Our Water ~ Our Legacy

Milk River Watershed Council Canada

Transboundary State of The Watershed Reporting: Opportunities, Challenges, and the Future

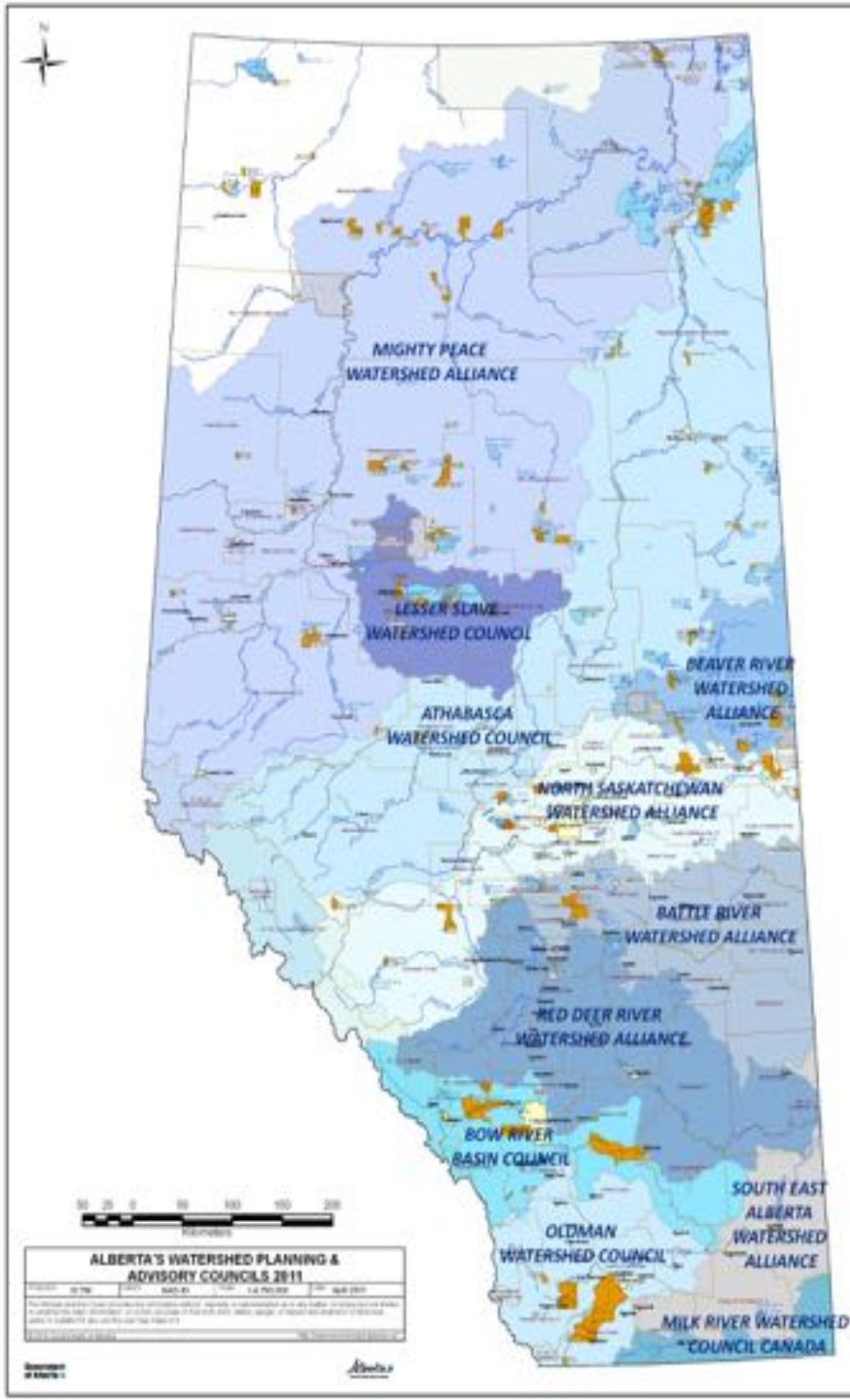
Transboundary Grasslands Workshop

Jan 2016

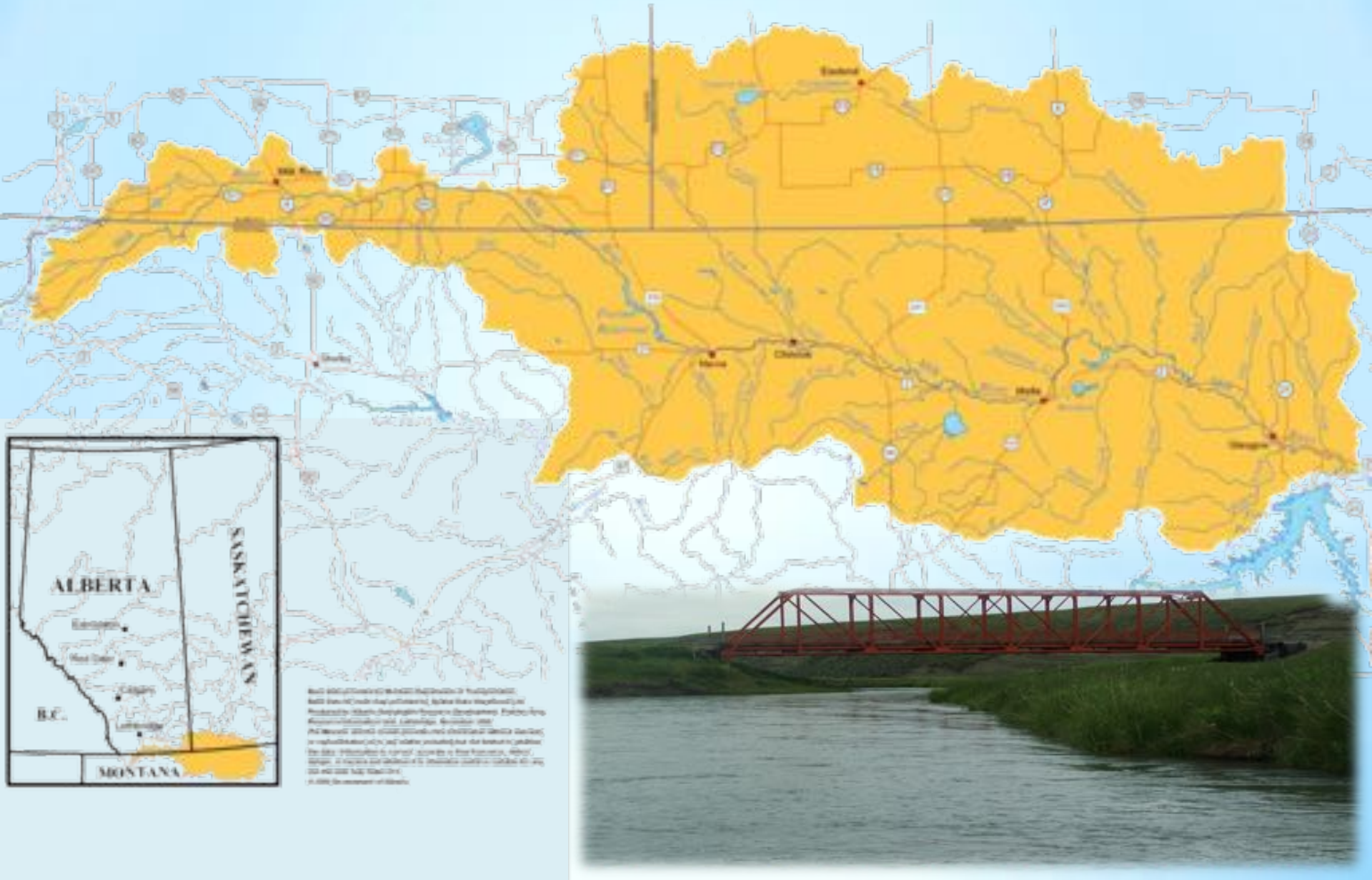
Tim Romanow BSc Executive Director - MRWCC

Milk River Watershed Council Canada

- MRWCC - one of 11 Watershed Planning and Advisory Councils (WPAC's)within the Province.
- Not for profit Charitable Society, providing a local voice for community concerns to be addressed through science based planning, monitoring, and stewardship activities.



