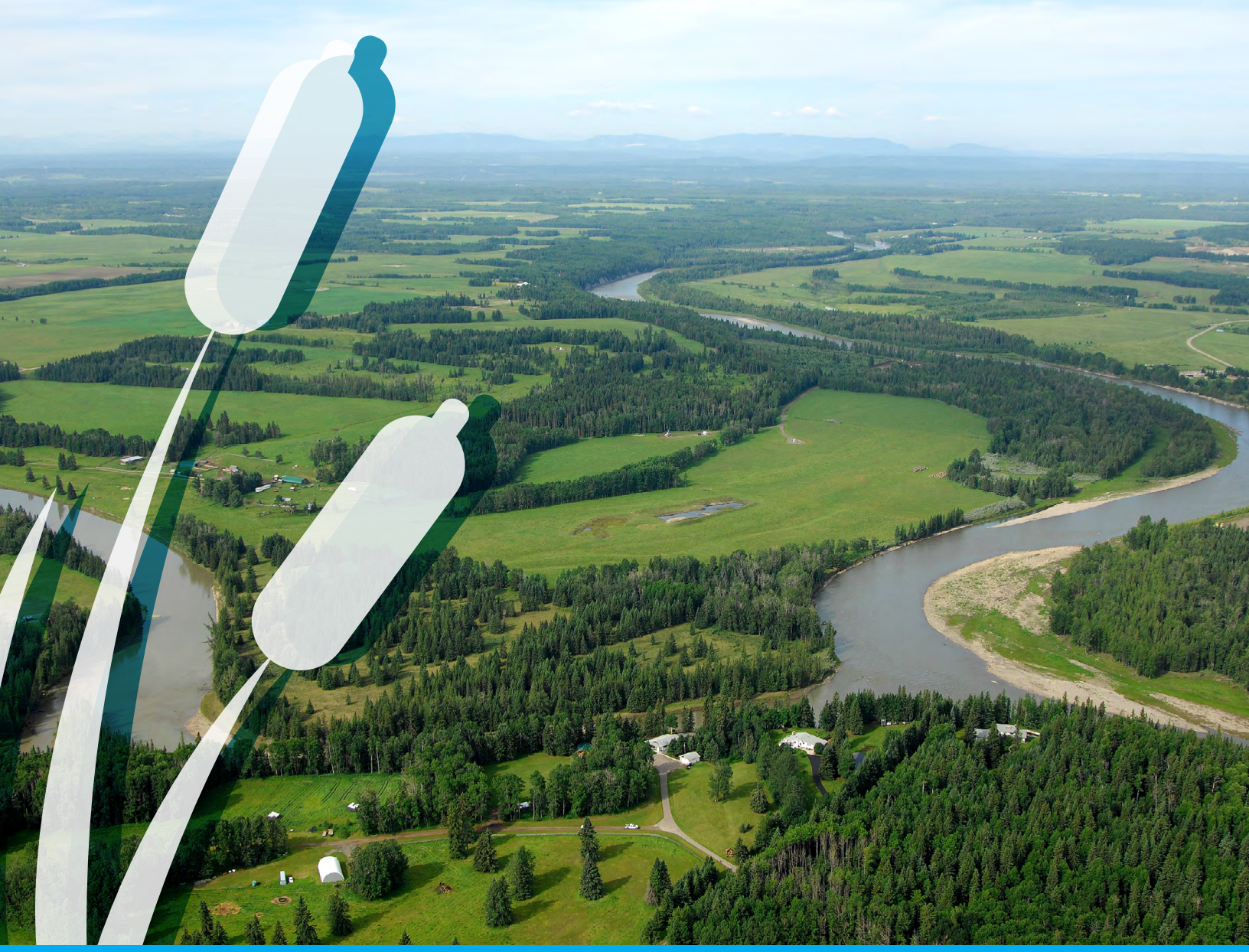


Shoreline and Riparian Condition Assessment

Kneehill County

RIPARIAN WEB PORTAL

June 2023

Kneehill County 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*).

