Lake, and the Summer Village of Parkland Beach. This program is voluntary and fish huts are registered and assigned a number. It is also intended to reduce the number of fish huts left on Gull Lake after the removal deadline of March 31st. The program had a successful second year, with zero ice huts being left on Gull Lake.

0
ICE HUTS
REMOVED FROM
GULL LAKE &
BUFFALO LAKE

Camrose County, Stettler County, Summer Village of Rochon Sands, and Summer Village of White Sands

The Take it Off Program was launched on Buffalo Lake in 2018, through the partnership of Lacombe County, Camrose County, Stettler County, the Summer Village of Rochon Sands, and the Summer Village of White. Similar to the Sylvan Lake and Gull Lake Take It Off Programs, this program is voluntary and fish huts are registered and assigned a number. It is also intended to reduce the number of fish huts left on Gull Lake after the removal deadline of March 31st. The program had a successful first year, with zero ice huts being left on Buffalo Lake.

Agricultural Plastics Recycling Program

An Agricultural Plastics Recycling Program was launched in 2018, through the Partnership of Lacombe County, Ponoka County, and Red Deer County. This program is offered to ensure the proper recycling of plastic grain bags. The program is free of charge to agriculture producers operating within Lacombe County, Ponoka County, and Red Deer County.

The three counties signed an agreement with Merlin Plastics, one of the largest plastic recyclers in Western Canada. The plastic grain bags, collected from central Alberta agriculture producers, will be delivered to a recycling facility in southern Alberta. From there, the plastic will be processed and turned into pellets, which are then utilized by an Alberta plastics manufacturer. Both the pelletizing and manufacturing occur in Alberta.

Sylvan Lake - Team Up to Clean Up

In May 2018, the Sylvan Lake Management Committee organized a one day shoreline cleanup event in all the municipalities surrounding Sylvan Lake. Lacombe County sent out 100 invitations to landowners around the lake and held their cleanup at Westside Country Estates. Two volunteers and four County staff collected three garbage bags and other large items in and around the development.

Team Up to Clean Up

Agricultural Plastics Roller


Elegant Sunburst Lichen. Photo Credit: Wikipedia


Lessers Bird's Claw Beard Moss. Photo Credit: Nature Spot

Biodiversity

The Alberta Biodiversity Monitoring Institute (ABMI) is an arm's-length, not-for-profit scientific organization. The business of the ABMI is to monitor and report on the status (current condition) and trends of Alberta's species, habitat, and human footprint. The goal of the ABMI is to provide relevant scientific information on the state of Alberta's biodiversity to support natural resource and land use decision making in the province.

The ABMI reports on a range of biodiversity indicators that act as a guide for establishing biodiversity-related management goals and tracking performance against those goals. The ABMI generates value-neutral, independent, publicly accessible data, and presents knowledge derived from the data in a value-neutral format.


Black-capped Chickadee. Photo Credit: Boreal Birds

ABMI has surveyed 1034 terrestrial sites and 989 wetland sites in Alberta from 2003-2017. There are eleven survey sites within Lacombe County and to date six of them have been surveyed.

When surveying sites ABMI collects data on vascular plants, lichens, bryophytes, birds, mammals, and soil mites. The following is a feature on species found in Lacombe County from some of these groups:

- Lesser Bird's-Claw Beard-Moss is a bright yellow-green moss that forms cushions or tight turfs. It can often be found in disturbed, open habitats, for example paths, gardens, and fields.
- Elegant Sunburst Lichen is a yellow to orange lichen, which can found on humid to dry rock habitats.
- Wild Bergamot is vascular plant with a whorl of showy, pinkish, leafy bracts. It is commonly found on dryish soils on prairies or dry rocky woods. Wild Bergamot attracts both hummingbirds and butterflies.
- Black-capped Chickadee is small, non-migratory bird that has a grey back, a black cap that covers their eyes, white cheeks, and a black triangle on the throat. They can be found across Canada in a variety of habits, but prefer deciduous and mixed forests. Black-capped Chickadee's can remember where they hid food for approximately 28 days after they hid it.