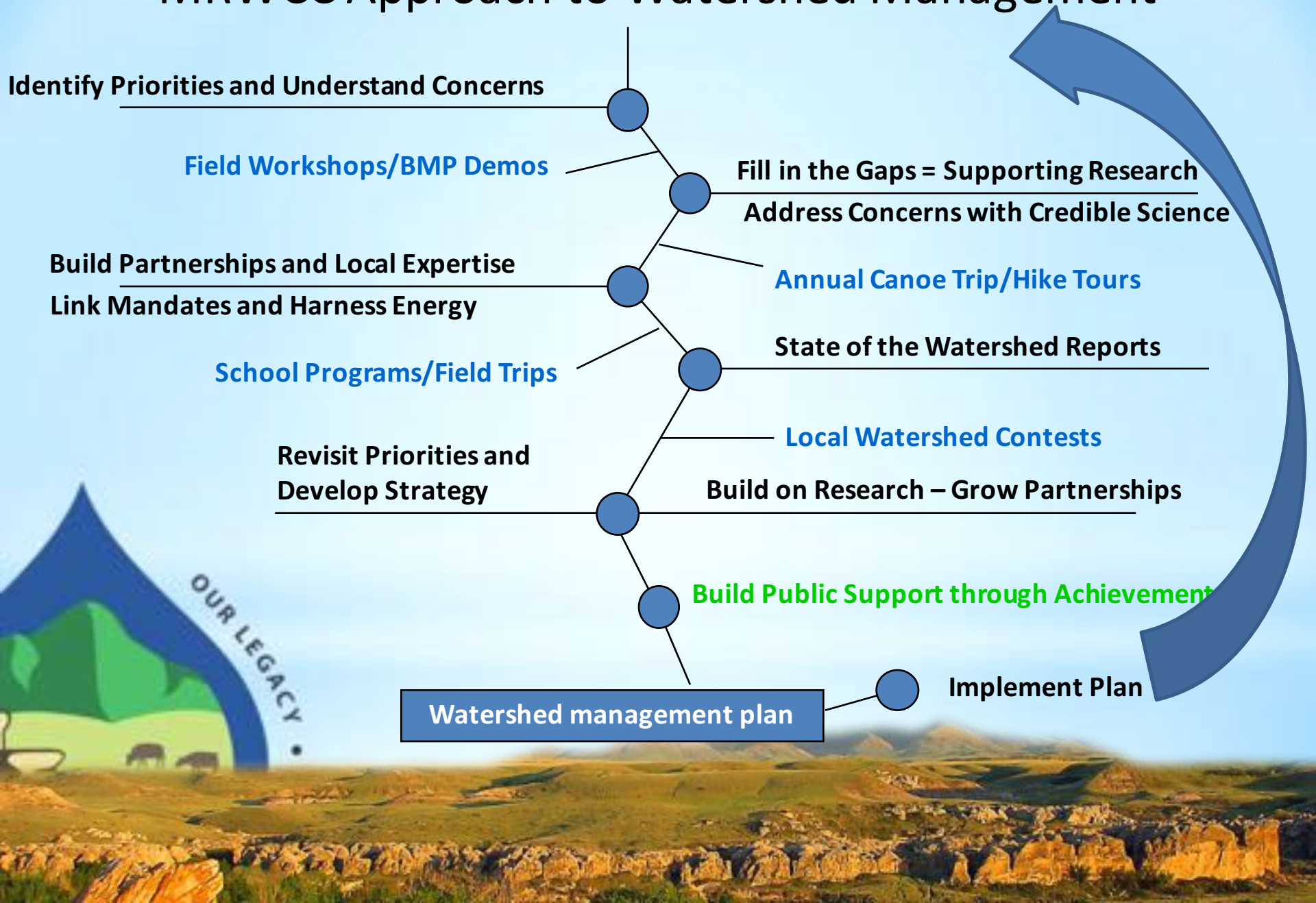
The Milk River Watershed



MRWCC Role

- To engage governments, stakeholders, other partnerships, and the public in watershed assessment and watershed management planning
- Must consider existing land and resource management planning processes and decision-making authorities.

MRWCC Approach to Watershed Management



2015-2016 Council:

Executive:

Chairman
John Ross, Agriculture
Vice Chairman
Ken Miller, Agriculture
Treasurer
Will Lindeman, Water User
Secretary
Warren Cunningham, Recreation Alt.

- Ed Sloboda, General NGO
- Dennis Spackman, Provincial Government
- Joan Hughson, Rural Municipality
- Kristen Dykstra, Health
- Roy Audet, Individual
- Lorraine Nicole, Academia
- Trevor Murray, Industry
- Ross Ford, Rural Municipality
- Brian Hills, Provincial Government
- Susanne Liebelt , Urban Municipality
- Lloyd Closson, Alternate, Urban Municipality
- Darcy Wills, Recreation
- Paulette Fox, First Nations
- Francis Larney, Federal Government
- Ron McNeil, Envi NGO
- William King, Appointed, Special Assignment

Teams and Volunteers

- Research and Monitoring Team
- Community Awareness and Involvement Team
- Water Supply and Management Team
- State of the Watershed Report Team
- Transboundary Watershed Team

Watershed Management

- Report on the “State of the Watershed”, and
- Develop an integrated watershed management plan to summarize issues and examine the best way to address them.

Photo by: Lois Gilchrist

Guiding Principles

- A State of the Watershed (SOW) Report is:
  - one part of the larger process
  - the tool required to reach the planning stage,
- Need to develop a common understanding among all stakeholders to effectively identify issues and develop a plan of action

State of the Watershed Report Objectives

- Identify indicators that can be used to monitor the State of the Watershed through time.
- Identify trends, knowledge gaps and research needs to further our understanding of the watershed and set direction.
- To use the SOW as a tool for creating an adaptive watershed management plan for the Milk River watershed.

2008 AB SOW Project Team

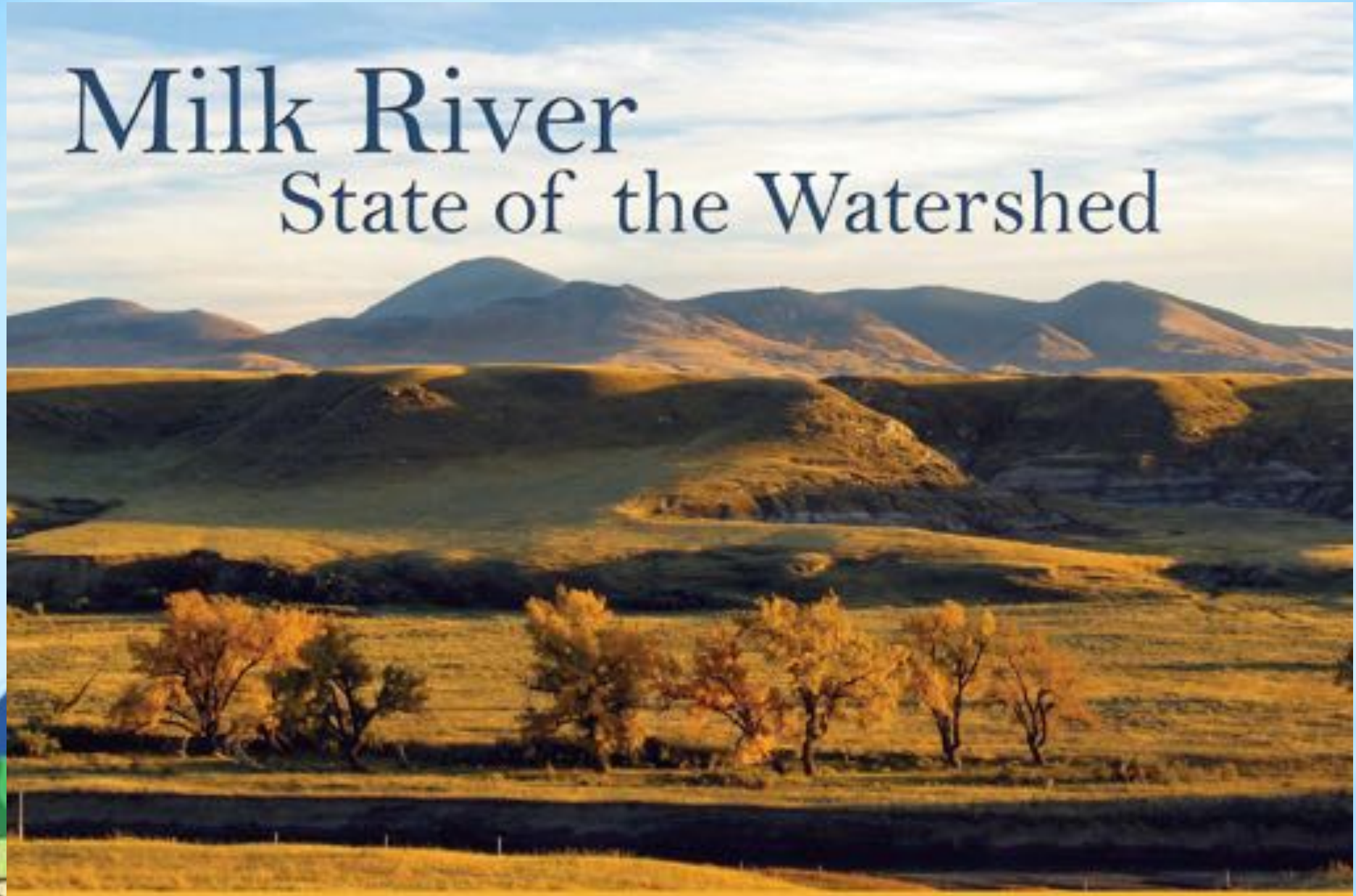
Agriculture and Agri-Food Canada
Agriculture et Agroalimentaire Canada

Prairie Farm Rehabilitation Administration
Administration du rétablissement agricole des Prairies

LandWise Inc.

Palliser Environmental Services Ltd.