Riparian Areas 101: Why They Matter

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

Photo credit: *Images Alberta Camera Club.*

- 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

Project Partners

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

Red Deer River Watershed Alliance

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

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

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

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

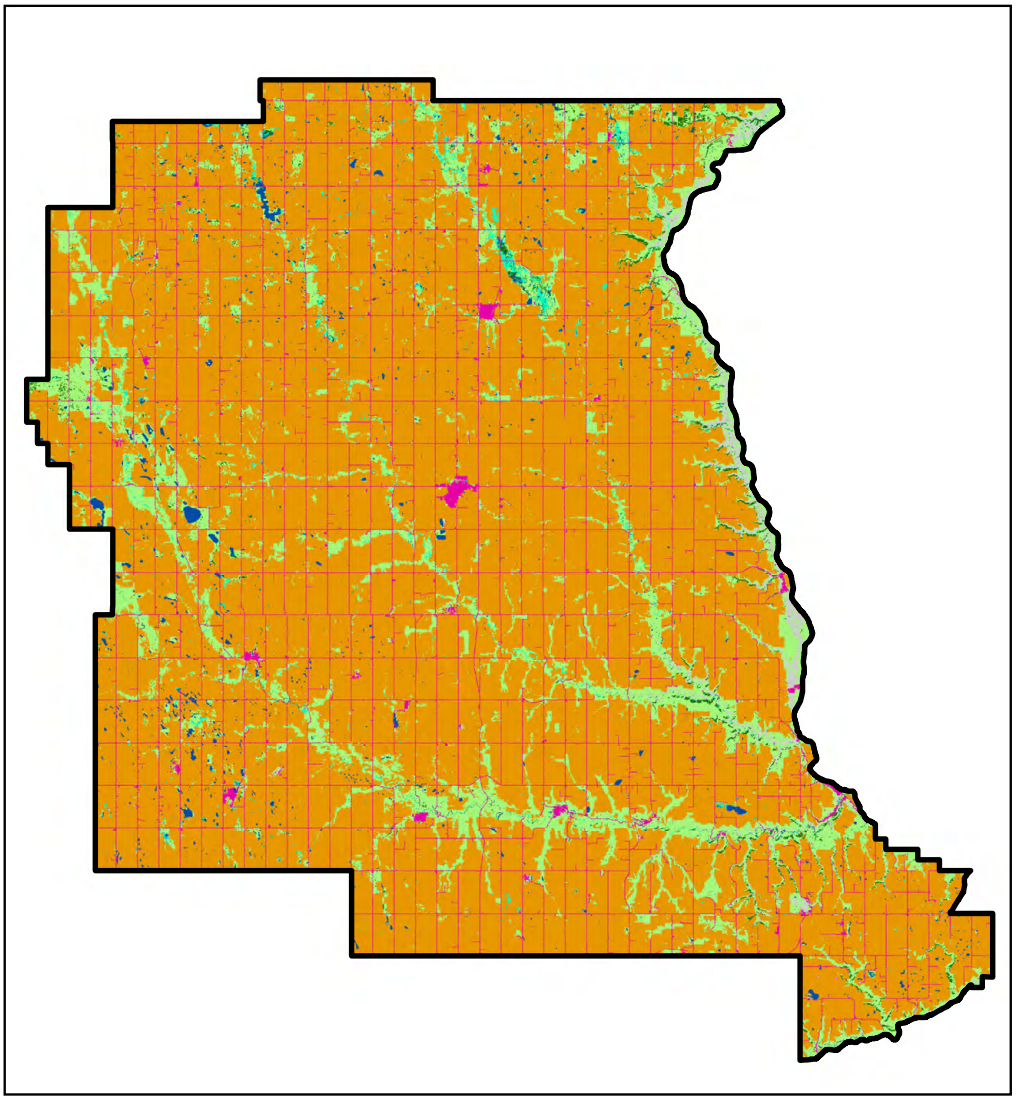
Eliminate or control invasive species in municipal riparian areas and promote natural and native species along shorelines

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

About Land Use

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

Land Use for Kneehill County

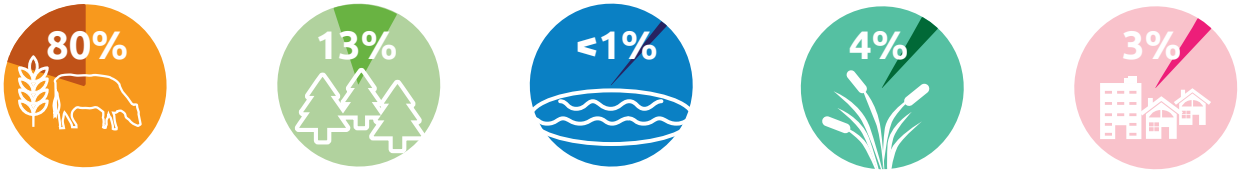


Land Use Types

- Agriculture
- Human Development
- Forest
- Natural Grassland
- Natural Bare Ground
- Open Water
- Wetland

Map 1: Land Use 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 use in the area.*

Kneehill County Land Use



What is Intactness?