Human Footprint

The ABMI defines human footprint as the visible alteration or conversion of native ecosystems to temporary or permanent residential, recreational, agricultural, or industrial landscapes. Human footprint includes any natural cover that is converted to a human use for extended period of time.

In 2010, Lacombe County had a human footprint of 78.7% and a native habitat footprint of 21.3%. In 2016, the human footprint in Lacombe County increased to 79.5% and the native habitat footprint decreased to 20.5%. As seen in Figure 12, human footprint in Lacombe County can be broken down into five categories: agriculture, transportation, urban rural, energy, and human created waterbodies. Agriculture makes up 86.67% of our human footprint, while the remaining other four categories make up the other 13.34%. The agriculture category includes areas of annual or perennial cultivation, as well as confined feeding operations and other high-density livestock operations.

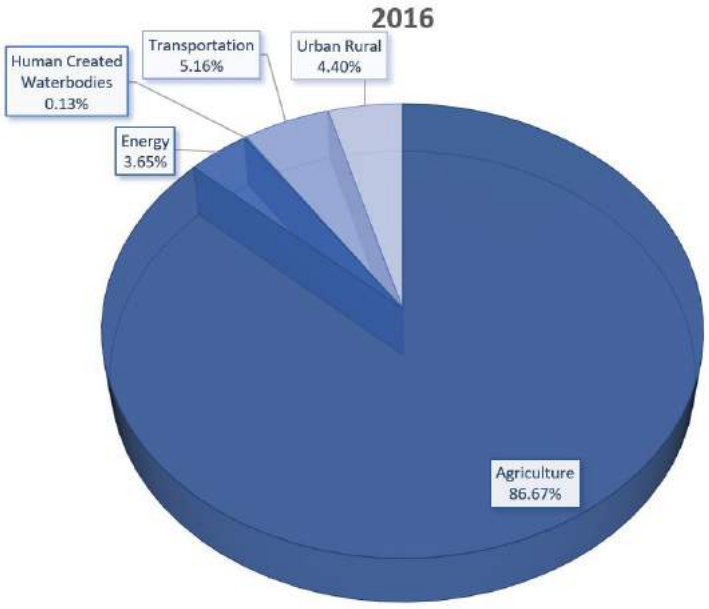


Figure 13. Percentage of the five categories that make up the human footprint in Lacombe County in 2016.

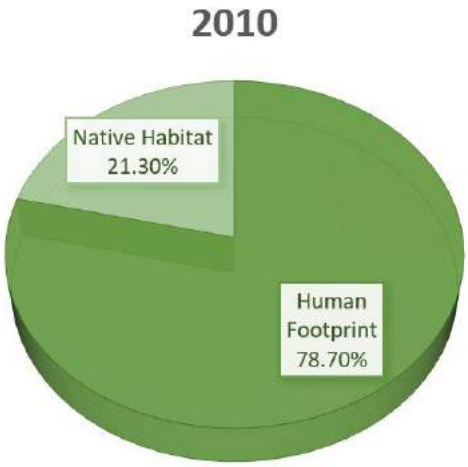


Figure 11. Percentage of human footprint and native habitat in Lacombe County in 2010.

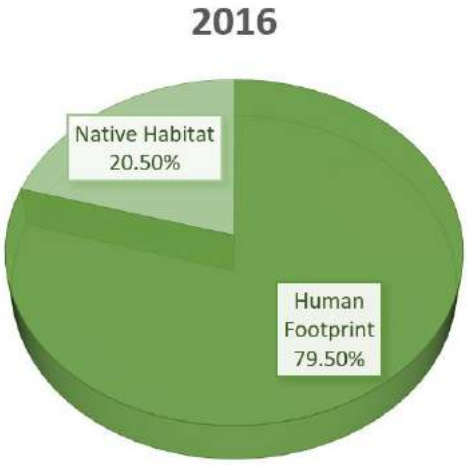
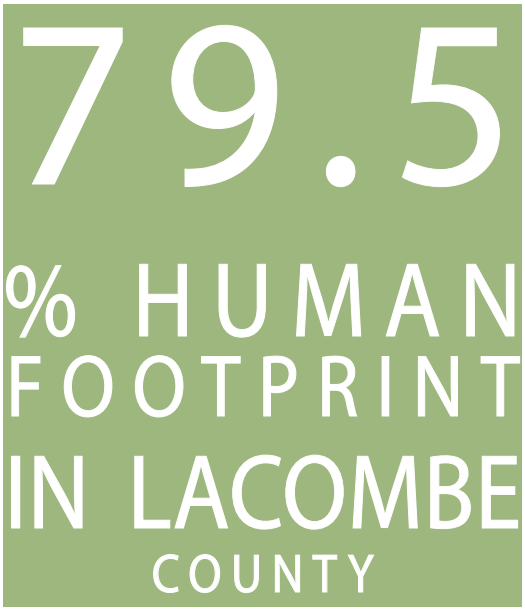


