Mighty Peace Watershed Alliance
Diverse, Responsible, Connected

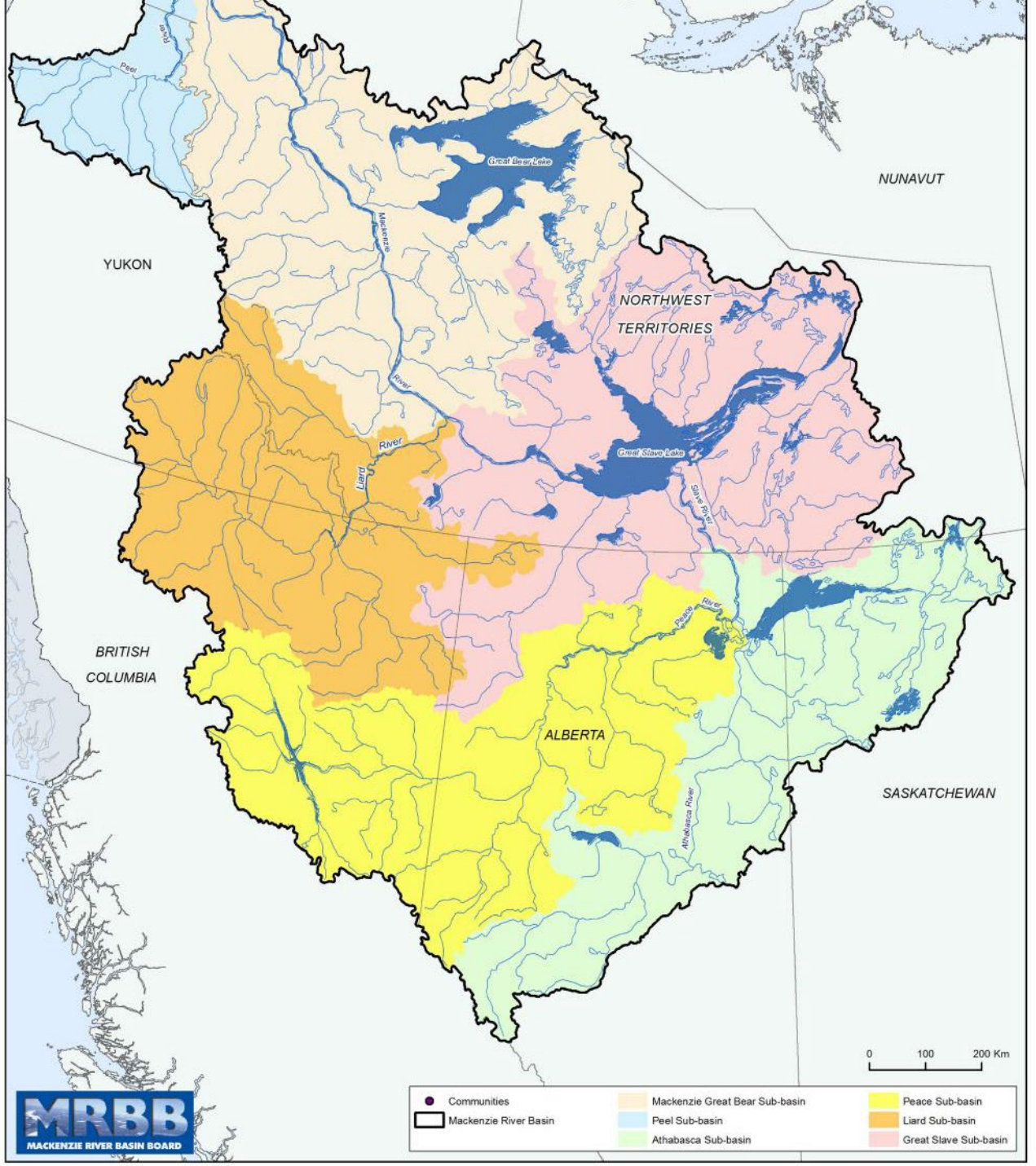
Lesser Slave Watershed Council

Athabasca WATERSHED COUNCIL

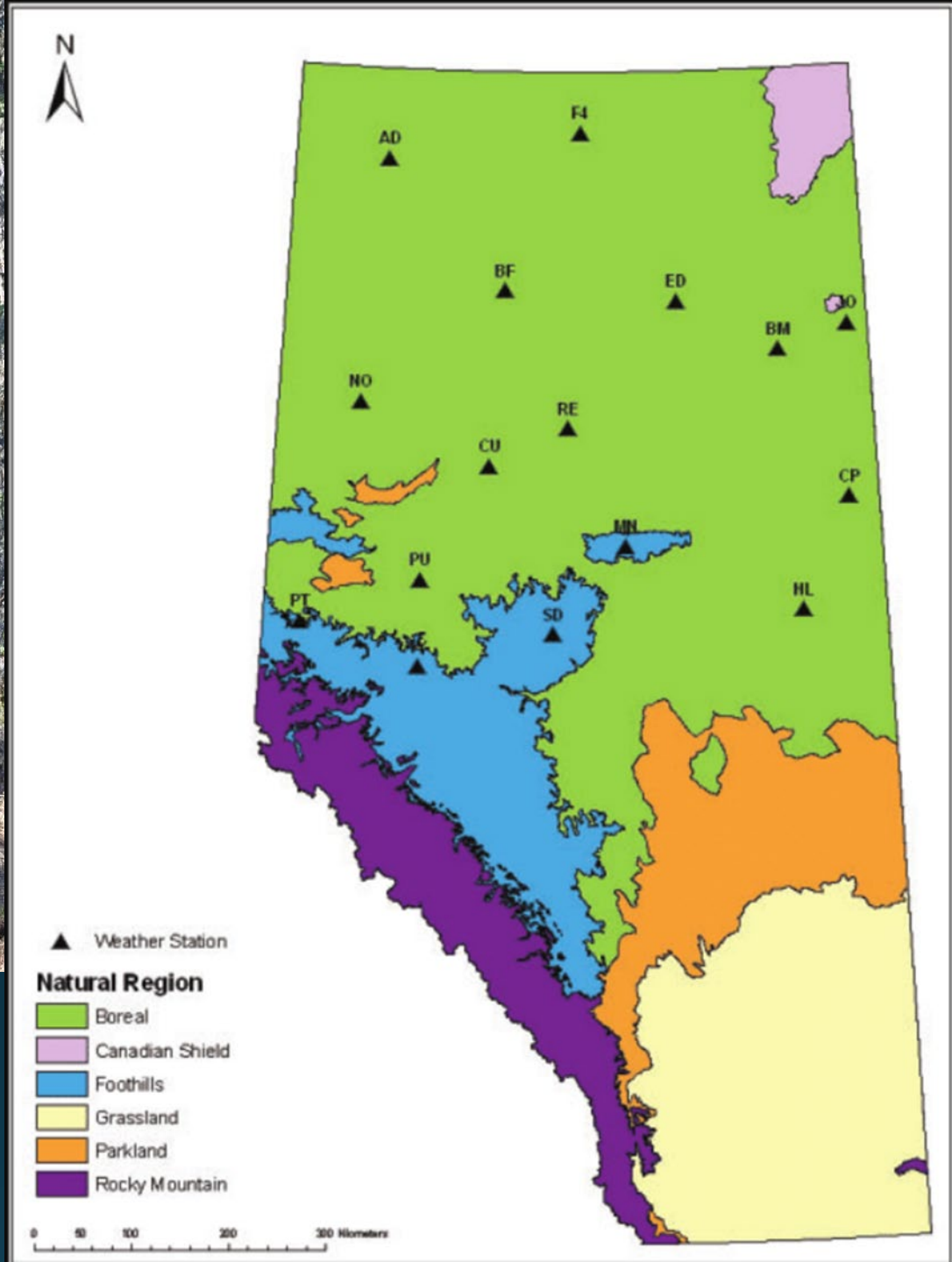
Introduction to Alberta's Boreal Watersheds & their role in State of the Watershed Reporting