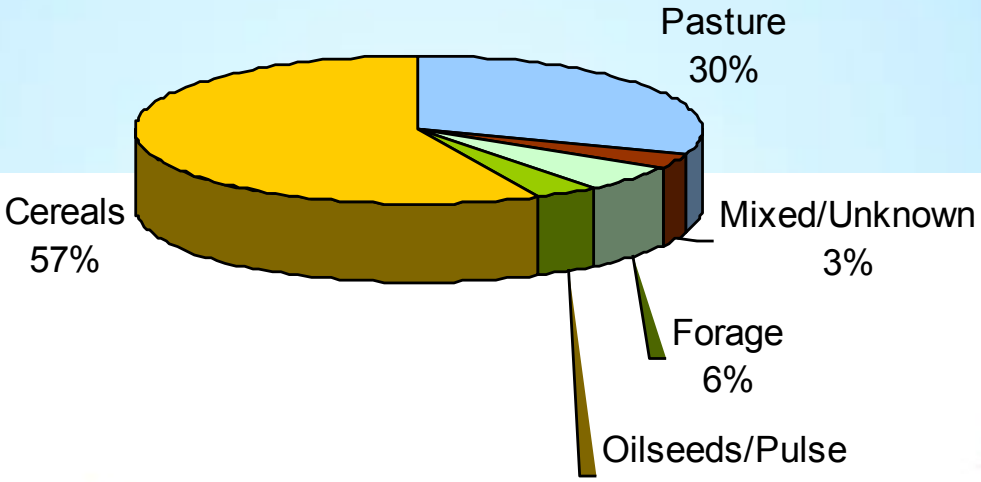
Milk River
State of the Watershed

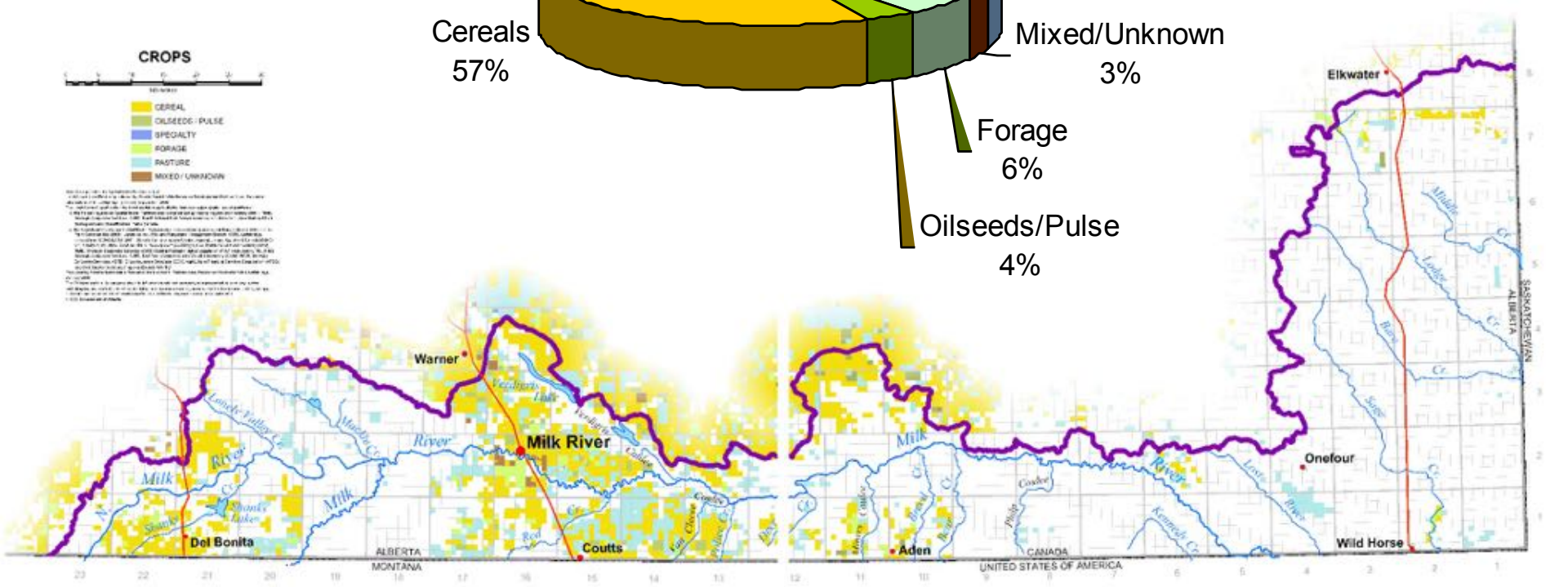


Milk River Watershed Council CANADA

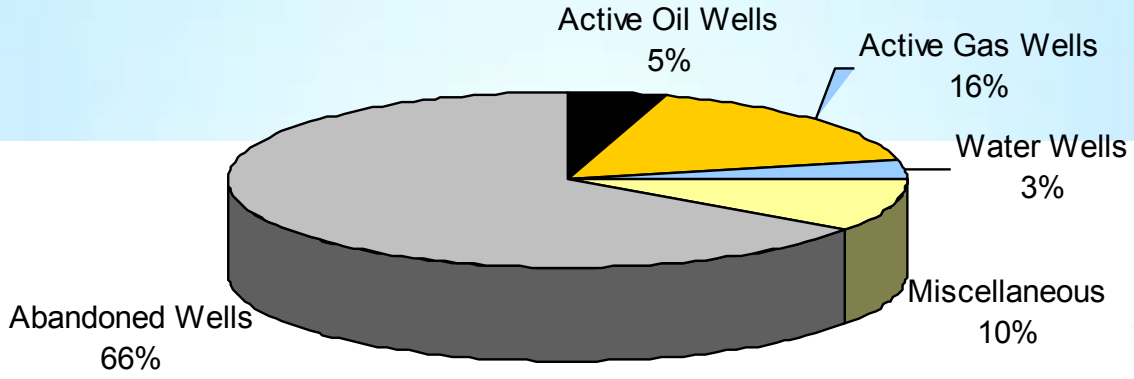
2008

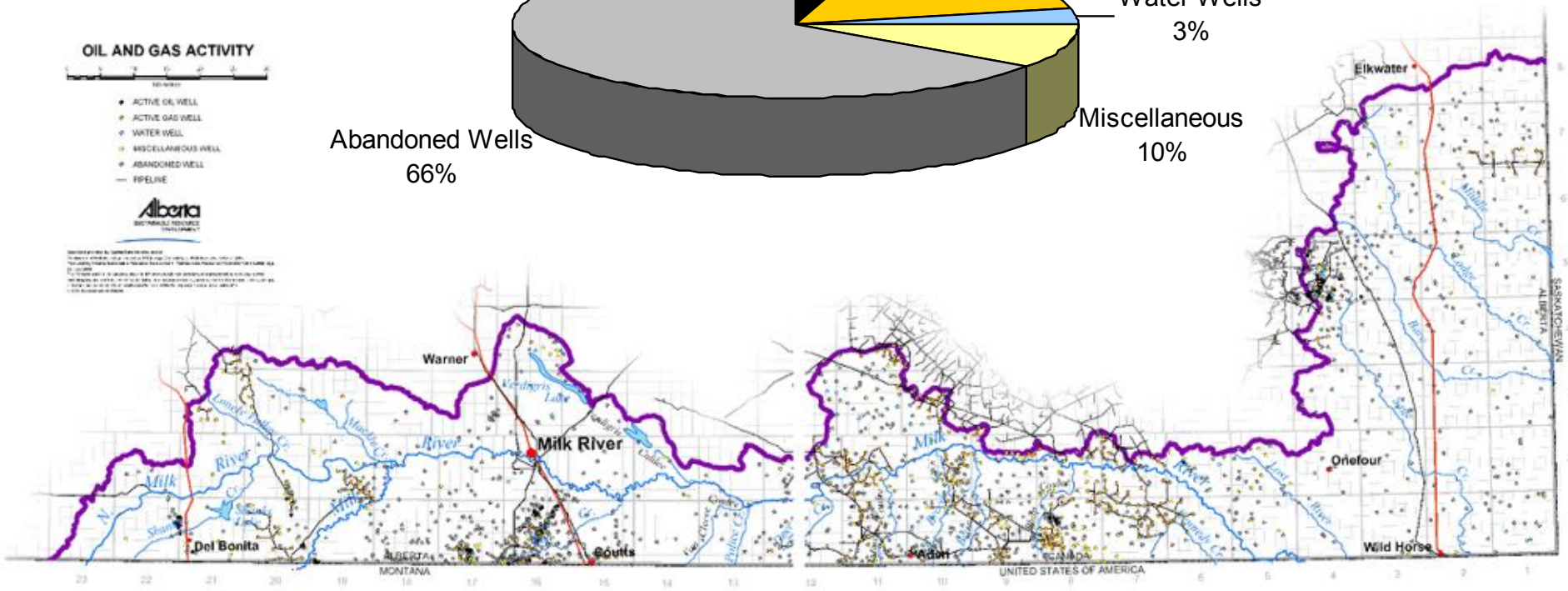
Crops


Pasture
30%
Cereals
57%
Mixed/Unknown
3%
Forage
6%
Oilseeds/Pulse
4%


CROPS
CEREAL
OILSEEDS / PULSE
SPECIALTY
FORAGE
PASTURE
MIXED / UNKNOWN
Warner
Milk River
Coutts
Del Bonita
Aden
Onefour
Wild Horse
Elkwater
ALBERTA
MONTANA
CANADA
UNITED STATES OF AMERICA
SASKATCHEWAN
ALBERTA

Oil and Gas Activity

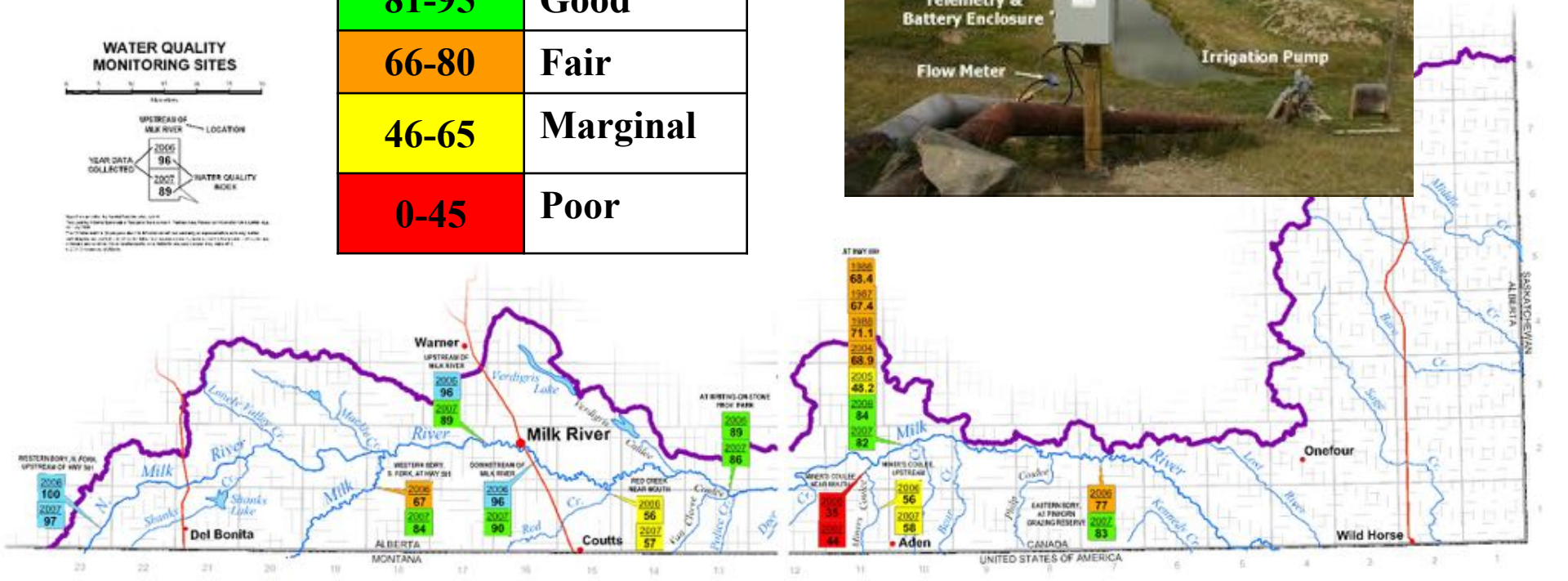




Surface Water

Water Quality Index

96-100	Excellent
81-95	Good
66-80	Fair
46-65	Marginal
0-45	Poor



Wildlife

PLAINS SPADEFOOT
PLAINS SPADEFOOT SITE
increasing
stable
decreasing
unknown
Milk River

What was missing…?

