

An aerial photograph of a river system in a mountainous region. The river flows through a dense forest of evergreen trees. The riverbed is wide and sandy, with several meanders. In the background, there are large mountains with patches of snow under a clear blue sky.

Watershed Management in Alberta Green Area

John Diiwu

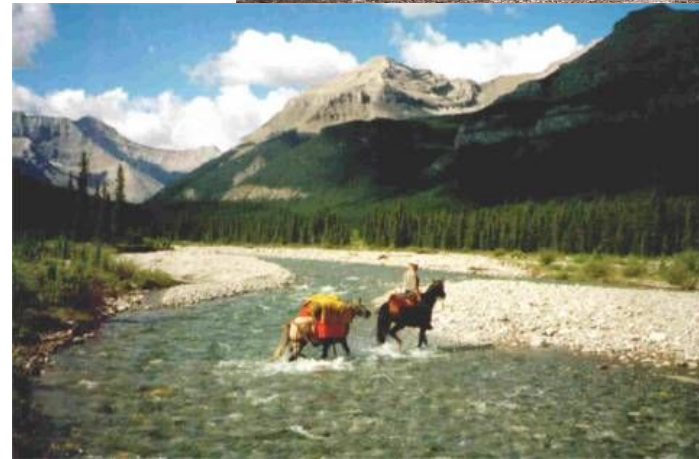
Alberta Sustainable Resource Development

Outline

- What is the green area?
- Key land use activities
- Need for watershed management
- Some provincial policies
- Need for information and tools
- Some current watershed studies
- Partnerships
- Conclusions

Forestry

- Much of the province is currently under Forest Management Agreements
- Many communities are very reliant on forest industry and its presence in the local community
- Forests provide opportunities for hunting, wildlife viewing and other forms of recreation



Oil and Gas

- Many communities are very reliant on oil & gas industry and its presence in the local community
- Exploration and development (seismic and drilling activity)
- Resulting infrastructure development on the landscape



Domestic Grazing

- Grazing dispositions in forest watersheds
- Majority of eastern slopes is under some form of grazing disposition



Forest Watersheds

- Main source of fresh water for main river systems in western Canada
- Increasing demand on water resources due to land use pressures, climate change, natural disasters, etc



Wildfires and MPB

- More frequent wildfires of high intensity
- MPB infestation moving eastwards



Need for Watershed Management

- Ensure a viable economy and sustainable watershed values
- Alberta forest management planning standard intended to protect
 - Water quantity and quality
 - Aquatic and terrestrial habitat
 - Social and cultural values
- Utilizes operating ground rules and riparian buffers
- Requires watershed assessment to identify potential impacts of forestry activities

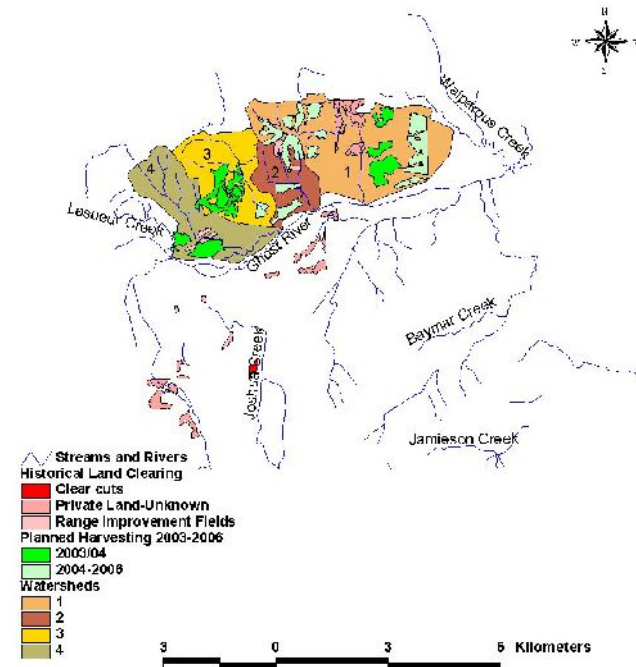
Alberta Forest Management Planning Standard

Alberta Sustainable Resource Development
Public Lands and Forests Division
Forest Management Branch
Version 4.1 - April 2006

Summary of an Assessment

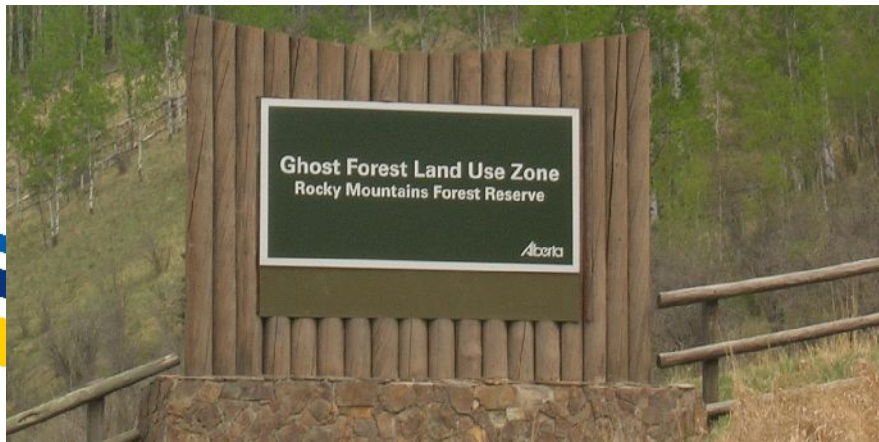
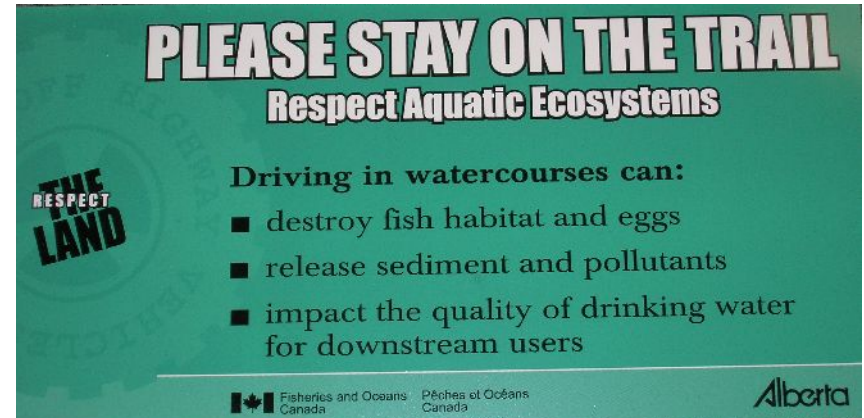
- Focus on
 - *Limit the impacts of timber harvesting on water yield and peak flows*
 - *Minimize impacts of forest operations on water quality*
 - *Minimize impacts of forest operations within riparian areas*
 - *Ensure that the quality and integrity of soil in the watershed are not compromised and can support regeneration of the forest*
 - *Protect hydrologically sensitive areas in the watershed such as wetlands, shallow groundwater, and steep slopes*
 - *Ensure that the integrity and characteristics of stream channels are not compromised and can support fish habitat.*