What do we mean Alberta's 'Boreal' watersheds?

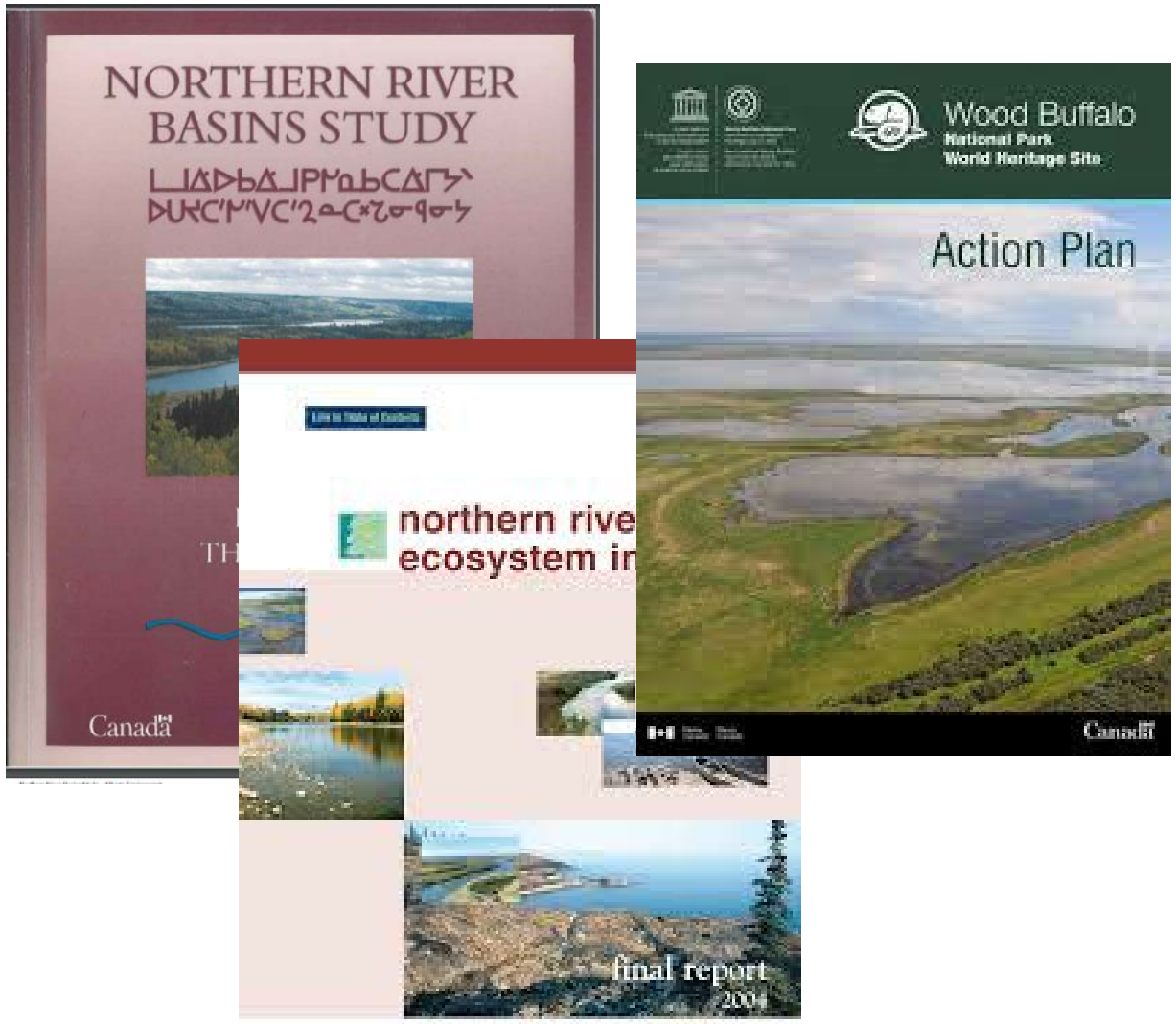
- The Lesser Slave River flows into the Athabasca.
- The Athabasca River joins the Peace-Slave system.
- The Slave flows into the Mackenzie River and eventually, the Arctic Ocean.



Alberta’s Boreal Forest Natural Region



Boreal Water Management Initiatives:



- Late 1960s WAC Bennet Dam
- 1980s Peace-Athabasca Delta studies and weirs constructed
- 1980s weir construction on the Lesser Slave River to stabilize lake levels
- 1990s Northern River Basins Study followed by the Northern Rivers Ecosystem Initiative
- 1997 Mackenzie River Basin Transboundary Master Agreement
- 2015 AB-NWT Bilateral Agreement
- 2019 Wood Buffalo National Park Action Plan

Water for Life 2003

Drivers / Risks:

- Walkerton and North Battleford drinking water contamination events
- 2001 drought / apportionment
- Legal risk of issuing junior licenses

WFL 3 goals:

- Safe, secure drinking water supplies
- Healthy aquatic ecosystems
- Reliable quality supplies for a sustainable economy

WPAC Establishment 2005 – 2011

The mandate of WPACs is to **engage governments, stakeholders, other partnerships, and the public in watershed assessment and watershed management planning,** considering existing land and resource management planning processes and decision-making authorities.