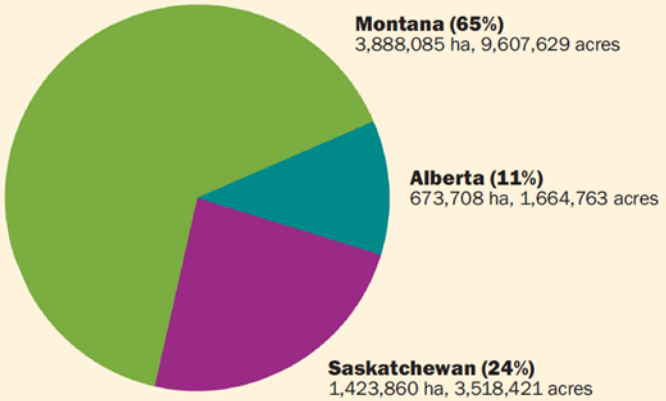


Figure 2.1. Area of the Milk River watershed in Alberta, Saskatchewan and Montana.

Where the fence lines and borders of Alberta, Saskatchewan and Montana meet in the heart of the Milk River watershed.

…May, 2013

Milk River

2nd Edition

Transboundary State of the Watershed Report

Why Transboundary?

Lois Gilchrist

- Resources are not static – water flows over borders, wildlife migrates, plants disperse
- Sought to create a new level of cooperation within the watershed
- Develop a greater understanding of shared resources among a broader group of people
- Builds on previous co-operations (Field Tours, Joint Initiative Team work)

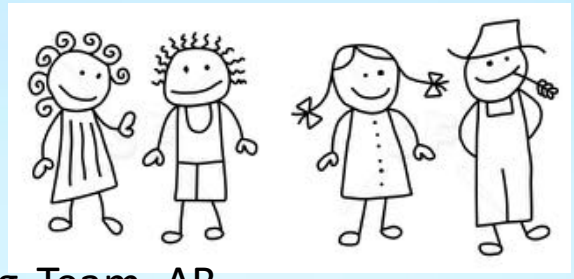
Common Interests

- Access to entitlement (% of share)
- Irrigation Reliability (number of deficits)
- Municipal water supplies
- Sediment and erosion
- In-stream flow / aquatic ecosystem health
- Species at Risk or of Concern
- Recreational opportunities

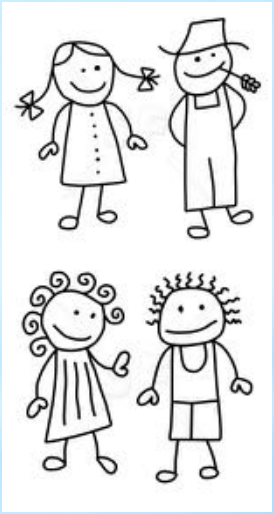
Meeting with the Milk River Watershed Alliance, Montana

- February 21, 2012
- Joe Broesder moved to have the Milk River Watershed Alliance partner with the Milk River Canada Coalition on the 2013 Milk River State of the Watershed Report. Donni Linn seconded. Motion carried.

Building a Team



MRWCC,Research and Monitoring Team, AB
MRWA, Technical Group (Havre Mtg)
Saskatchewan (Swift Current Mtg)



AB

SK

MT

Milk River State of the Watershed Report Team

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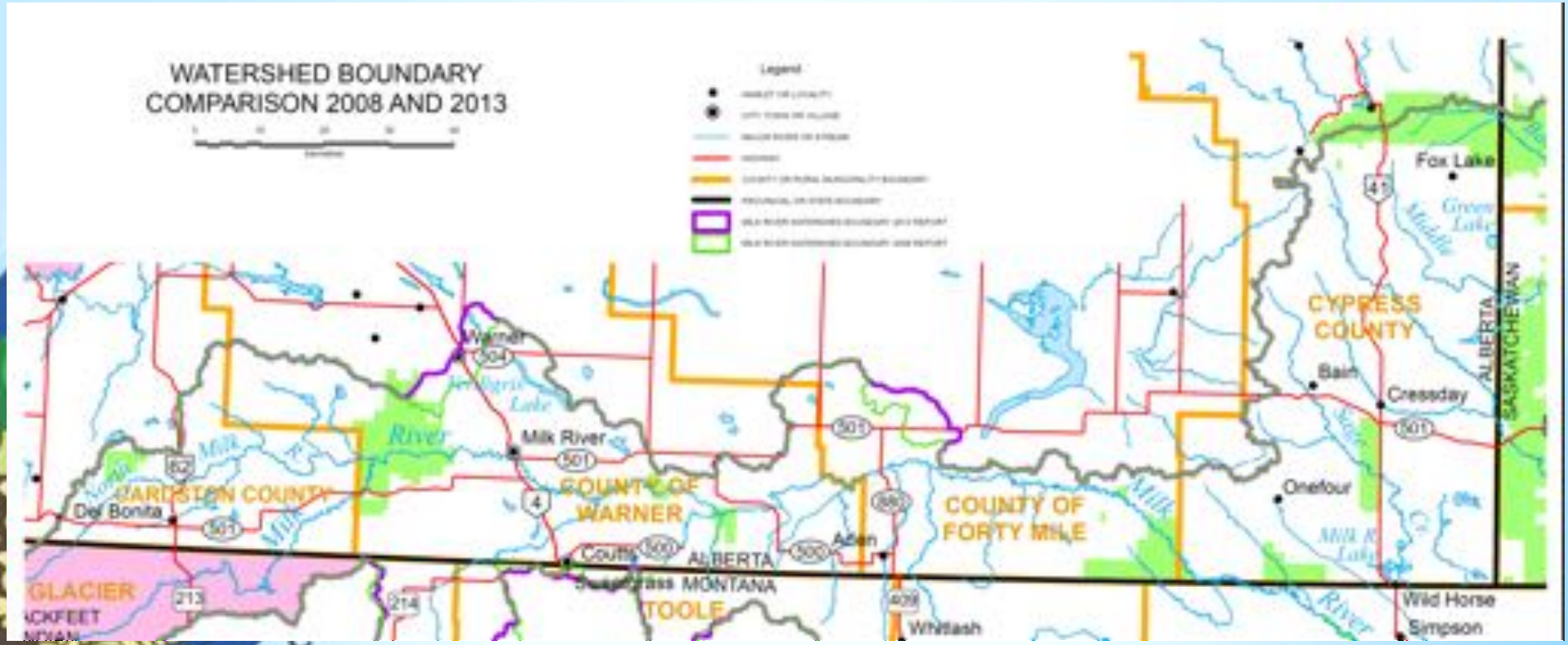
Full photo credits are provided on page 237.

Status Updates from 2008

- Watershed boundary changes
- Changing evaluation criteria
- Expanded focus meant losing some detail in mapping, but places watershed resources in a broader context



Transboundary Challenges

- Harmonize data sets
  - Data collection methods differ
  - Frequency and intensity differ
- Processing and reporting – data sensitivities
- Language (terminology)

<u>barriers</u>

  - Units (Feet vs. meters)
  - Protected areas
  - Species status reporting

Condition Indicators

Table 1.1. Summary of indicators used to report on the state of the Milk River watershed.

Watershed Component		Indicator	Measure	Watershed Linkages
Aquatic Ecosystem	Surface Water	Water Supply	Annual streamflow measurements	Streamflows should reflect a normal range of condition and support channel processes (erosion/building), aquatic life, the riparian environment and communities.
		Allocation and Use	Water licenses and registrations; industrial water use reports.	Water supplies support aquatic life, communities and economic activity.
		Water Quality	Nutrients, Sediment, Metals, Pathogens	Deviation of quality from natural condition suggests a degraded environment. Surface water quality should support designated or beneficial uses.
	Groundwater	Water Supply	Number of wells Number of Licenses Water Level and Yield	Indicates land use pressure on the groundwater resource. Deviation of water level or yields can indicate exploitation of the resource.
		Water Quality	Nutrients, Metals, Pathogens	Groundwater is the main water supply for many rural people throughout the watershed.
Riparian Ecosystem	Wetlands (Lentic)	Condition	Density Riparian Health Assessment (scores)	Functioning riparian areas contribute to water supply, water quality, channel stability (lotic systems) and biodiversity.
	Riparian Areas (Lotic)	Condition	Riparian Health Assessment (Scores)	

Watershed Component		Indicator	Measure	Watershed Linkages
Upland Ecosystem	Land Cover	Native Vegetation	Percent Cover	Native vegetation is an indicator of overall watershed condition. The greater the percent cover of native vegetation the greater the likelihood that the watershed is in a functioning condition. Native vegetation supports soil, water and biodiversity.
	Land Use	Access	Road density	Linear developments result in landscape and habitat fragmentation.
		Parks, Protected and Managed Areas	Percent of Watershed Protected	Results in the conservation of historical and natural features, and wildlife refuges. Important for human health and well-being.
		Tourism and Recreation Activity	Number of visitors to serviced areas Number of anglers and hunters in the watershed	Indicates the pressure placed on natural resources in the watershed by people recreating, including hunting and fishing.
		Agricultural Activity	Crop Footprint	An indication of land conversion from native vegetation to annual crops.
			Farm Size Number of Farm Operators	Indicates economic well-being within the community.
			Rangeland Condition	An indication of permanent cover in the watershed. Healthy rangeland supports water supply, water quality, soil quality and biodiversity.
		Oil and Gas Activity	Number of oil and gas wells	Indicates the level of disturbance on the landscape, including habitat fragmentation due to associated linear developments.
Biodiversity	Fish	Species composition	Number of species	An aquatic ecosystem that supports a diverse group of fish species is more resilient to ecological adversity or changes to environmental condition.
	Wildlife	A variety of seasonal, migratory and resident species.	Population	An upland ecosystem that supports a diverse group of wildlife species is more resilient to ecological adversity or changes to environmental condition.
	Vegetation	Invasive, Disturbance and Rare Plants	Distribution and Occurrence	An upland ecosystem that supports a diverse group of plant species is more resilient to ecological adversity or changes to environmental condition.
Community	People	Population	Number of people in the watershed	People are the cornerstone of a watershed. Watersheds should be livable places that can sustain people through time.
	Stewardship	Stewardship	Participation in programs	Stewardship programs are available that help residents, landowners and leaseholders maintain and improve watershed conditions.

Condition Indicators

- Available data was usually collected to support local projects or programs and not for the purpose of SOW reporting
  - Long-term data generally not available – lacking trends
  - Different methods generally used to report on similar indicators and not always directly available
- Relied on partners within each jurisdiction, generally better buy-in from Montana and worked to locate pools of information in SK.