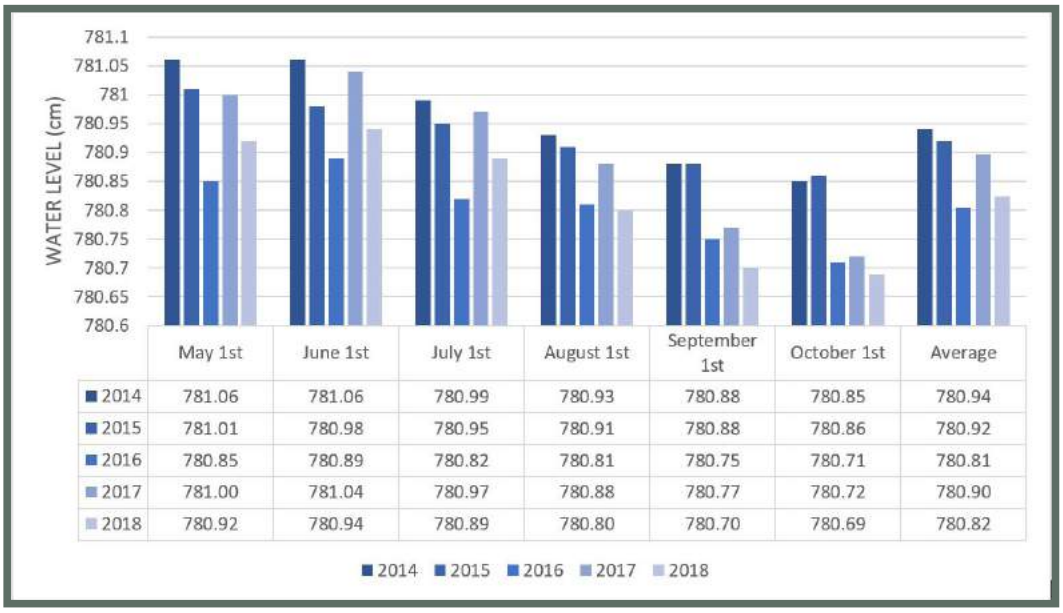
Figure 12. Percentage of human footprint and native habitat in Lacombe County in 2016.



Water Quantity

Buffalo Lake

Over the past five years, the water level in Buffalo has fluctuated from 780.94 cm in 2014 to 780.82 cm in 2018. The average water level over this time period was 780.88 cm.



	May 1st	June 1st	July 1st	August 1st	September 1st	October 1st	Average
2014	781.06	781.06	780.99	780.93	780.88	780.85	780.94
2015	781.01	780.98	780.95	780.91	780.88	780.86	780.92
2016	780.85	780.89	780.82	780.81	780.75	780.71	780.81
2017	781.00	781.04	780.97	780.88	780.77	780.72	780.90
2018	780.92	780.94	780.89	780.80	780.70	780.69	780.82

Figure 14. Water levels in Buffalo Lake from 2014-2018.

