

# Shoreline and Riparian Condition Assessment

## **MD of Bighorn**



Summer 2023

# MD of Bighorn Summary:

## Your Shoreline and Riparian Condition Assessment

### Purpose of this Report

This report presents information about the condition of riparian areas in your municipality. Satellite-based mapping techniques were used to assess riparian intactness for select waterbodies and areas in the Red Deer River Watershed. Results can be used to inform planning, conservation, and restoration efforts.

Details about the study scope and results can be found in the Appendix and through the Riparian Web Portal ([riparian.info](http://riparian.info)).

### Riparian Areas 101: Why They Matter

Riparian areas are transitional areas between a waterbody and the adjacent upland area. They:



**Improve water quality** by trapping sediments, filtering nutrients and pollutants, reducing aquatic plant and algal growth



**Mitigate floods and droughts** by storing and slowing the release of water and reducing erosion



**Improve biodiversity** by providing fish and wildlife habitat and cooling water temperatures



**Provide aesthetically pleasing areas** for recreation or cultural activities



**Add economic value** by increasing property values or providing areas for nature viewing

To learn more about the importance of riparian areas, please go to:  
[riparian.info](http://riparian.info)

### Project Partners

This work has been carried out by Watershed Planning and Advisory Council (WPAC) in your area:



# What is Riparian Intactness?



*Illustration by: Terra Simieritsch*

Riparian intactness is a measure of how “natural” a shoreline is. Riparian intactness measures riparian condition at a broad scale, using satellite data. This is a new method, which has been scientifically validated, to assess riparian conditions across a large area in Alberta.

## How to Use This Information

- To compare the condition of water bodies or watersheds across a region
- To prioritize areas that are in need of conserving and areas in need of restoring
- To complement field-based assessment methods by showcasing broad-scale results
- To guide voluntary stewardship efforts by municipalities, community groups, and landowners

## Beneficial Management Practices for Municipal Leaders



Ensure that your municipality has policies for sufficient development setbacks and buffers of native plants to safeguard water bodies



Encourage and support landowners and community initiatives to maintain and improve riparian areas through water and land stewardship groups



Utilize and enforce policy tools such as Environmental Reserves, Conservation Reserves and Conservation Easements to ensure that hazard and sensitive lands are not developed



Eliminate or control invasive species in municipal riparian areas and promote natural and native species along shorelines




Minimize erosion, maintain slopes and prevent disturbance in or close to riparian areas