Athabas
WATERSHED CO

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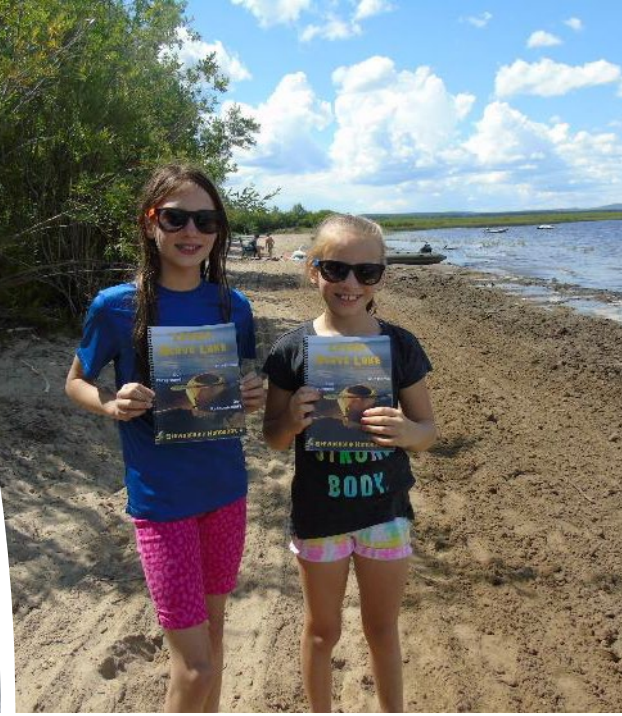

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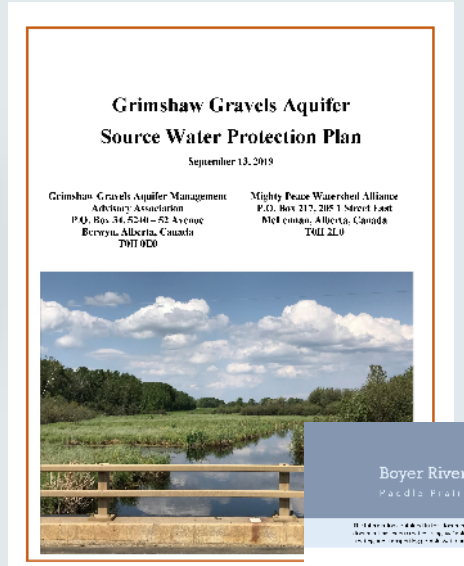
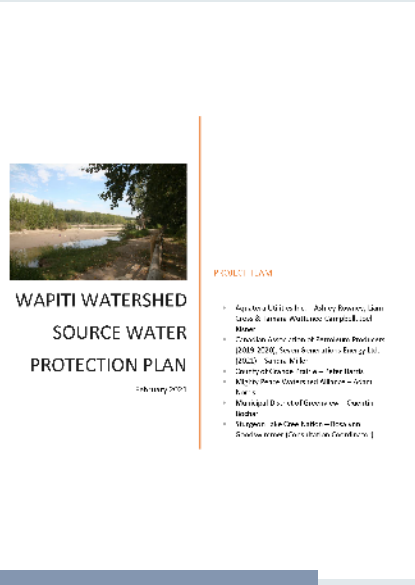




Rhonda Clarke-Gauthier
Executive Director

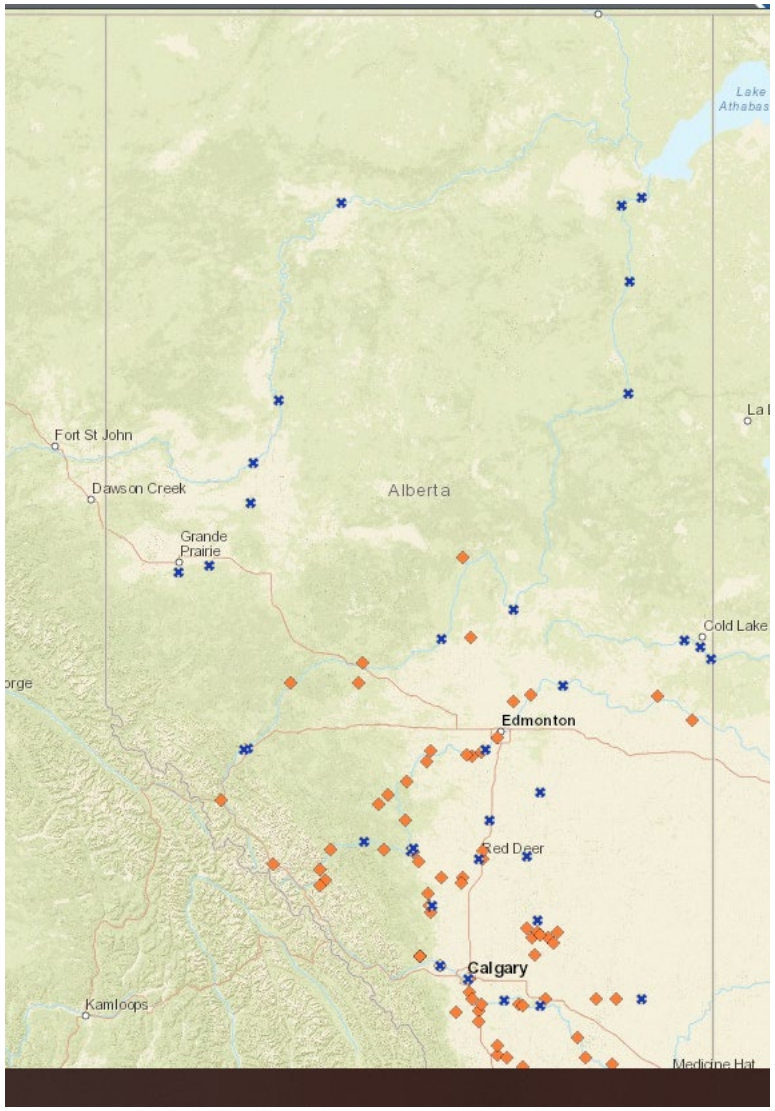
Adam Norris
Watershed Coordinator

Ashley Garnham
Project Coordinator

Adanna Hustler
Education & Outreach Coordinator

Water Management Challenges in the Boreal

- Large geographic area (60% of the province) & small population (about 400k or less than 10%)
- Rivers are mountain glacier and snowpack fed; big and sediment heavy. Guidelines for parameters like turbidity, if they exist, may not fit. Lots of background ‘noise’ (e.g., naturally occurring metals, sediments, etc.)
- Little baseline or benchmarking done prior to major disturbances like the WAC Bennet Dam or Oilsands
- Even today, monitoring efforts relatively sparse, sporadic, and not well coordinated given the extent of the geographic area and compared to smaller, more densely populated jurisdictions.