Transboundary SOW Contents

- Aims to bridge the scientific and technical community with the people who live and work in the watershed
- Follows the general headings:
  - Watershed Characteristics
  - Socio-economic condition
  - Surface water Quantity and Allocation
  - Surface Water Quality
  - Groundwater
  - Riparian Areas and Wetlands
  - Biodiversity (Fish, Wildlife and Plants)
  - Land Use (Access, Parks, Protected and Managed Areas, Tourism and Recreation, Agriculture and Oil and Gas
  - Watershed Stewardship

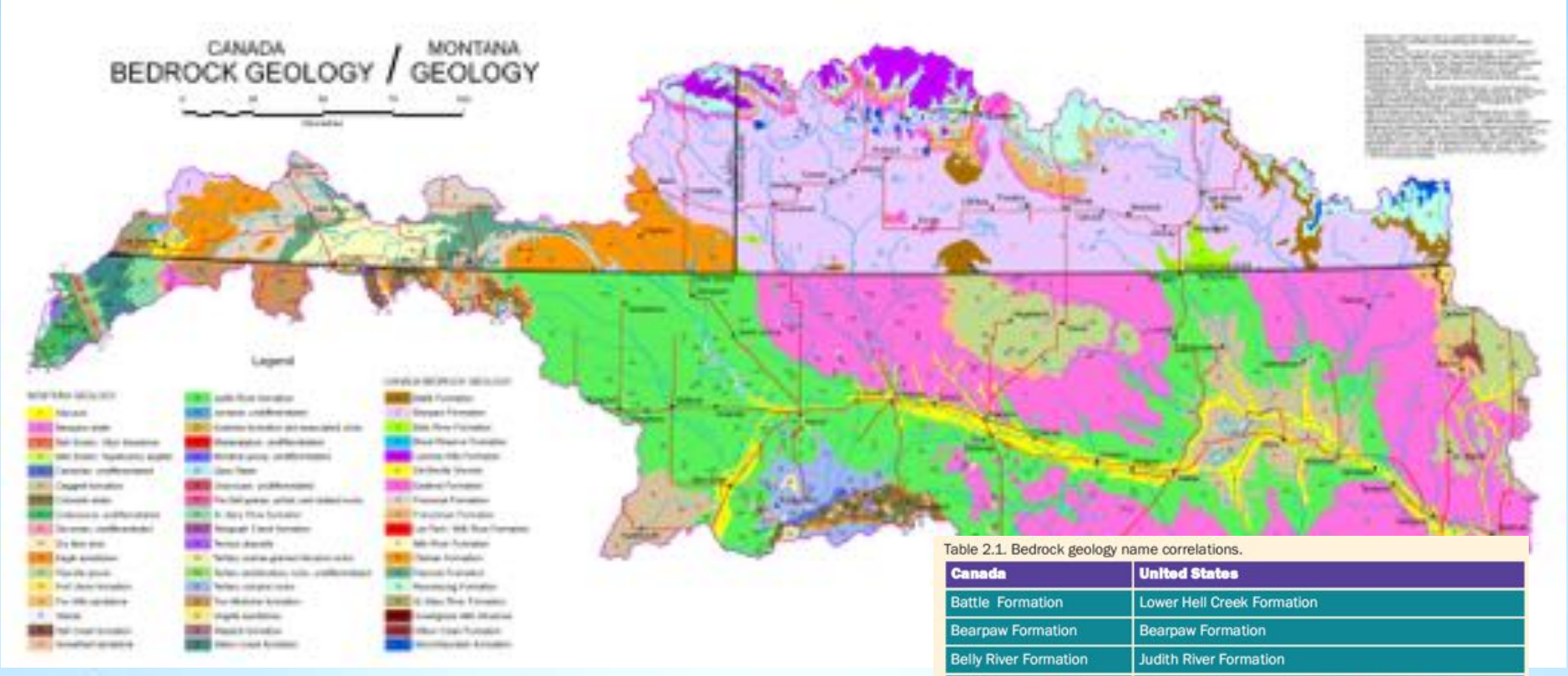
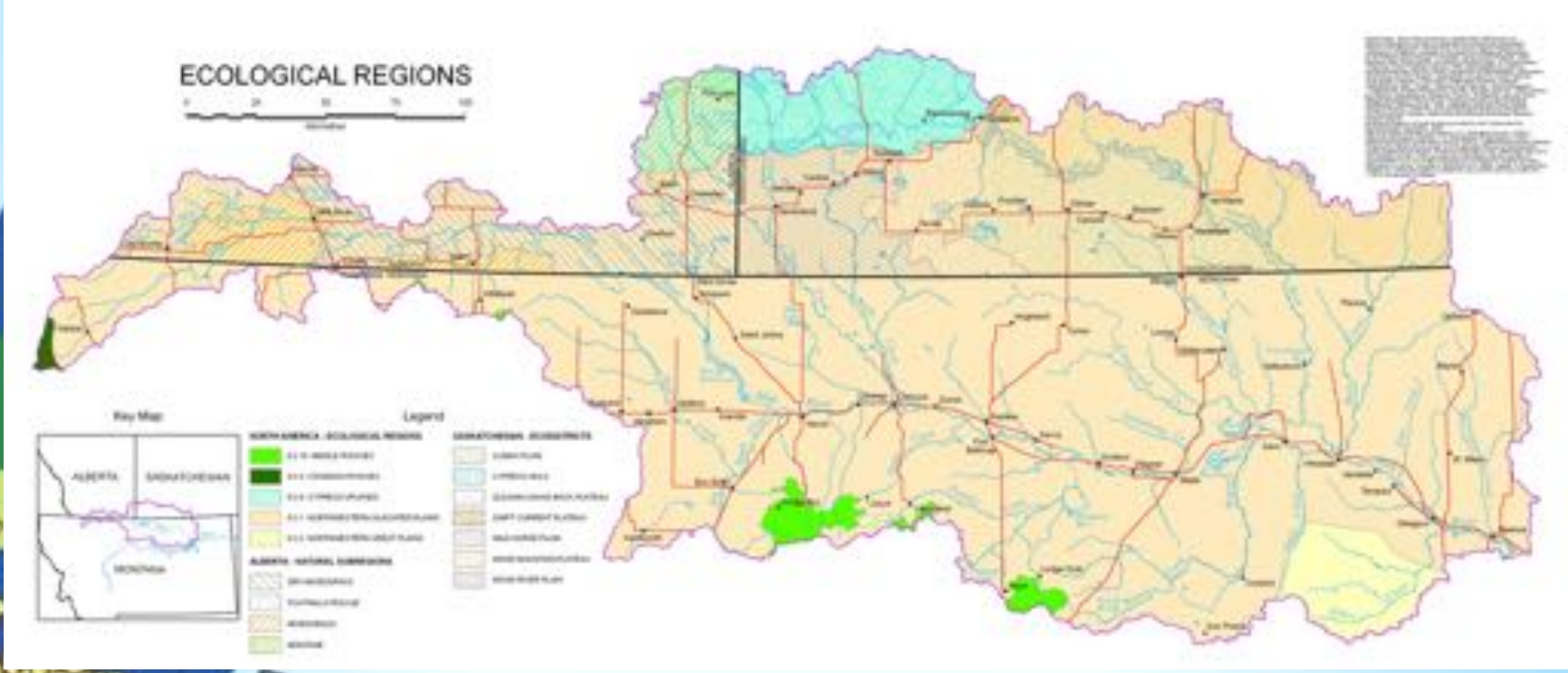


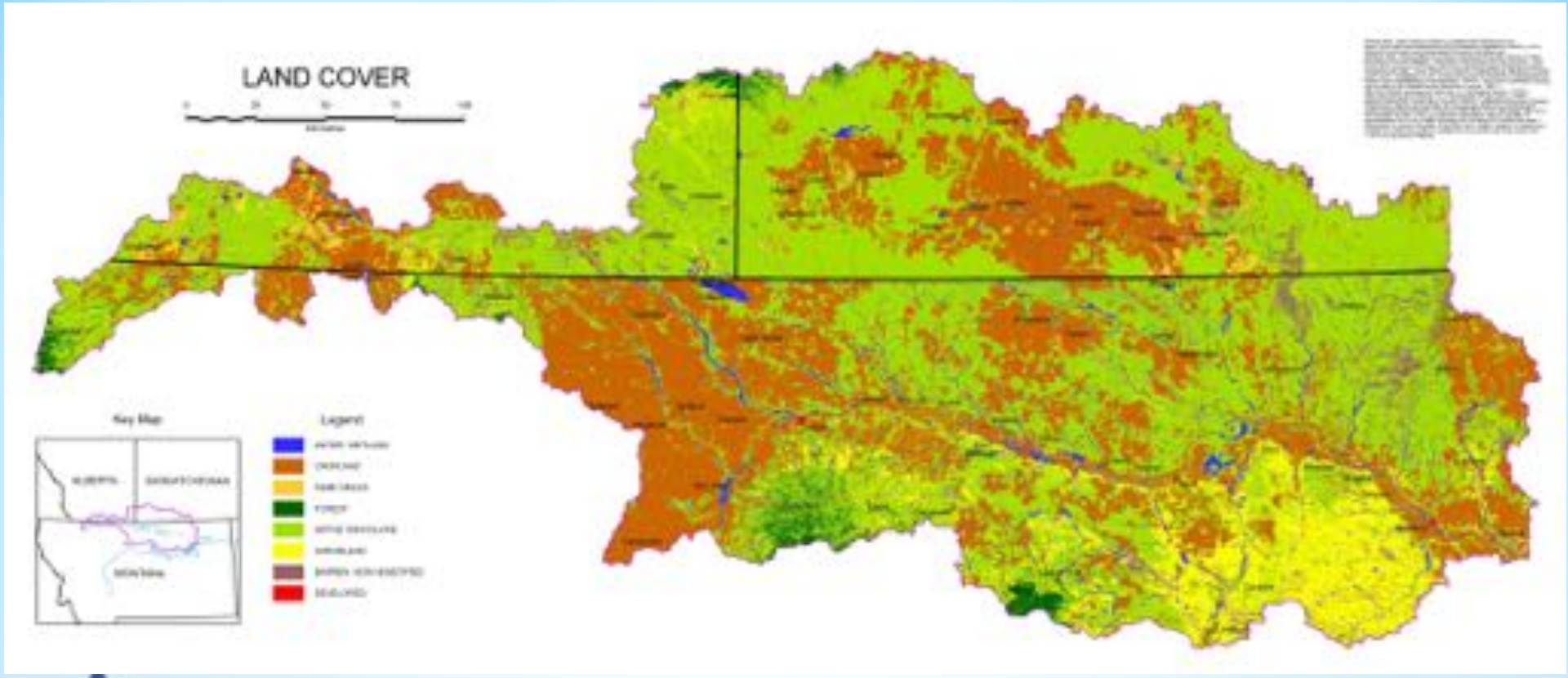
Table 2.1. Bedrock geology name correlations.