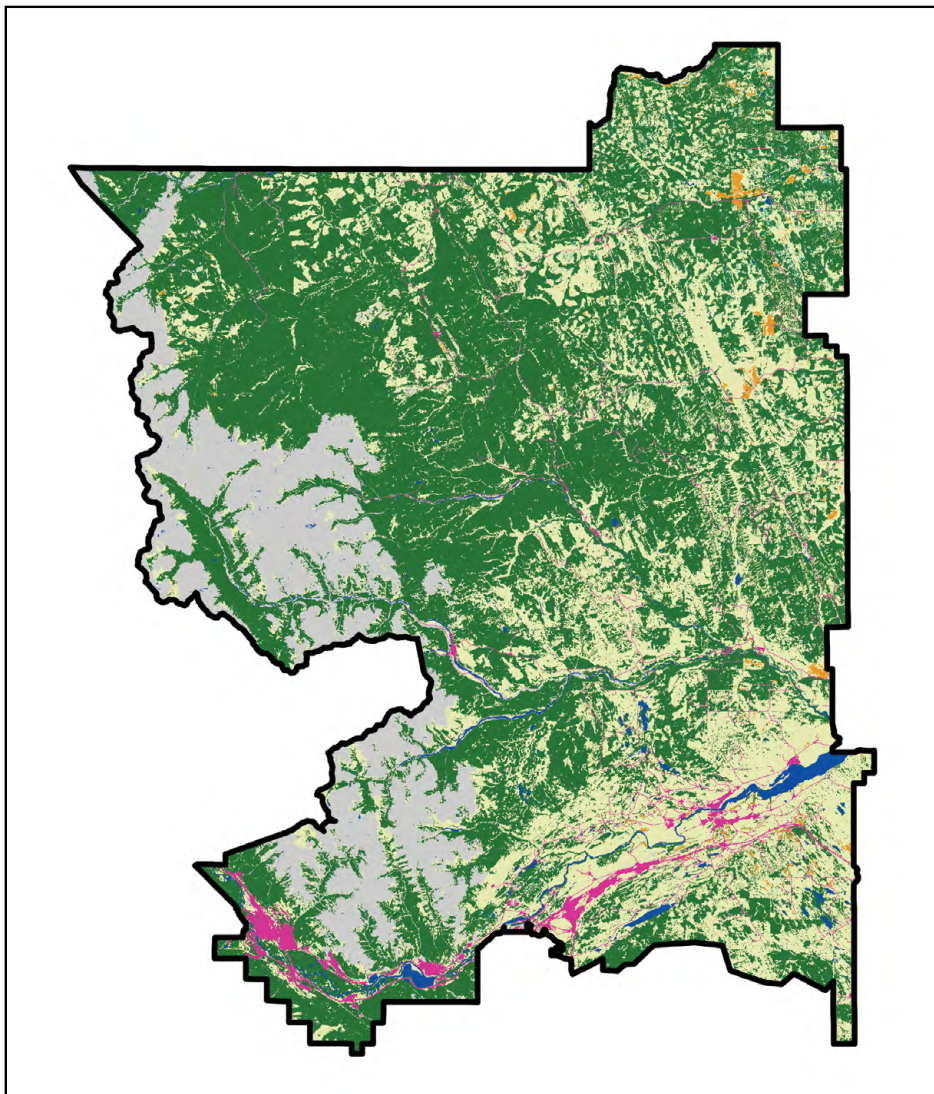


Educate the public about recreational use impacts and why some activities are restricted to specific places or seasons

# About Land Cover

- o Land Cover can impact and create variation in water quality throughout a watershed
- o Areas of high Land er intensity (development, industry, recreation, agriculture) are more likely to impact water quality
- o Municipalities can improve storm water management and flood and drought resilience through conservation & restoration projects

## Land Cover for MD of Bighorn

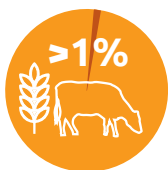


### Land Cover Types

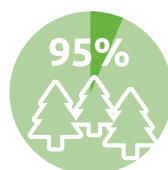


*Map 1: Land Cover in the municipality. This is based on the AAFC's Land Class data (2021). The resolution for these datasets is coarse, so this is a general representation of Land Cover in the*

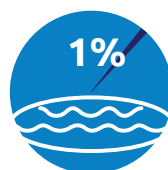
## MD of Bighorn Land Cover



Agricultural



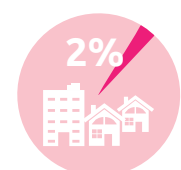
Forest, Grassland,  
Bare Ground



Open  
Water



Wetland



Human  
Development

# What is Intactness?

- o Intactness is a measure of riparian condition at a broad scale (watershed or region)
- o Measures if natural habitat has been altered or impaired by human activity
- o Measures the quantity of natural and woody vegetation, as well as human footprint, using satellite data

## Intactness Results for MD of Bighorn

**647 KM**

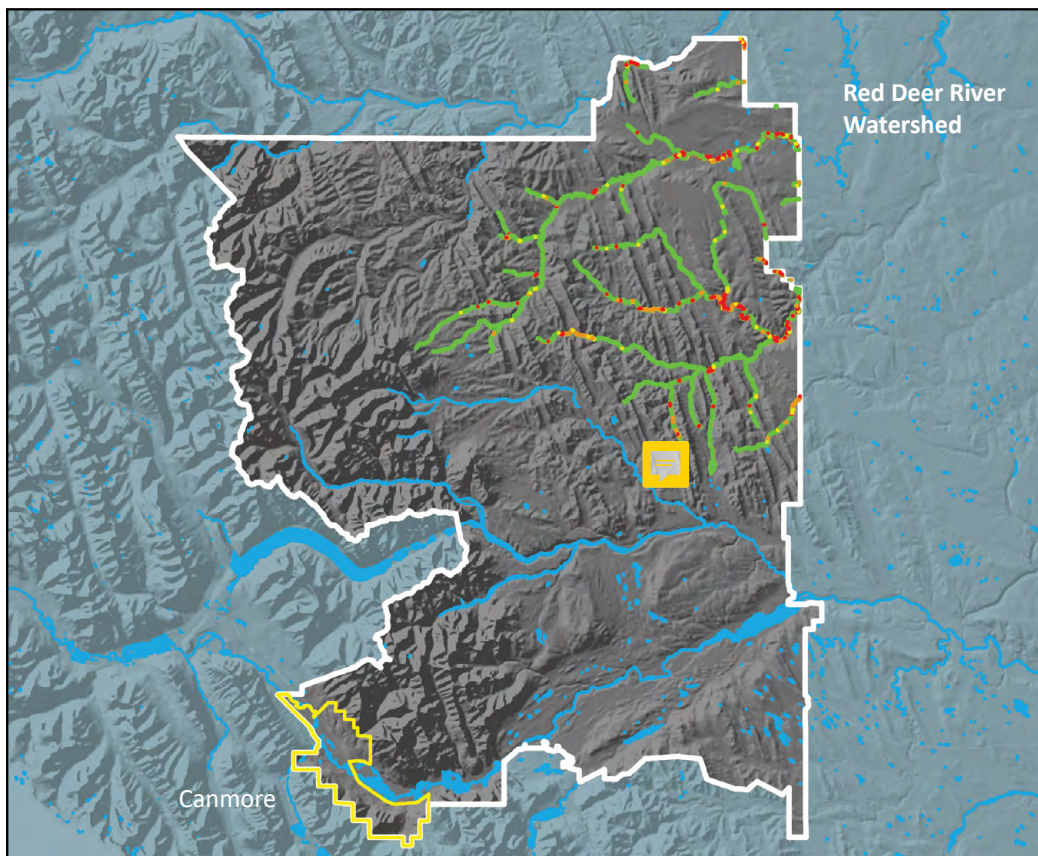
of shorelines assessed  
in MD of Bighorn