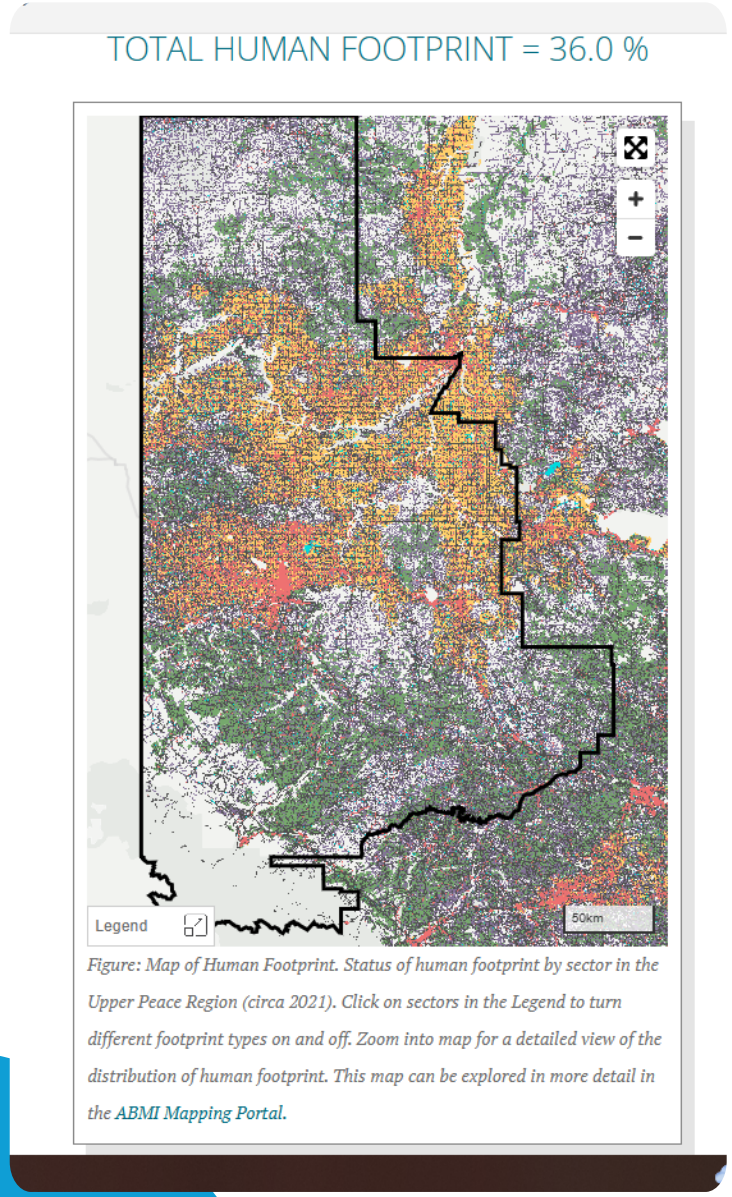
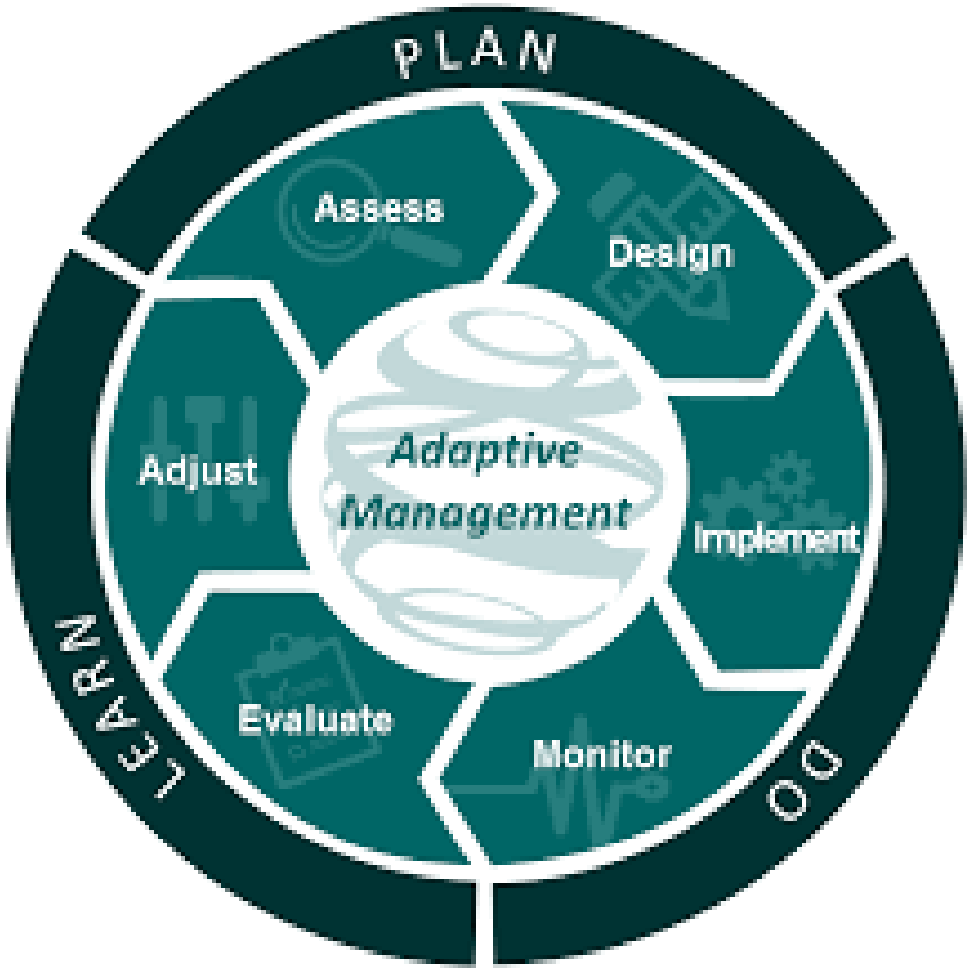


Figure: Map of Human Footprint. Status of human footprint by sector in the Upper Peace Region (circa 2021). Click on sectors in the Legend to turn different footprint types on and off. Zoom into map for a detailed view of the distribution of human footprint. This map can be explored in more detail in the ABMI Mapping Portal.