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

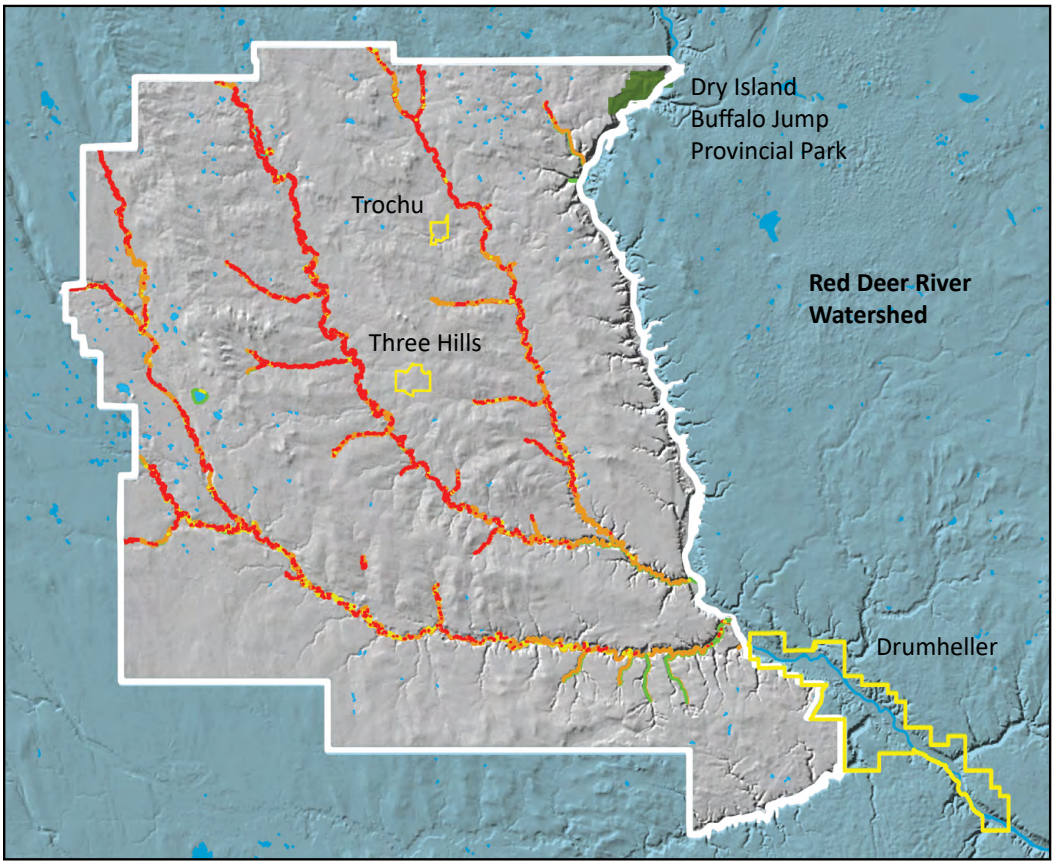
Intactness Results for Kneehill County

1,467 KM of shorelines assessed in Kneehill County

1/4 * lakes had 65%+ High Intactness

1/28 * creeks had 65%+ High Intactness

17/32 waterbodies had 65%+ Moderate 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.

Kneehill County Overall Intactness

41%	16%	37%	6%
Very Low	Low	Moderate	High

Key Areas of Highest and Lowest Intactness

Lowest Intactness Areas

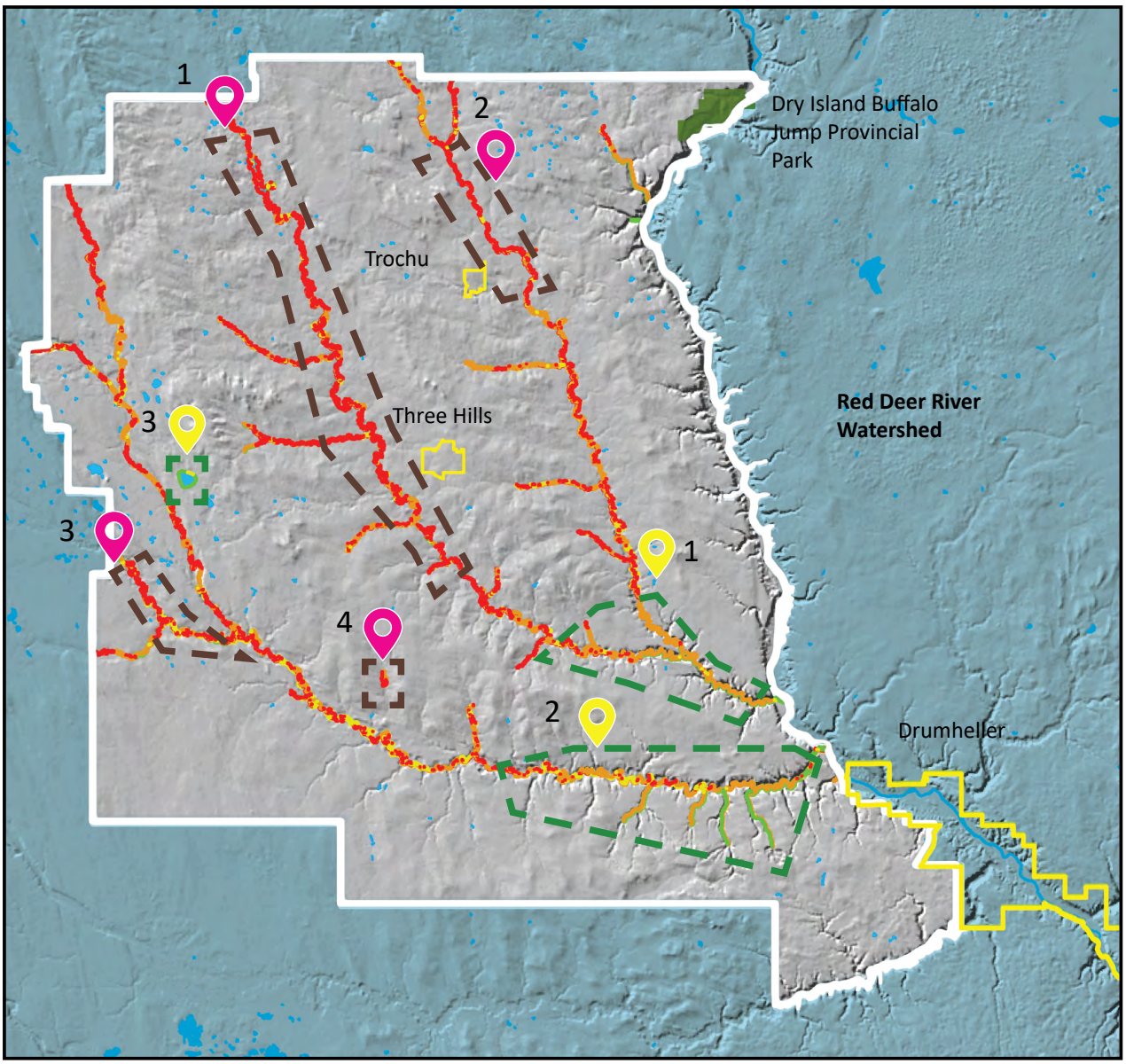
Areas with the lowest intactness need restoration