**9/9**

\* lakes had 65%+  
**High Intactness**

**20/21**

\* creeks had 65%+  
**High Intactness**



### Intactness Ratings

- Vegetation mostly cleared. Human footprint dominant.
- Vegetation limited. Human footprint prevalent.
- Vegetation present. Some human footprint.
- Vegetation present. Little or no human footprint.

**Map 2: Riparian Intactness in the municipality.** Note: It was not possible to assess some areas. To view more data, please see the attached [Appendix](#).

\* A general target for Intactness is to have 65% or greater **High Intactness**.

## MD of Bighorn Overall Intactness

**4%**

Very Low

**3%**

Low

**6%**

Moderate

**88%**

High

# Key Priorities Based on Highest & Lowest Intactness

## Lowest Intactness Areas

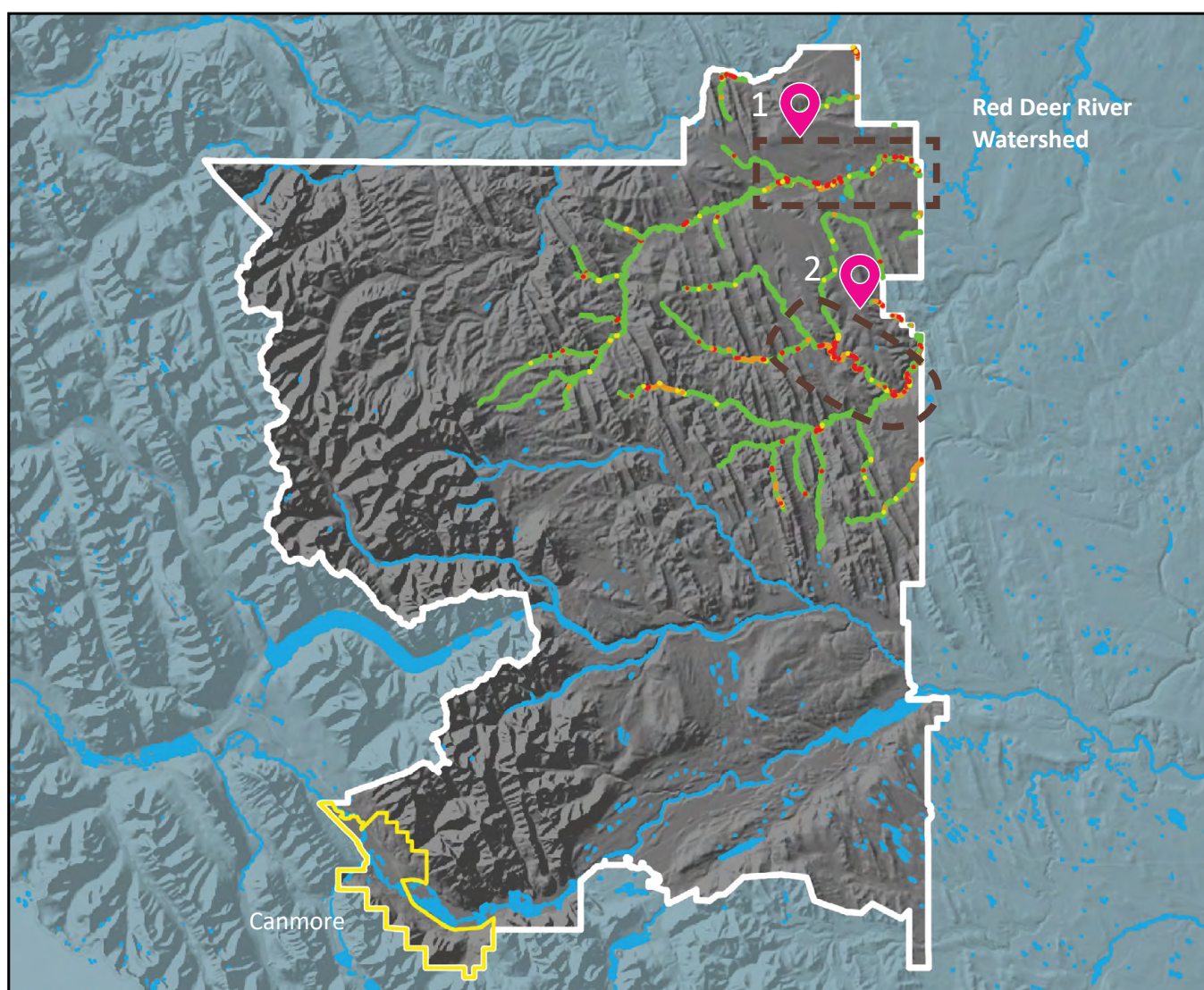
Areas with the lowest intactness need restoration