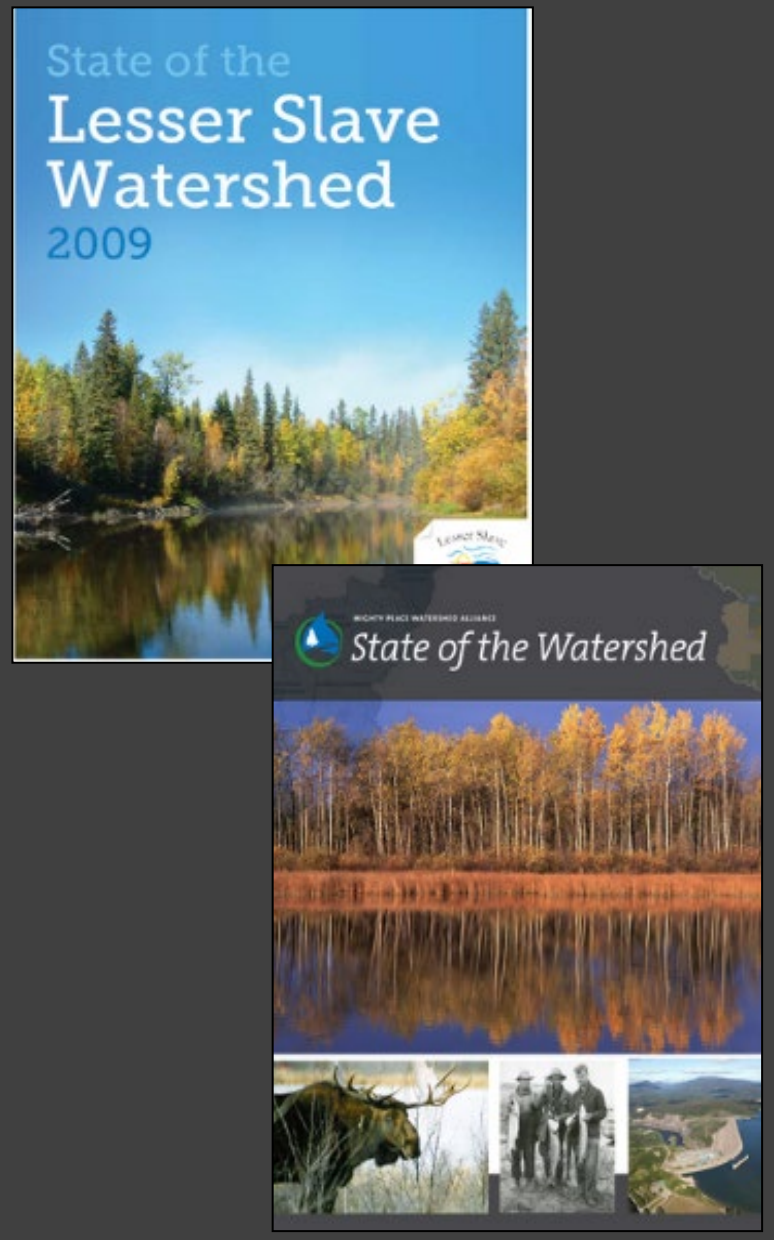
Water Management Challenges in the Boreal

- Very busy landscape (ABMI footprint 9 – 36%)
- Agriculture (crop and livestock), Forestry (lumber, pulp and paper), Oil and gas (conventional, in situ, oil sands), Mining (coal, peat, sand & gravel), Recreation, Transportation & Urban centres
- New (geothermal, Hydrogen, minerals, carbon capture, utilization and storage, small nuclear?)
- Climate change? Cumulative effects?
- With impacts to water quality, instream flow needs, biodiversity and surrounding uplands



To address these issues, WPACs

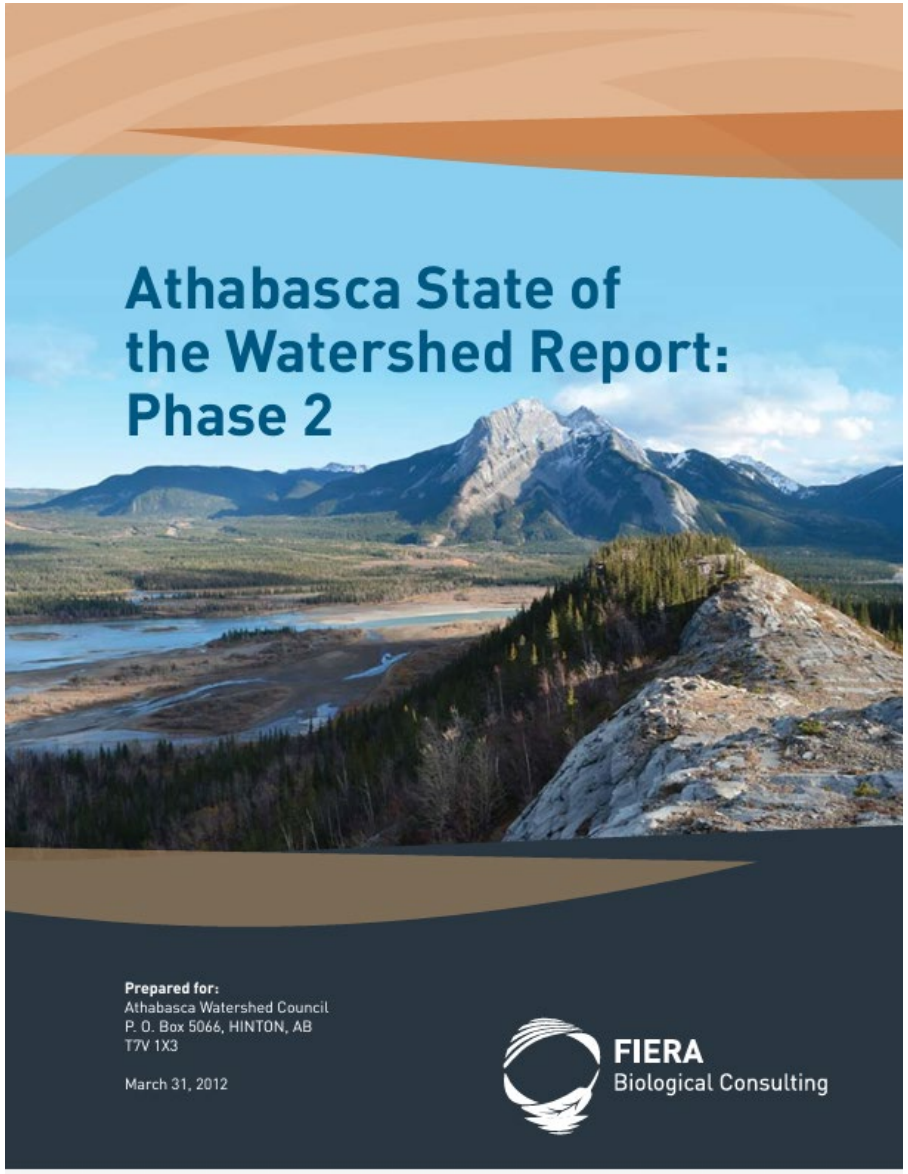
- Take an iterative and adaptive management approach
- Identify issues and fill data gaps
- ***Assess the state of the watershed (SOWs)***
- Develop and implement an integrated Watershed Management Plan
- Monitor, adjust and repeat!