1 Upper and mid reaches of Threehills Creek, near Bigelow Reservoir and the Town of Three Hills
2 Upper reaches of Ghostpine Creek
3 Lonepine Creek
4 Fyten Reservoir

Highest Intactness Areas

Areas with the highest intactness need conservation

1-2* Lower reaches of Ghostpine and Kneehills Creeks
3 Keiver's Lake

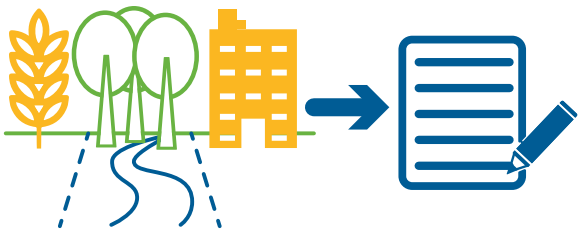


Map 3: Key Areas for Conserving or Restoring Riparian Areas Based on Intactness.
* *See the Bar charts and Right bank maps in the Appendix for a better understanding of the intactness for these lower reaches.*

Next steps to conserve or restore priority riparian habitats

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

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



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

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

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 Use 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***

9.2. Kneehill County

Kneehill County overlaps both the Kneehills and Threehills subwatersheds, with 94% of the county being covered by these two subwatersheds (Map 4). Agriculture is the predominant land cover in this county (80%), with natural cover accounting for approximately 17% of the land cover (Figure 36). Natural grassland (7%) and wetland (4%) make up the greatest proportion of natural cover, with this cover tending to be associated with the southern portions of Kneehills, Threehills, and Ghostpine Creek.

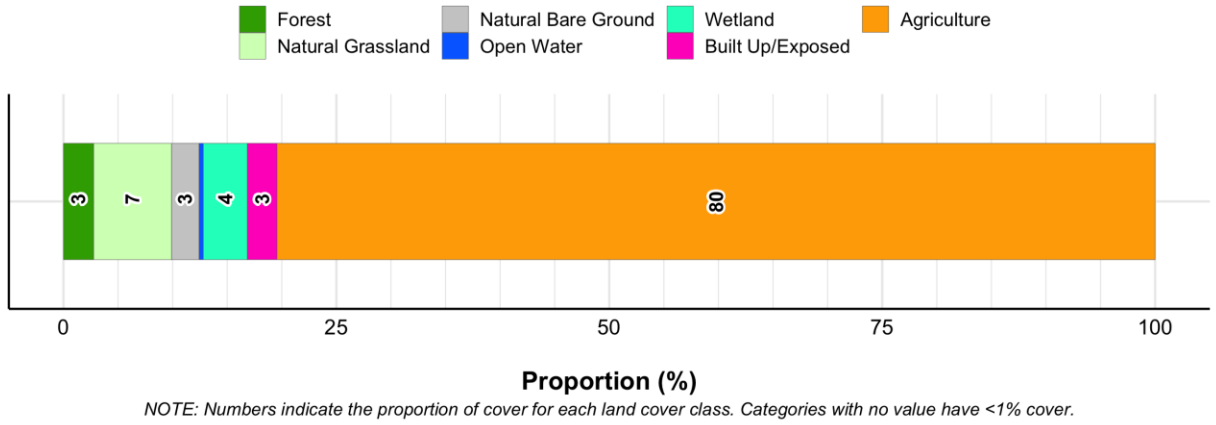


Figure 36. The proportion of Kneehill County assigned to each land cover class. Land cover data is based on the 2020 Agriculture and Agri-Food Canada land cover.

A total of 1,467 km of shoreline was assessed within Kneehill County, with only 6% (87 km) categorized as High Intactness and an additional 37% (546 km) assessed as Moderate Intactness (Figure 37). The remaining 57% of shoreline was categorized as Low Intactness (16%, 238 km) or Very Low Intactness (41%, 606 km). These results included both the left and right shorelines of watercourses.

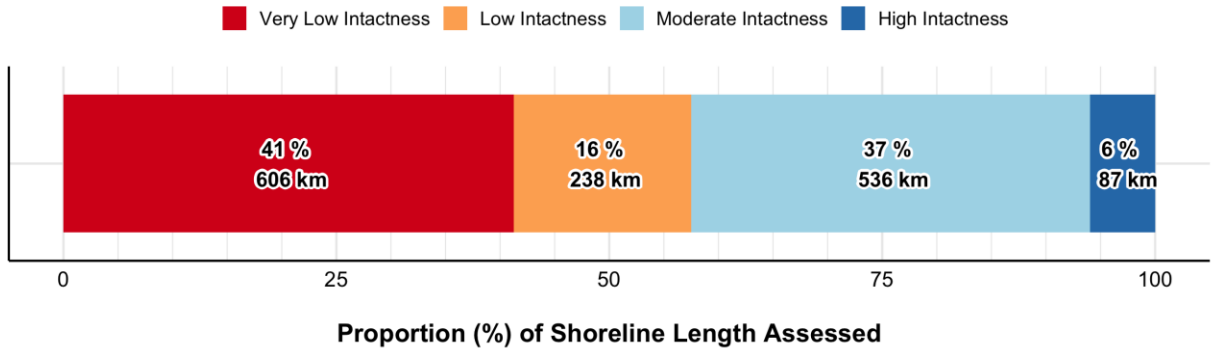


Figure 37. Overall intactness for waterbodies assessed within Kneehill County.