Gull Lake

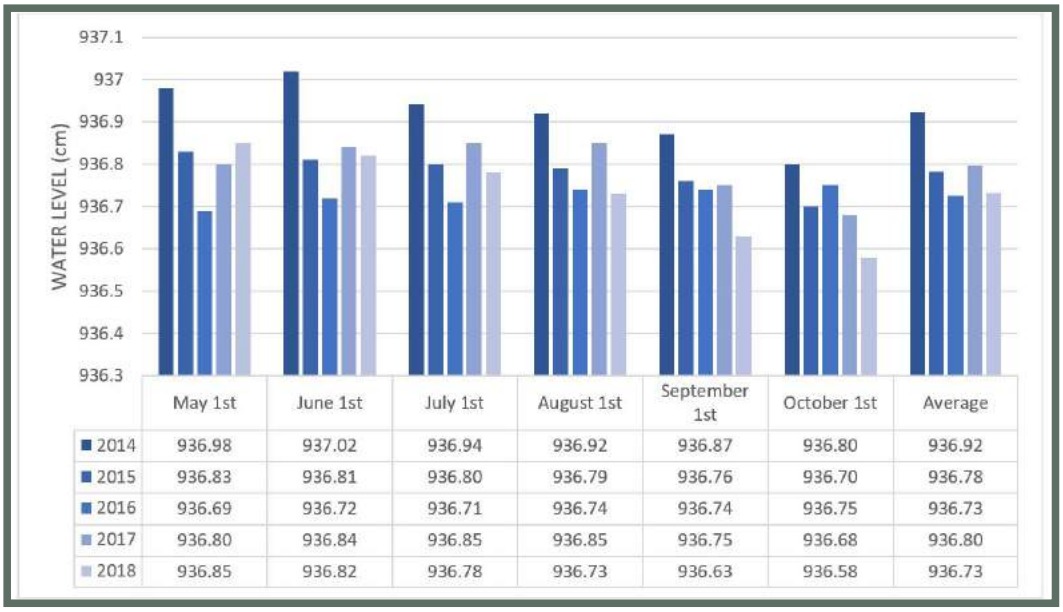
Over the past five years, the water level in Gull Lake has fluctuated from 899.44 cm in 2014 to 898.98 cm in 2018. The average water level over this time period was 899.17 cm.

	May 1st	June 1st	July 1st	August 1st	September 1st	October 1st	Average
2014	899.54	899.56	899.52	899.35	899.36	899.30	899.44
2015	899.32	899.30	899.28	899.27	899.22	899.20	899.27
2016	899.14	899.14	899.08	899.02	899.02	899.00	899.07
2017	899.17	899.18	899.13	899.1	899.03	898.96	899.10
2018	899.07	899.09	899.01	898.97	898.88	898.88	898.98

Figure 15. Water levels in Gull Lake from 2014-2018.

Sylvan Lake

Over the past five years, the water level in Sylvan Lake has fluctuated from 936.92 cm in 2014 to 936.73 cm in 2018. The average water level over this time period was 936.73 cm.



	May 1st	June 1st	July 1st	August 1st	September 1st	October 1st	Average
2014	936.98	937.02	936.94	936.92	936.87	936.80	936.92
2015	936.83	936.81	936.80	936.79	936.76	936.70	936.78
2016	936.69	936.72	936.71	936.74	936.74	936.75	936.73
2017	936.80	936.84	936.85	936.85	936.75	936.68	936.80
2018	936.85	936.82	936.78	936.73	936.63	936.58	936.73

Figure 16. Water levels in Sylvan Lake from 2014-2018.

Photo Credit: G. Hovius

Water Quality

The Alberta Lake Management Society (ALMS) in non-profit organization that was established in 1991. ALMS's purpose is to *"promote understanding and comprehensive management of lakes and reservoirs and their watersheds."* Their LakeWatch program is a volunteer-based water quality monitoring program, used to collect information about Alberta lakes and reservoirs.

Buffalo Lake

Buffalo Lake was last tested by ALMS in 2016. The following is a brief summary of the results from that study:

- The average concentration of phosphorus was 45 µg/L
- The average concentration of chlorophyll-α was 12.1 µg/L
- All metals measured fell within their respective guidelines, with the exception of selenium and arsenic
- The average Secchi depth was 1.6m
- Microcystin was measured four times and all samples were below the recommended guidelines for recreational use.
- No invasive mussels were detected.

Gull Lake

Gull Lake was last tested by ALMS in 2016. The following is a brief summary of the results from that study:

- The average concentration of phosphorus was 17.0 µg/L
- The average concentration of chlorophyll-α was 8.9 µg/L
- All metals measured fell within their respective guidelines, with the exception of arsenic
- The average Secchi depth was 2.0 m
- Microcystin was measured four times and all samples were below the recommended guidelines for recreational use.
- No invasive mussels were detected.