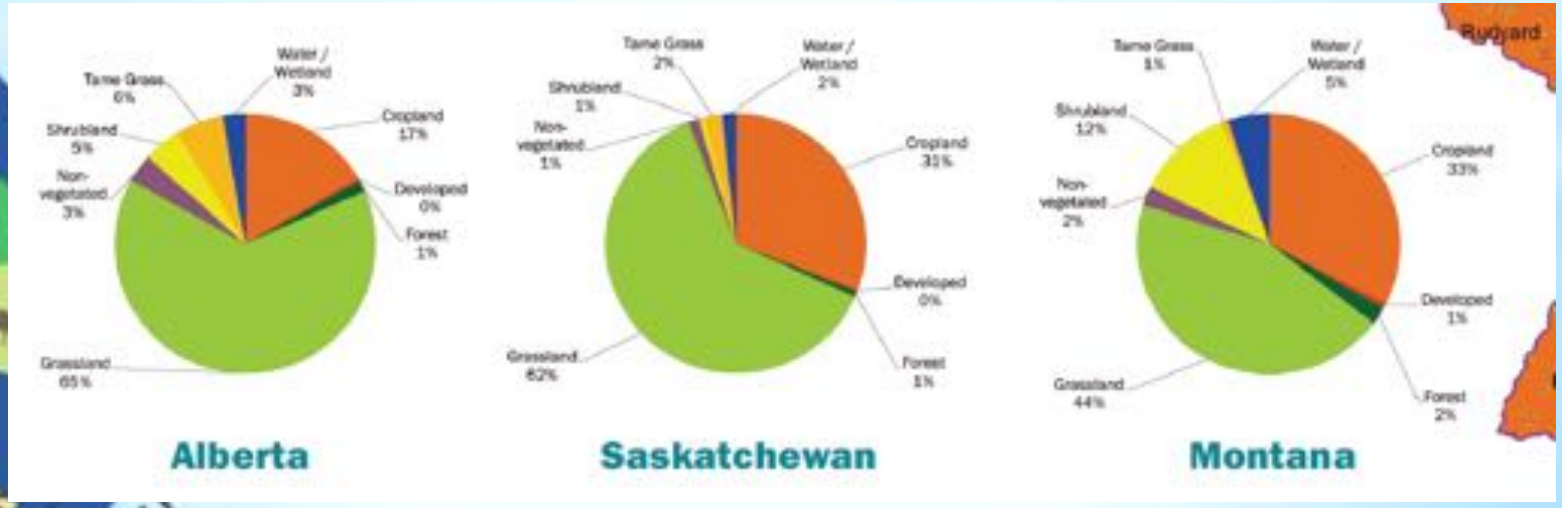
Canada	United States
Battle Formation	Lower Hell Creek Formation
Bearpaw Formation	Bearpaw Formation
Belly River Formation	Judith River Formation
Blood Reserve Formation	Fox Hills Formation and Lower Hell Creek Formation
Cypress Hills Formation	No known correlation
Del Bonita Gravels	No known correlation
East End Formation	Lower Fox Hills Formation
Foremost Formation	Lower Judith Formation
Frenchman Formation	Upper Hell Creek Formation
Lea Park Formation	Claggett Formation and Eagle Formation
Milk River Formation	Eagle Formation and Virgelle Sandstone
Oldman Formation	Upper Judith River Formation
Pakowki Formation	Claggett Formation
Ravenscrag Formation	Fort Union Formation
St. Mary River Formation	St. Mary River Formation, including Fox Hills Formation and Lower Hell Creek Formation
Sweetgrass Hills Intrusives	Broken down by petrology classification (syenite, syenite porphyry, trachyte porphyry, diorite porphyry, monzonite porphyry, lamprophyre)
Willow Creek Formation	Willow Creek Formation
Wood Mountain Formation	No known correlation

Ecoregions are areas of land that have been grouped within a boundary due to similarities in type and in the quantity and quality of environmental resources.

Ecoregions have been defined by assessing geology, physiography, vegetation, climate, soils, land use, wildlife and hydrology that affect or reflect differences in ecosystem quality and integrity.

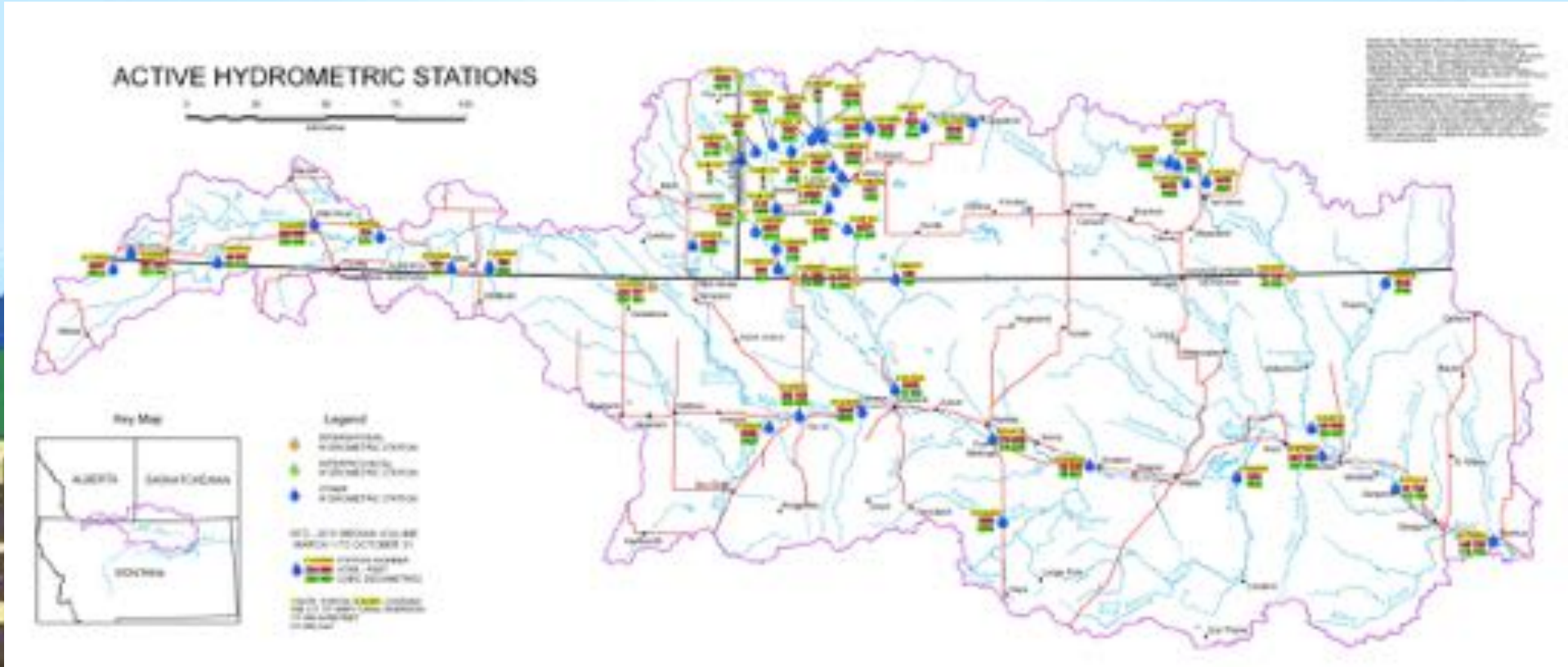



LAND COVER
Key Map
Legend

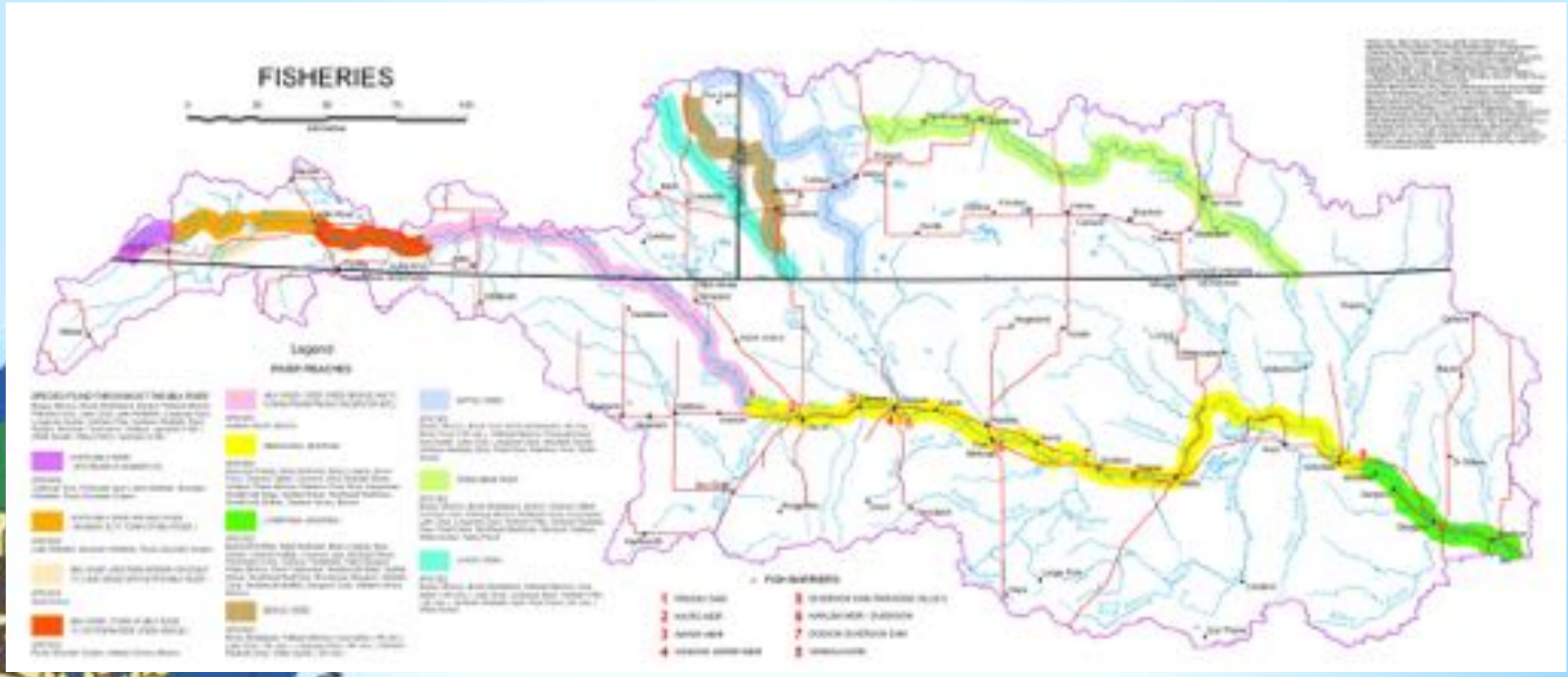

Water / Wetland 3%
Tame Grass 6%
Cropland 17%
Shrubland 5%
Developed 0%
Non-vegetated 3%
Forest 1%
Grassland 65%
Alberta
Tame Grass 2%
Water / Wetland 2%
Shrubland 1%
Non-vegetated 1%
Cropland 31%
Developed 0%
Grassland 62%
Forest 1%
Saskatchewan
Tame Grass 1%
Water / Wetland 5%
Shrubland 12%
Cropland 33%
Non-vegetated 2%
Developed 1%
Grassland 44%
Forest 2%
Montana

Water Supply and Allocation

As water scarcity increases,
there is greater need for water monitoring.