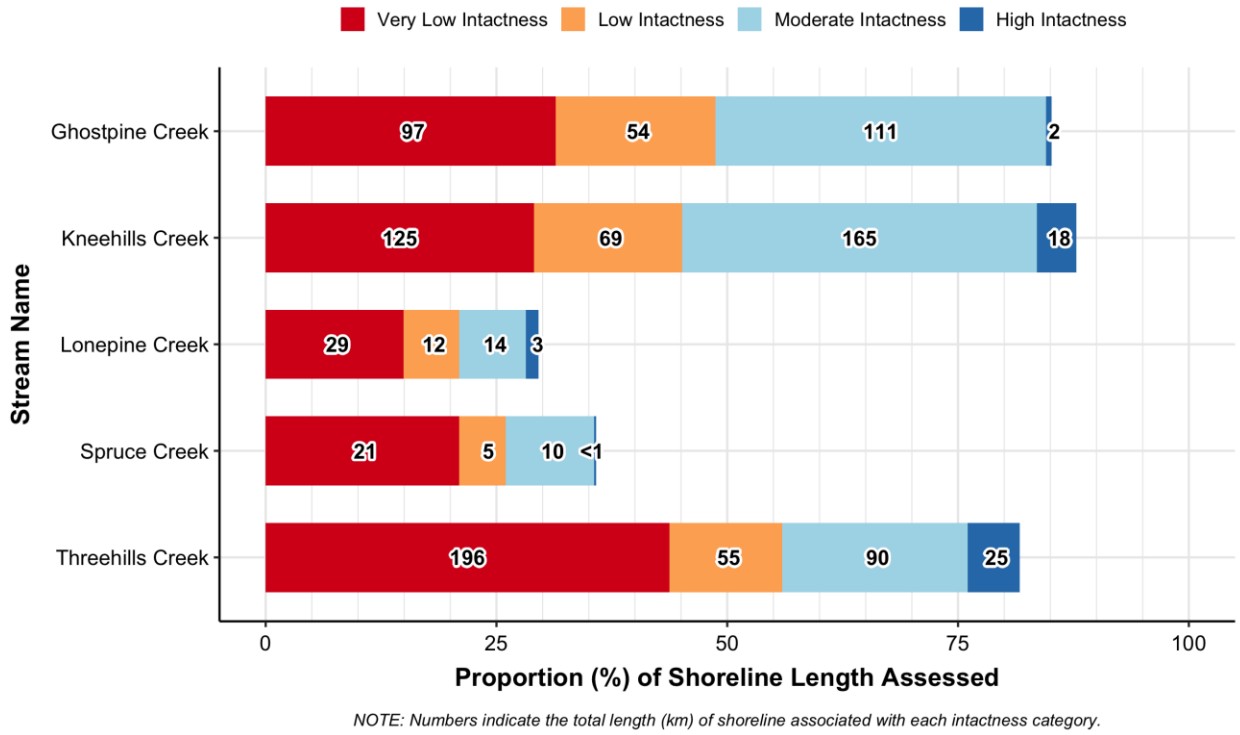


Figure 38. The proportion of shoreline length assigned to each riparian intactness category for named watercourses within Kneehill County.

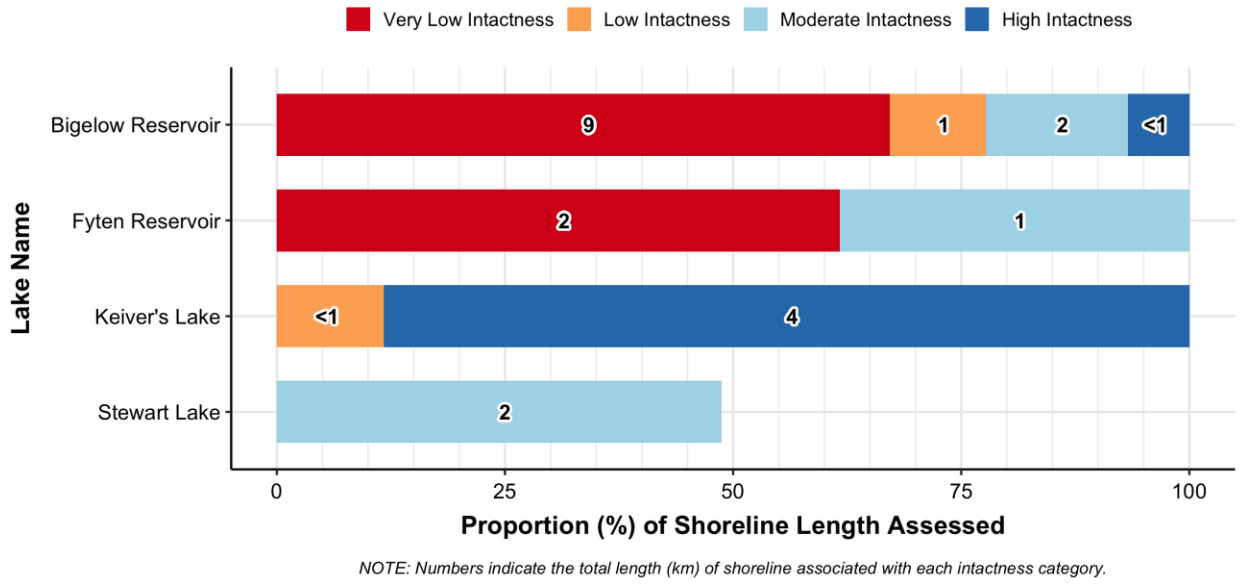


Figure 39. The proportion of shoreline length assigned to each riparian intactness category for named lakes within Kneehill County.