Gull Lake. Photo Credit: V. Heidt

Lacombe Lake

Lacombe Lake was last tested by ALMS in 2017. The following is a brief summary of the results from that study:

- The average concentration of phosphorus was 26.3 µg/L
- The average concentration of chlorophyll-α was 15.0 µg/L
- All metals measured fell within their respective guidelines
- The average Secchi depth was 1.45 m
- Microcystin was measured four times and all samples were below the recommended guidelines for recreational use.
- No invasive mussels were detected.

Sylvan Lake

Sylvan Lake was last tested by ALMS in 2016. The following is a brief summary of the results from that study:

- The average concentration of phosphorus was 14.0 µg/L
- The average concentration of chlorophyll-α was 5.6 µg/L
- All metals measured fell within their respective guidelines
- The average Secchi depth was 4.02 m
- Microcystin was measured three times and all samples were below the recommended guidelines for recreational use.
- No invasive mussels were detected.

Sunbreaker Cove boat launch, Sylvan Lake


Lacombe Lake. Photo Credit: P. Hegge

Waste

The Lacombe Regional Solid Waste Commission (LRSWC) is responsible for the management of solid waste within the boundaries of Lacombe County. The Commission consists of the following member municipalities:

1. Lacombe County
2. Alix
3. Lacombe
4. Eckville
5. Clive
6. Bentley
7. Mirror

Table 4 illustrates the overall waste generation for the LRSWC area over the years of 2012-2017.

Waste that is quantified under the “compactor” disposal column is household waste. This waste is compacted into containers and transferred from the Prentiss Landfill site to the Dried Meat Lake waste facility.

The waste column labeled “landfill” is for dry rubble materials disposed at the Prentiss Landfill site.

Table 4
Waste Generated by LRSWC, 2012-2017

Disposal	2017	2016	2015	2014	2013	2012
Compactor	8700	9814	9284	9964	9844	9743
Landfill	9562	9815	10890	12984	10387	No Data

*Weight is represented in Tonnes

In addition to the overall amount of waste to landfill the authority also tracks the amount of recyclables generated (Table 5). The data collected and depicted below is for the entire commission and is not necessarily only Lacombe County. When collected, the waste is co-mingled and as such data regarding the amount of cardboard, plastic and paper is not separated out.

Table 5
Recyclables Generated by LRSWC, 2012-2017

Recyclable Item	2017	2016	2015	2014	2013	2012
Metal	36.45	500.79	469.46	452.14	412.44	382.92
Cardboard, plastic, & paper co-mingled	1447.46	1332.97	1352.20	900.18	No Data	No Data

*Weight is represented in Tonnes

STATE OF THE ENVIRONMENT

Evaluation Form

Thank you for your interest in the State of the Environment 2018 Report for Lacombe County. To help ensure continuous improvement in our publications and communications with the community we are looking for your feedback.

Please take a few minutes and provide us feedback on the SOE. Please scan and email or post the feedback form back to Jennifer Berry, Environmental Coordinator at Lacombe County.

Email: jberry@lacombecounty.com

Post: Attention: Jennifer Berry
Lacombe County
RR3 , Lacombe AB
T4L 2N3

Please rate the two statements below on a scale of 1 to 10, with 1 being strongly disagree and 10 being strongly agree.

1. The layout for the State of the Environment 2018 Report for Lacombe County was well thought out and easy to read.

Please circle your answer:

1 2 3 4 5 6 7 8 9 10

Strongly disagree Strongly agree

2. The information presented in the State of the Environment 2018 Report for Lacombe County was clear and understandable.

Please circle your answer:

1 2 3 4 5 6 7 8 9 10

Strongly disagree Strongly agree

Tear Here

3. Was there any information missing from the State of the Environment report that you would have like to have seen reported on?

4. Did you learn anything new from the State of the Environment report? If yes, what are some examples?

5. What do you think Lacombe County should do with the information presented in the report?

6. How did you hear about the State of the Environment Report?

THANK YOU FOR YOUR FEEDBACK

LACOMBE COUNTY

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