Fish Species Composition is:



Ferruginous Hawk

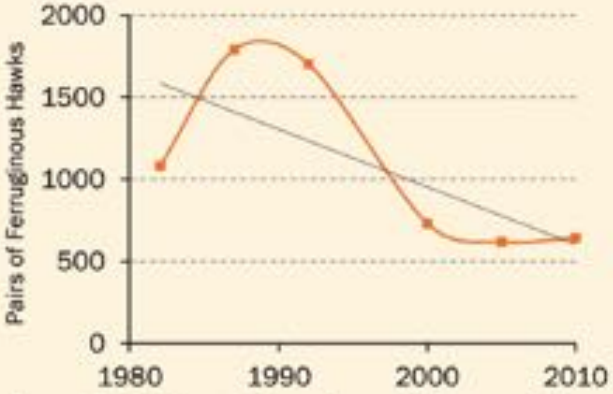


Figure 8.2. Estimated Ferruginous Hawk population within Alberta based on provincial trend surveys .

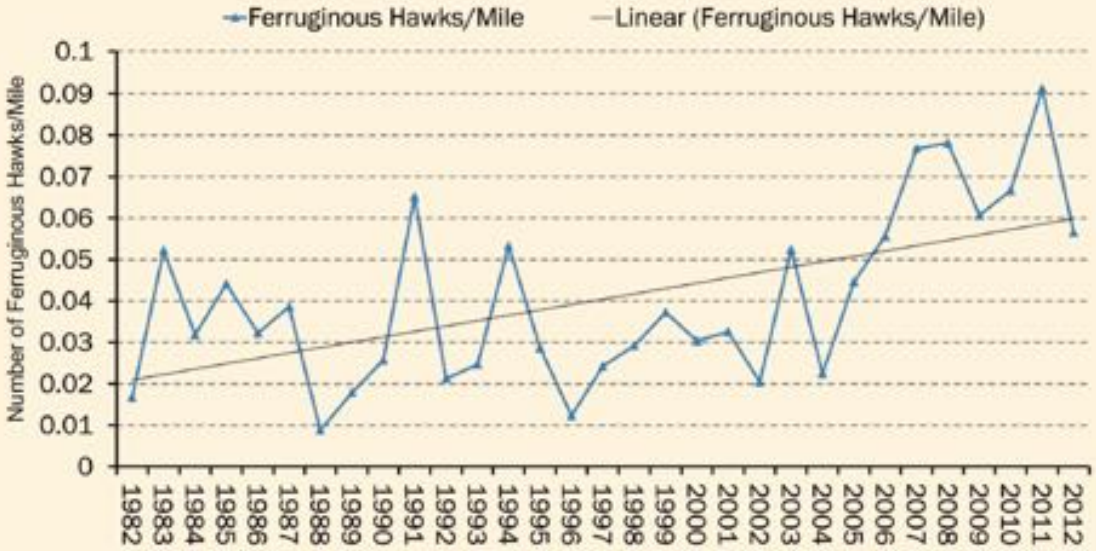


Figure 8.13. Peak total male Greater Sage Grouse lek attendance, Alberta. Data provided by the Alberta Fish and Wildlife lek census.

Figure 8.14. Average male Greater Sage Grouse lek count in the Milk River watershed, Montana, for leks having greater than 8 years of data available, 1981-2012. Data provided by MT FWP.

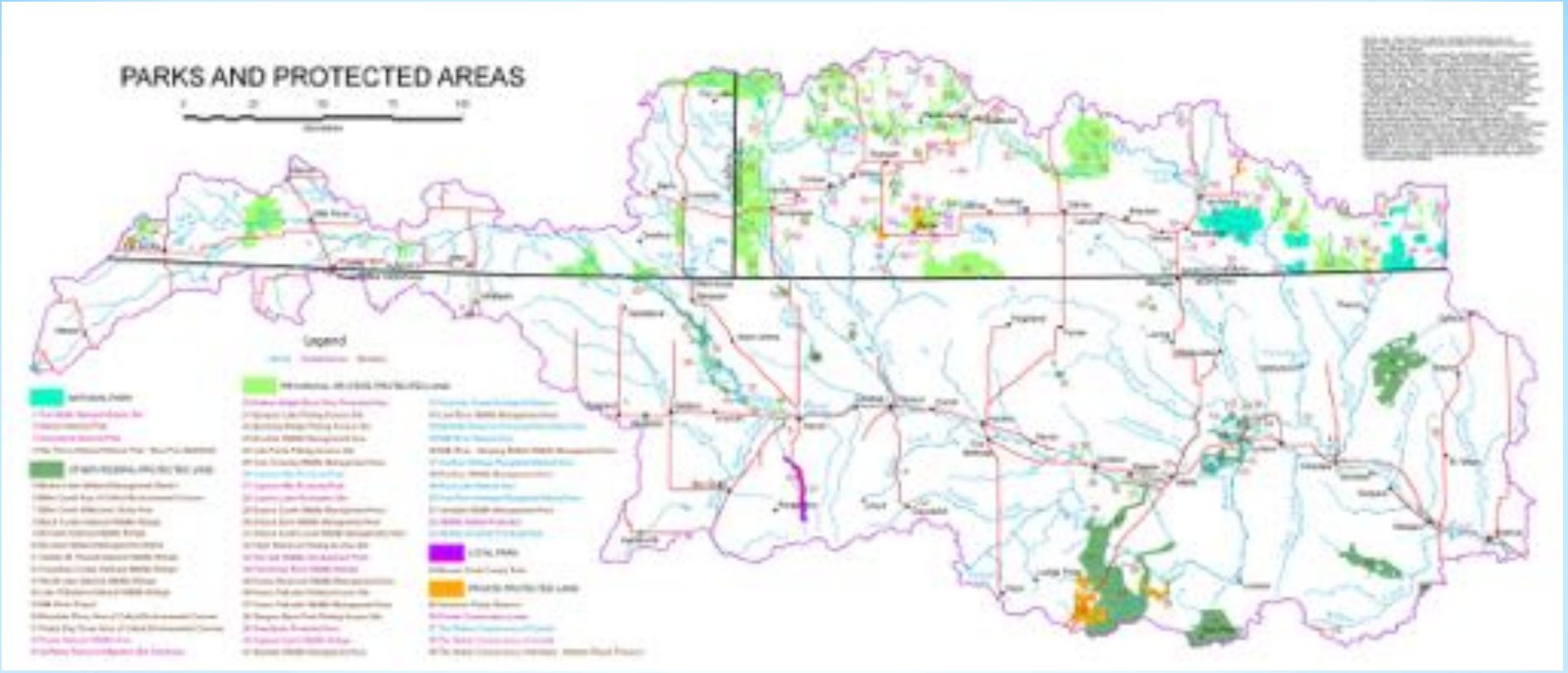
Additional information provided on accompanying DVD: Alberta and Montana recovery strategies for Greater Sage Grouse, see 'Wildlife'.

Greater Sage Grouse

Population is:

regeneration of silver sagebrush habitat, 3) Defer grazing near leks until late spring, 4) Construct new livestock facilities away from leks, 5) Avoid supplemental feeding of livestock in key Greater Sage Grouse wintering habitat, 6) Maintain high range health in Greater Sage Grouse habitat (Adams et al. 2004; Alberta Sage Grouse Recovery Action Group 2005).

In Montana key activity includes: 1) 74,058 ha (183,000 acres) of sagebrush habitat has been conserved through long-term (30-year) leases, 2) Implementation and evaluation of rest-rotation grazing systems, 3) Protection of important Greater Sage Grouse habitats