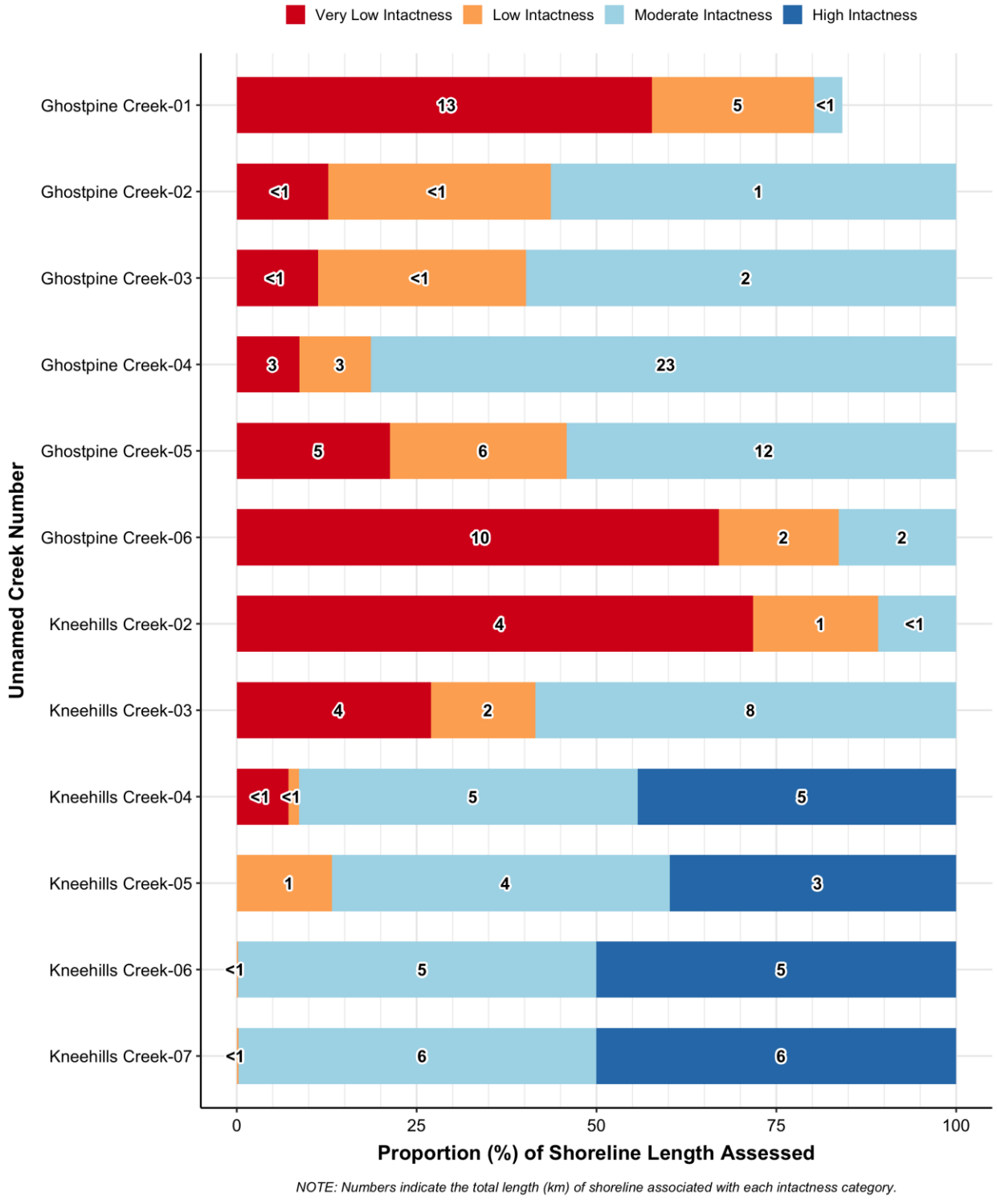


Figure 40. The proportion of shoreline length assigned to each riparian intactness category for unnamed watercourses within Kneehill County.