State of the Watershed reports:

- Are a snapshot in time
- Iterative and adaptive (need to be repeated every 8 years)
- Provide a benchmark to measure progress towards goals over time
- Rely on good, long-term, consistent data
- Need to be scale-able to lakes, tributaries, main stem rivers

- Are an assessment watershed ‘health’ based on a suite of indicators.
- Include ecological as well as social and economic metrics
- Might include condition, pressures and management metrics



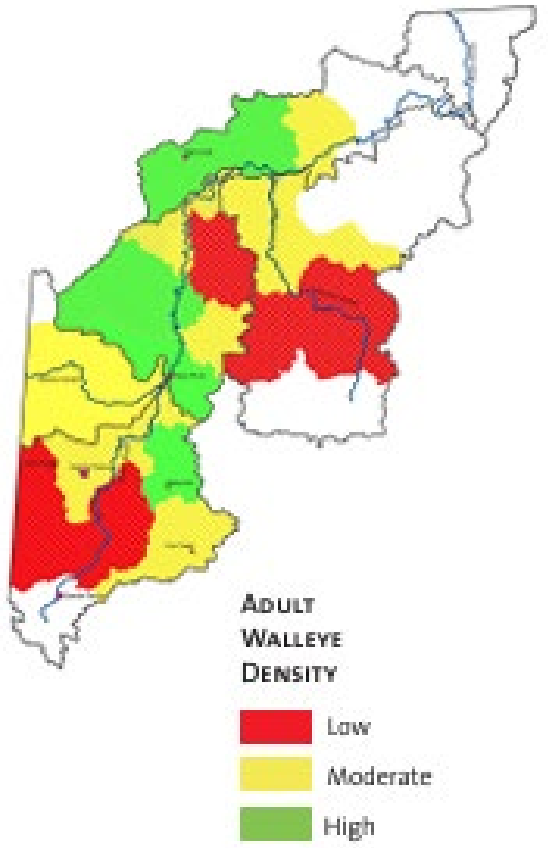
State of the Watershed Reports

- A suite of indicators might include:
  - Surface and groundwater quality (physical, chemical and biological parameters) for a particular purpose (livestock, recreation, source)
  - Surface and groundwater quantity (flow or level)
  - Aquatic Ecosystem Health (Instream flow needs, Biodiversity, Riparian and wetland health)
  - Social/Cultural values like source drinking water quality, recreation or traditional Indigenous harvest
  - Economic measures such as water supply, water conservation, efficiency and productivity

How do we use SOW metrics?

Table 3. Indicators for which Pressure Ratings were developed based on thresholds derived from the scientific literature.

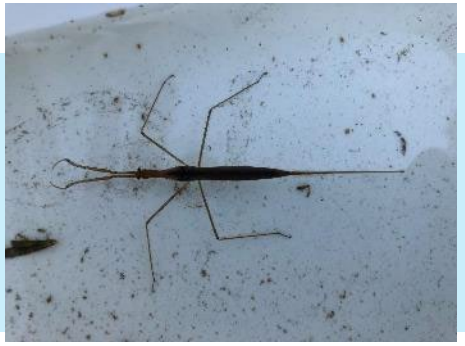
INDICATOR	UNIT	HIGH PRESSURE	MODERATE PRESSURE	LOW PRESSUR
Road Density	km/km²	≥0.5	>0.1 to 0.5	0 to 0.10
Seismic, Pipeline, Power Line & Railroad Density	km/km²	>3	>1.2 to 3	0 to 1.2
Large Patches of Natural Vegetation	% aerial coverage of tertiary watershed with large patches	≤30%	<30 – 65%	>65%
Stream Crossing Density	# of road crossings/km²	>0.6	>0.4 – 0.6	≤0.4
Human Population Density	Growth rate by tertiary watershed (%)	>5.67	>0 to 5.67	≤0
Human Land Use - Agriculture	% aerial coverage of tertiary watershed	>60	>25 to 60	≤25



At the end of the day, SOWs …

- Are a reflection of what we value & everything going on in the watershed
- Water, land and resource managers need to be involved
- Must be supported by a system of long-term data collection and sharing
- Are not one-off's! Must be repeatable.
- Can be expensive!
- Can inform a variety of water, land and resource managers, authorities and rights-holders