Parks and Protected Areas are:

increasing	stable	decreasing	unknown
Alberta & Montana			Saskatchewan

Beaver Creek Park, Montana

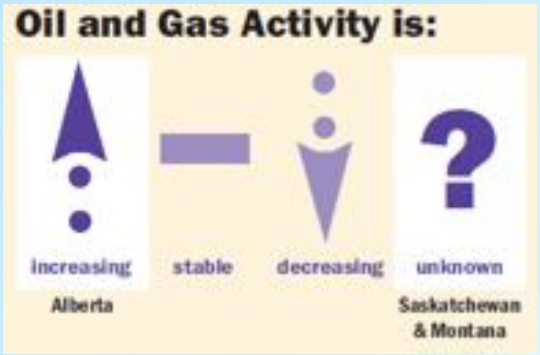
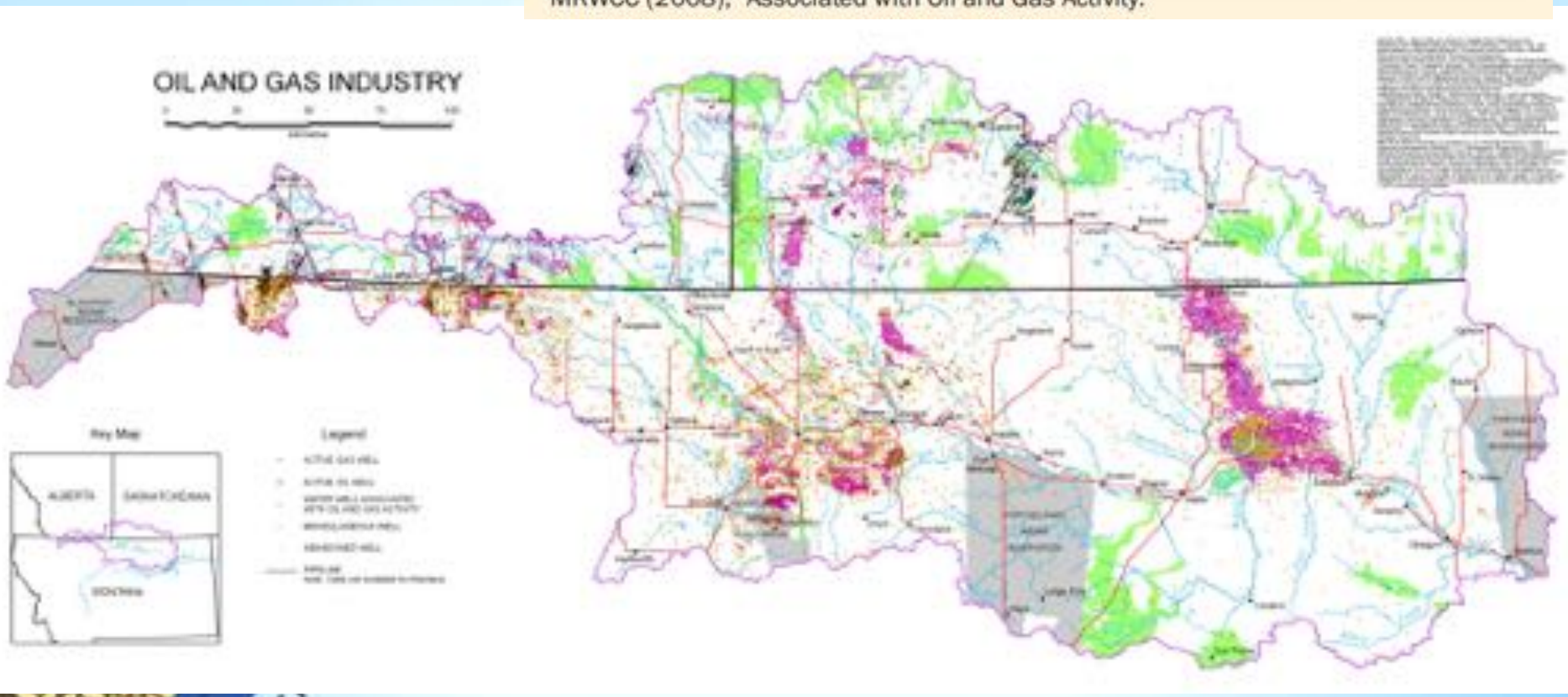


Table 9.4. Summary of oil and gas well statistics.

Type of Well	Alberta		Saskatchewan	Montana
	2007[1]	2012	2012	2012
Active Oil Wells	121	162	506	998
Active Gas Wells	409	476	760	5126
Water Wells[2]		18	109	114
Miscellaneous Well		336	212	3493
Abandoned Well	1624	1864	909	125
	2493	**2856**	**2496**	**9856**

[1]MRWCC (2008); [2]Associated with Oil and Gas Activity.



Looking Ahead

The Milk River Transboundary State of the Watershed Report provides resource managers, landowners and residents with greater insight into watershed resources that are shared across provincial and international borders. The intent was to build a common understanding within the watershed so that resources may be managed collaboratively in the future, in a way that will benefit all. Understanding approaches to monitoring and reporting across the jurisdictions will form the basis for future collaboration and management.

Next Steps

- A core team of transboundary co-operators should be established to discuss monitoring needs and approaches for Milk River transboundary state of the watershed reporting in 2018.
- Alberta, Saskatchewan and Montana should collaborate to develop common monitoring criteria for select indicators important to the Milk River watershed.
- Water is the watershed's most valuable and limiting resource. In recognition, an on-going, knowledgeable Committee may be assembled (possibly under the auspices of the International Joint Commission) to provide a forum for collaborative integrated watershed management, unrestricted by political boundaries. The objective of the Committee would be to identify and recommend management strategies that result in more effective utilization of our communal water resources.

Opportunities: 2018 is fast approaching…

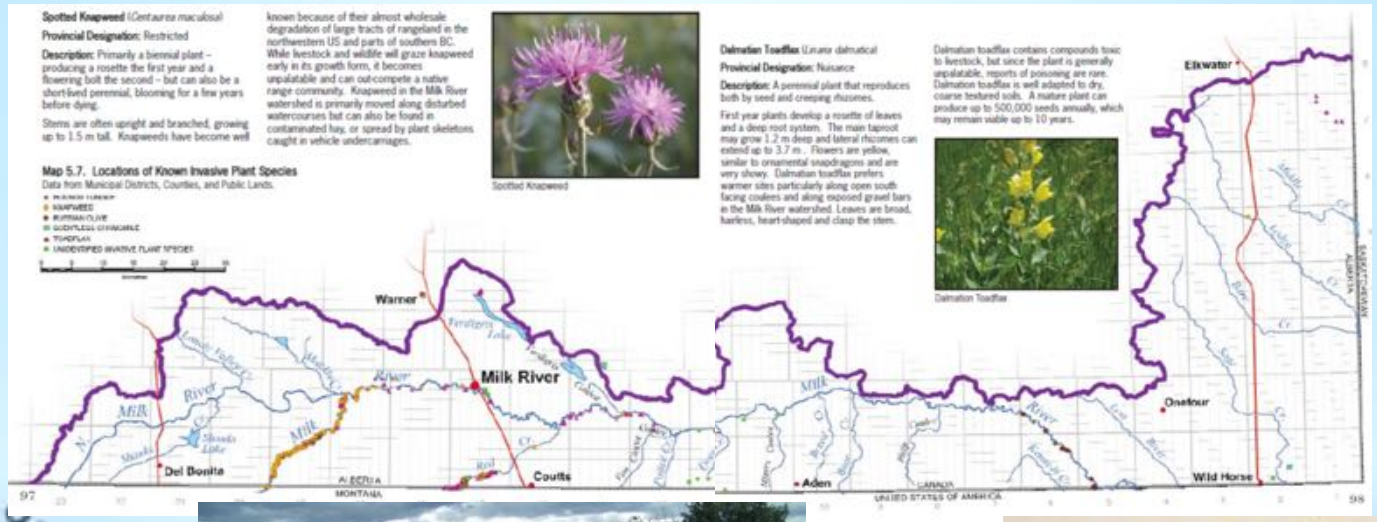
- Is there interest from Montana and Saskatchewan to continue with Transboundary reporting?
- Can we identify partners for a new ‘team’?
- Build on the Transboundary SOW report and come up with a monitoring and research protocol/needs assessment for the next report in 2018…?
- Projects…. Invasive weed mapping?

Thank you!

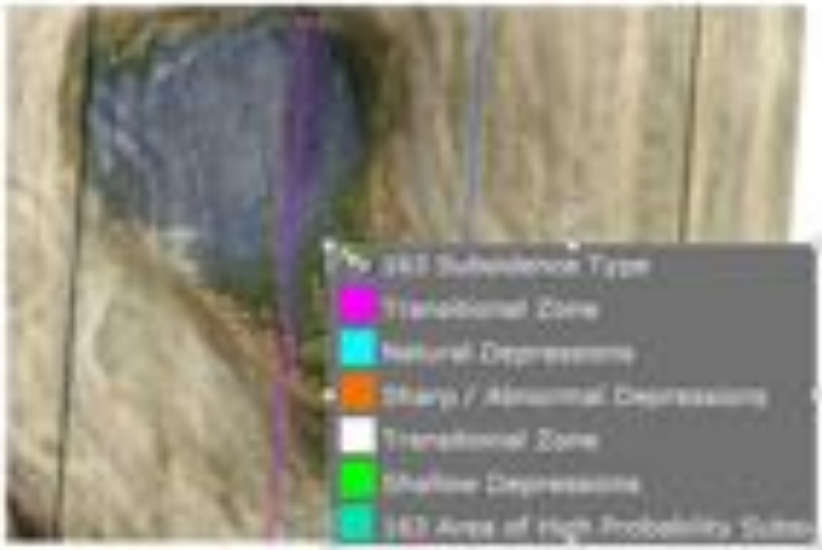
Cooperative Weed Management:

Bridging partners access borders

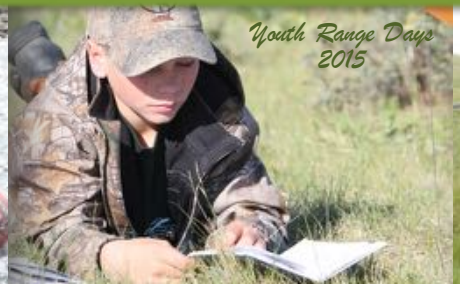
- Goal: Provide a forum for discussing programs, successes/challenges/common concerns in Invasive Species Management within the Milk River Watershed in Canada and the United States, and to explore opportunities for future cooperation among area stakeholders.



VENTUS
Geospatial
Flying Higher



Grass-Roots Stewardship



OUR LEGACY
CANADA

S. Riemersma

Moving Forward…

- Implementation of the Milk River Integrated Watershed Management Plan (IWMP).
  - Develop projects that will support plan implementation and our community.
- Pursue opportunities to secure water for economic sustainability and lead the development of a municipal water conservation and security strategy in the coming years.
  - Further Develop and deliver educational youth programming on Watershed related topics
  - Continue with projects that will improve our knowledge of the watershed, and contribute to sustainable watershed management.

Future IWMP implementation and research projects

- Voluntary Ecological goods and services pilot project for native grasslands stewardship on private lands.
  - Delayed until the release of the SSRP – BMF
  - Can focus on SAR as well, possibly similar to the NCC Stewardship Credit Program on the Sandstone Ranch.
- Overwintering Fish Habitat evaluation project
  - In cooperation with DFO, focus on critical overwintering pool identification and evaluation and modeling.
- River Crossing Pipeline integrity project
  - In cooperation with AER
- Source Water Protection Planning
  - Community Emergency Preparedness desktop exercise.
  - Groundwater protection and education, monitoring network expansion.
- Prepare for 2018 State of the Watershed Report