- 1 Confluence of Fallentimber Creek and Stormy Creek and lower reach of Fallentimer Creek.
- 2 Confluence of Grease Creek and Turnbull Creek. Lower reaches of Grease Creek and Little Red Deer River.

## Highest Intactness Areas

Areas with the highest intactness need conservation

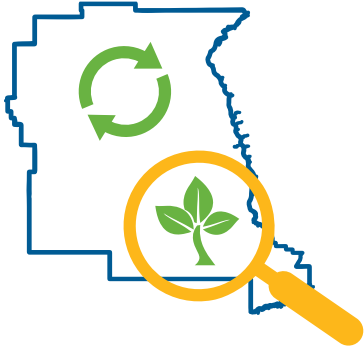
Continue to conserve most other areas, which have high intactness



*Map 3: Key Areas for Conserving or Restoring Riparian Areas Based on Intactness.*

# Next steps to conserve or restore priority riparian habitats

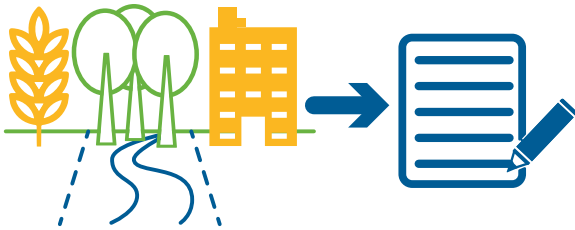
- 1 Use priority maps to direct conservation and restoration efforts.



- 3 Provide incentives for private landowners to restore degraded riparian habitats.



- 2 Develop policies at the municipal level for land management.



- 4 Restore and conserve riparian habitats through municipal reserves, land trusts and/or conservation groups.



To find out more about riparian condition data and resources, go to: [riparian.info](http://riparian.info)






## Acknowledgments

This work was an inter Watershed Planning and Advisory Councils (WPAC) project with funding and support from many sources. A special thanks to the Watershed Resiliency and Restoration Program and the governments of Canada and Alberta, through the Canadian Agricultural Partnership.

Intactness data was created by Fiera Biological Consulting Ltd. Base Map Data and Land Cover Data was provided by the Government of Alberta.





The following appendix is a summary of waterbodies assessed in your municipality, and includes results of the intactness assessments.

Please note that the assessment methods were applied to specific waterbodies; some areas were not included. As such, results described in this report apply only to those areas assessed. See the supporting documents for more details. Please note that waterbodies that flow through multiple municipalities have been 'clipped' to demonstrate the portion which applies only to your municipality.

The data has been extracted from the *Riparian Area Assessment for the Buffalo, Kneehills, Little Red Deer, and Threehills Subwatersheds*. (Fiera Biological Consulting Ltd, 2022). These reports can be found at:  
<https://open.alberta.ca/opendata/gda-f0931661-3c35-4149-ae0b-94058938ad6f>