Monitoring



Lakewatch

ALMS
Alberta Lake Management Society

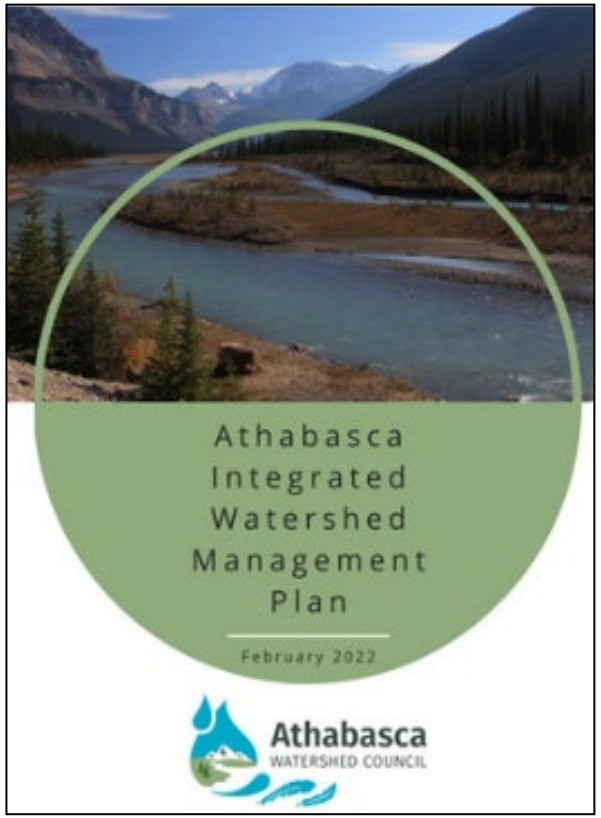
DataStream
Lake Winnipeg
Great Lakes
Mackenzie
Atlantic
Pacific

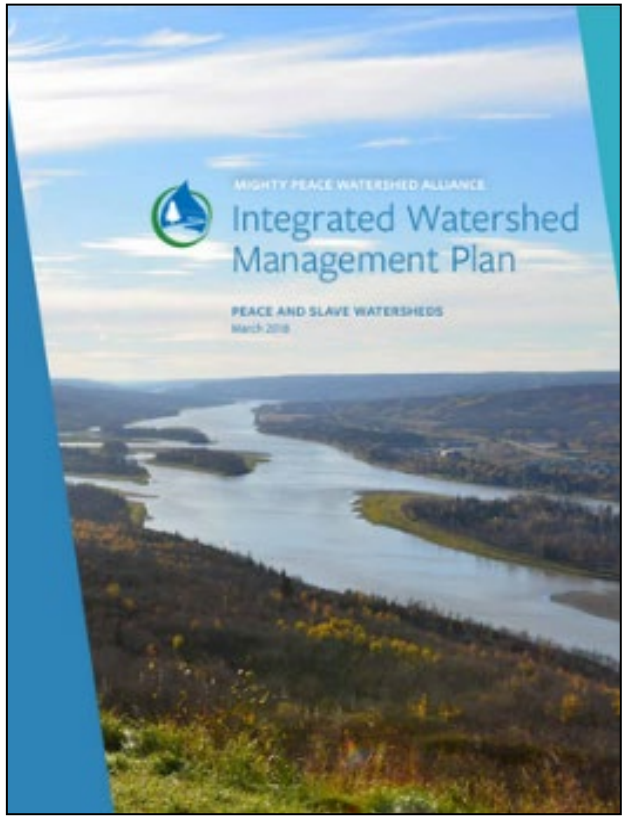
CABIN
CANADIAN AQUATIC BIOMONITORING NETWORK