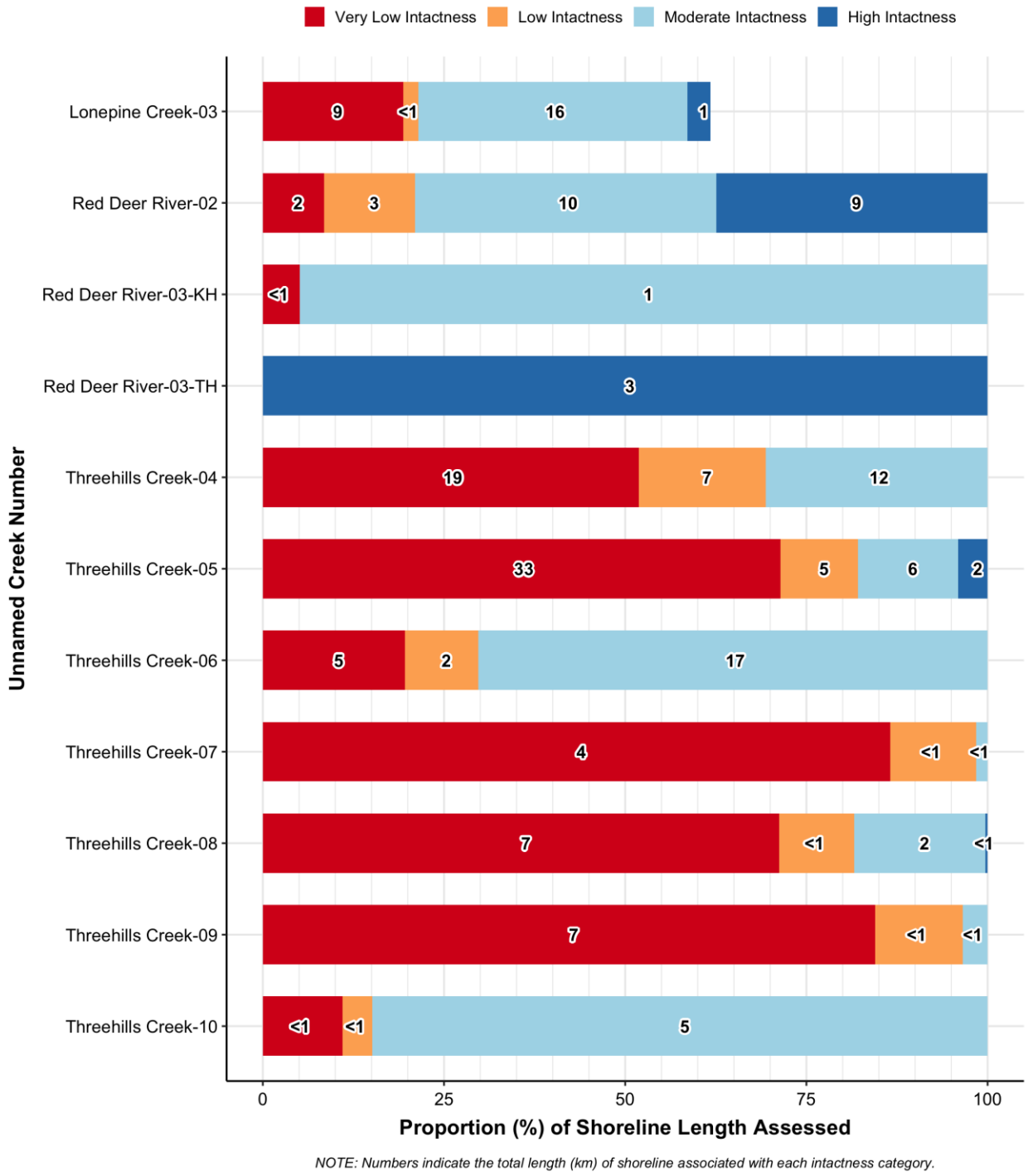
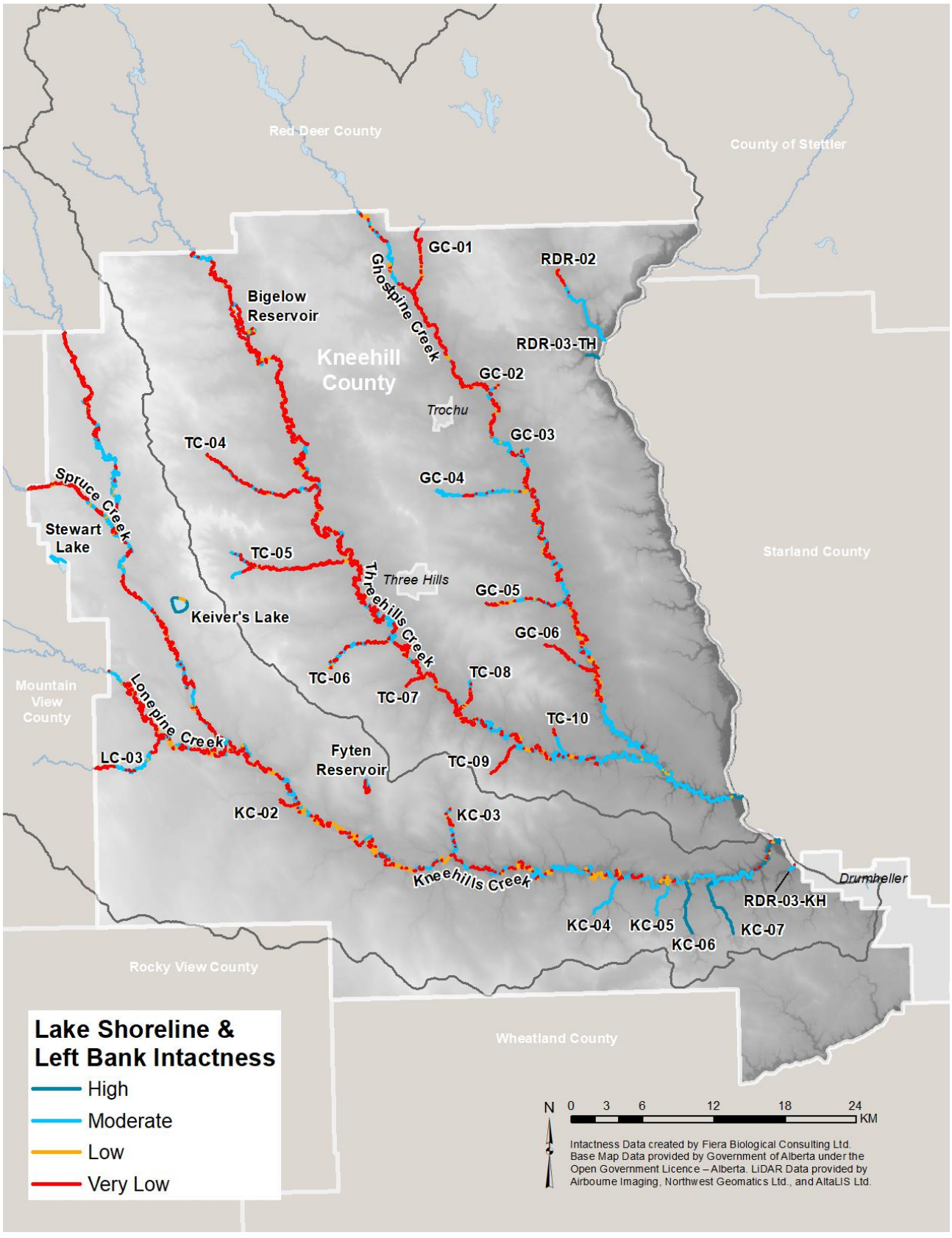
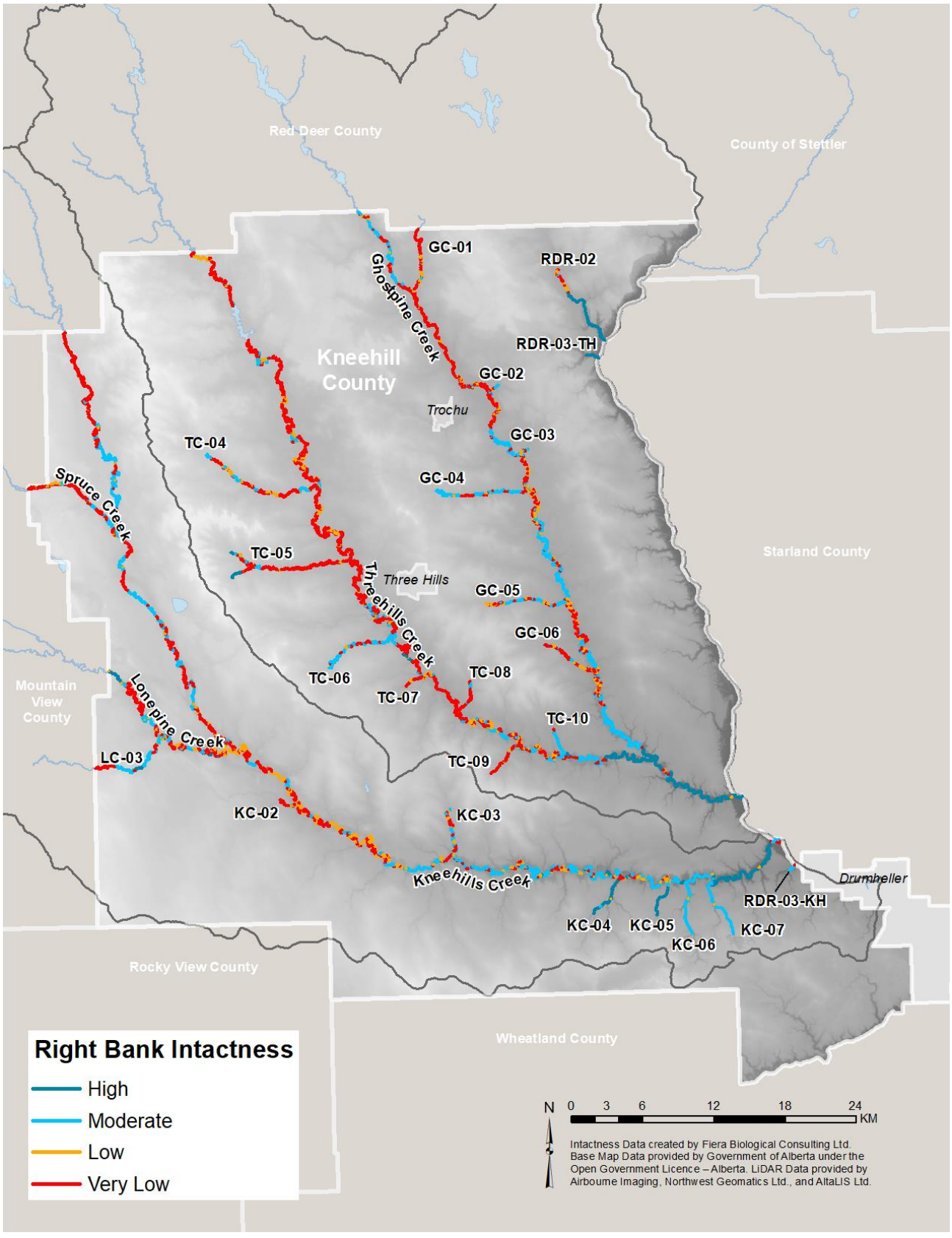


Figure 40 *continued*. The proportion of shoreline length assigned to each riparian intactness category for unnamed watercourses within Kneehill County.



Map 21. Intactness for the left banks of watercourses and lake shorelines that were assessed in Kneehill County.



Map 22. Intactness for the right banks of watercourses that were assessed in Kneehill County.