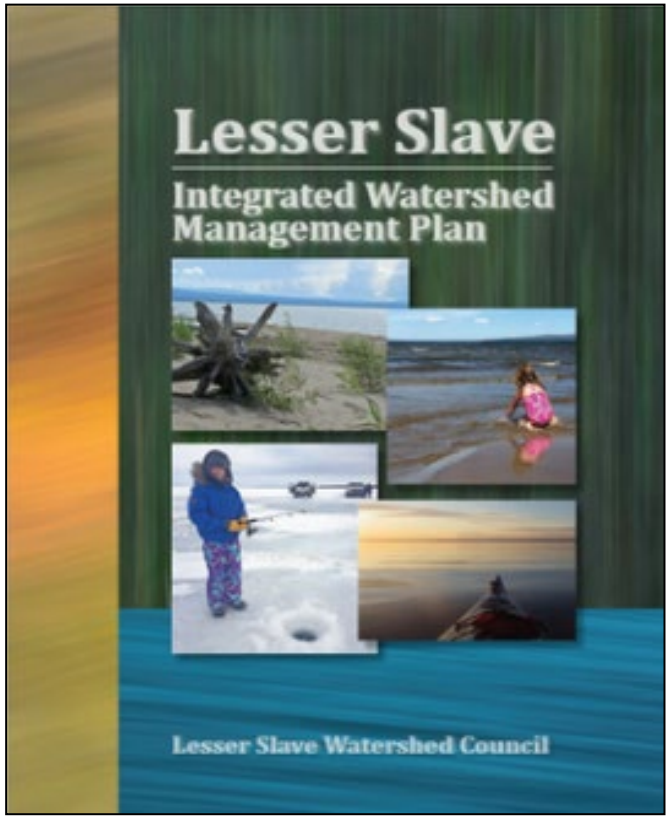
Environment and Climate Change Canada

Restoration

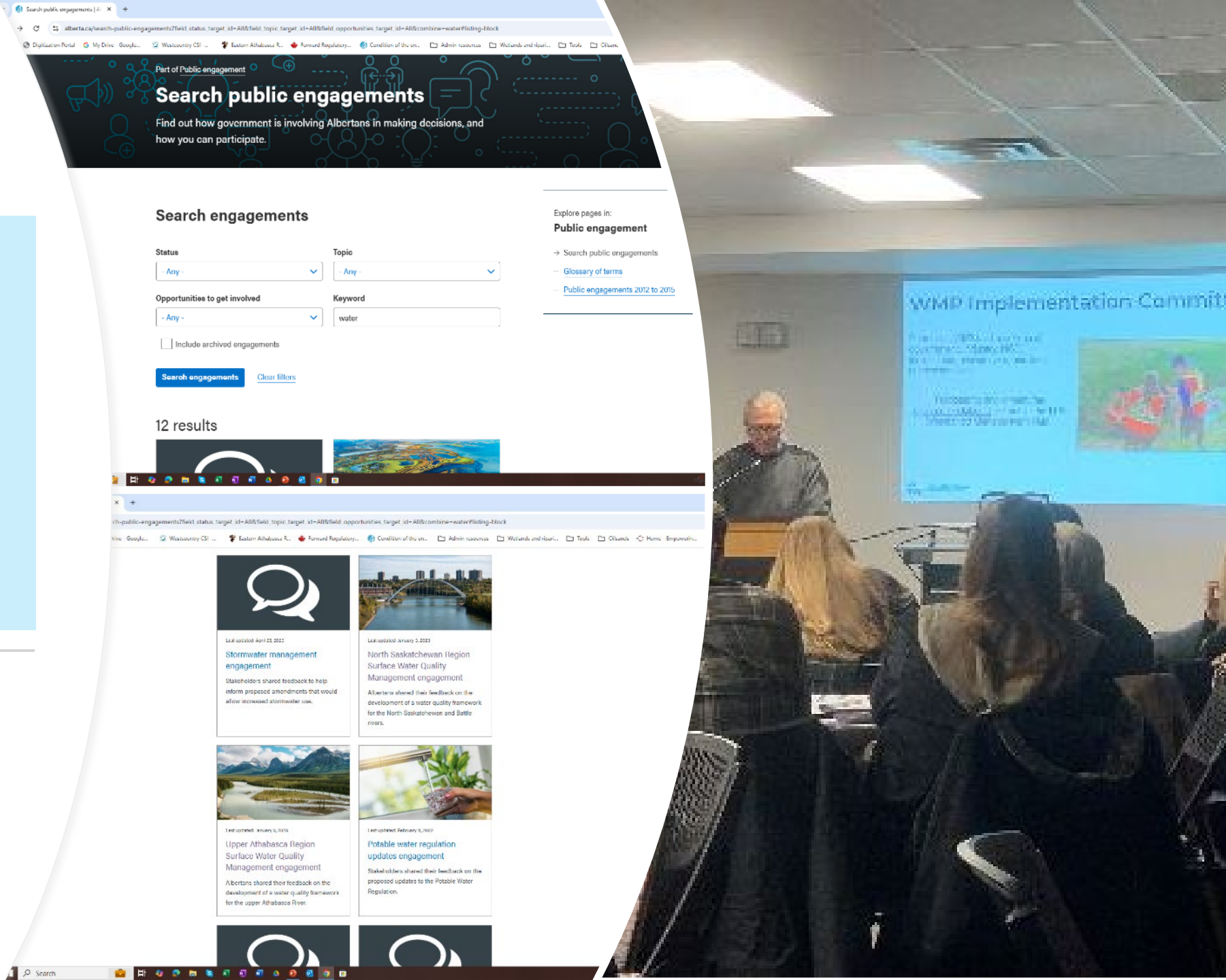
Integrated Watershed Management Planning







Advice on Policies, plans & Practices

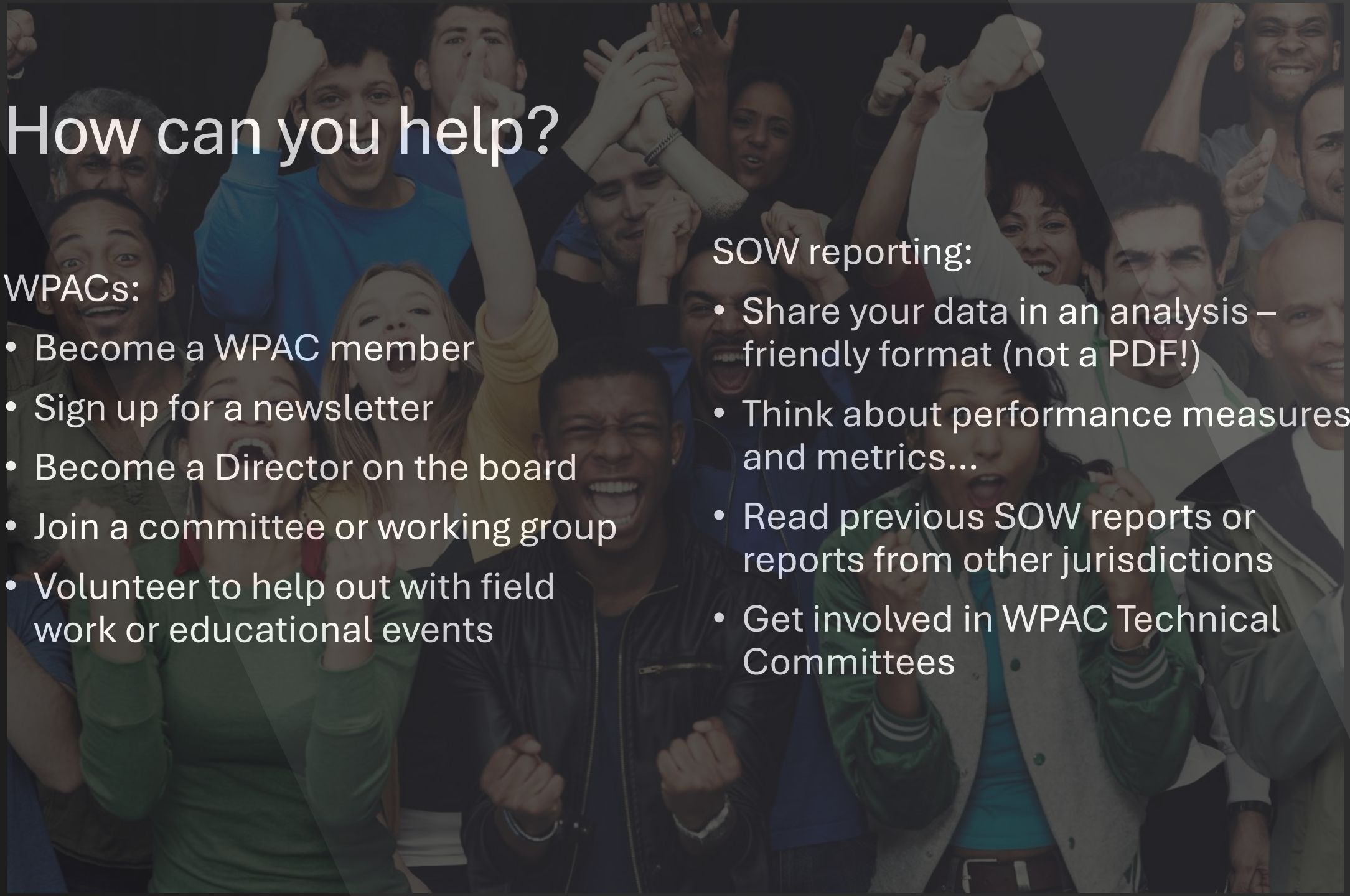


Convening and Collaborating

RIPARIAN WEB PORTAL

Education and Literacy

How can you help?



WPACs:

- Become a WPAC member
- Sign up for a newsletter
- Become a Director on the board
- Join a committee or working group
- Volunteer to help out with field work or educational events

SOW reporting:

- Share your data in an analysis – friendly format (not a PDF!)
- Think about performance measures and metrics…
- Read previous SOW reports or reports from other jurisdictions
- Get involved in WPAC Technical Committees

Thank you!

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