Proposed Harvesting South Ghost CTPP Area



Managing Recreational Impacts on other Watershed Values

- Information and awareness
- Stewardship and partnerships
- Enforcement



Other Watershed Management Policies

- Alberta Water for Life Strategy, since 2003
- Land Use Framework, based on land use regions and accounts for cumulative impacts
- New Wetland Policy, in the works
- Region specific policies eg NE Strategy, Eastern Slopes Policy
- MPB Management Plan

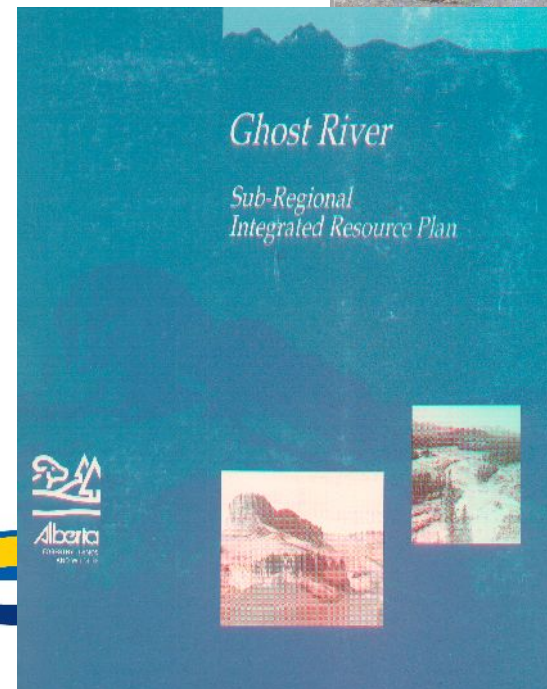
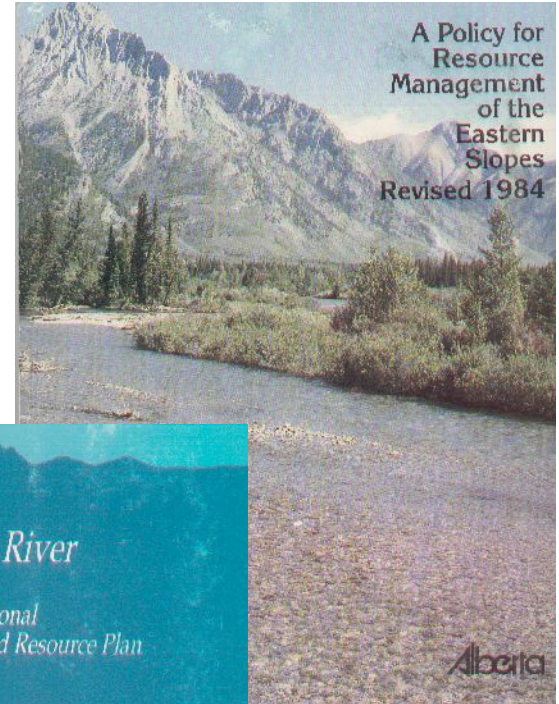
Water for Life

- SRD is an active participant in Alberta's Water for Life Strategy recognizing the key linkage between land use and water
- The *Water For Life* strategy is based on three key goals, or outcomes:
 - *Safe, secure drinking water supply*
 - *Healthy aquatic ecosystems*
 - *Reliable, quality water supplies for a sustainable economy*



Eastern Slopes Strategy

- The Policy
 - *Guides management of public lands and resources within the eastern slopes region*
 - *Describes the concept of land use zonation and compatible uses*
 - *Led to the development of Sub-Regional Integrated Resource Plans*
- Sub-Regional Integrated Resource Plans (IRP's)



IRP Watershed Objectives

Objectives

1. To maintain an optimum water yield of streams in the planning area to satisfy both increasing downstream and on-site demands.
2. To prevent vegetation changes that could cause extreme fluctuations in streamflow, resulting in erosion of channel materials, high sediment loads, property damage or water supply problems.
3. To maintain, and where possible improve, the water quality of streams and lakes.
4. To prevent or minimize soil erosion associated with land use activities.
5. To proceed with proposed reclamation projects on vacant public land where unacceptable environmental conditions exist.
6. To ensure that reclamation guidelines and standards are adhered to on surface and subsurface dispositions and on land disturbances from natural and man-made causes.

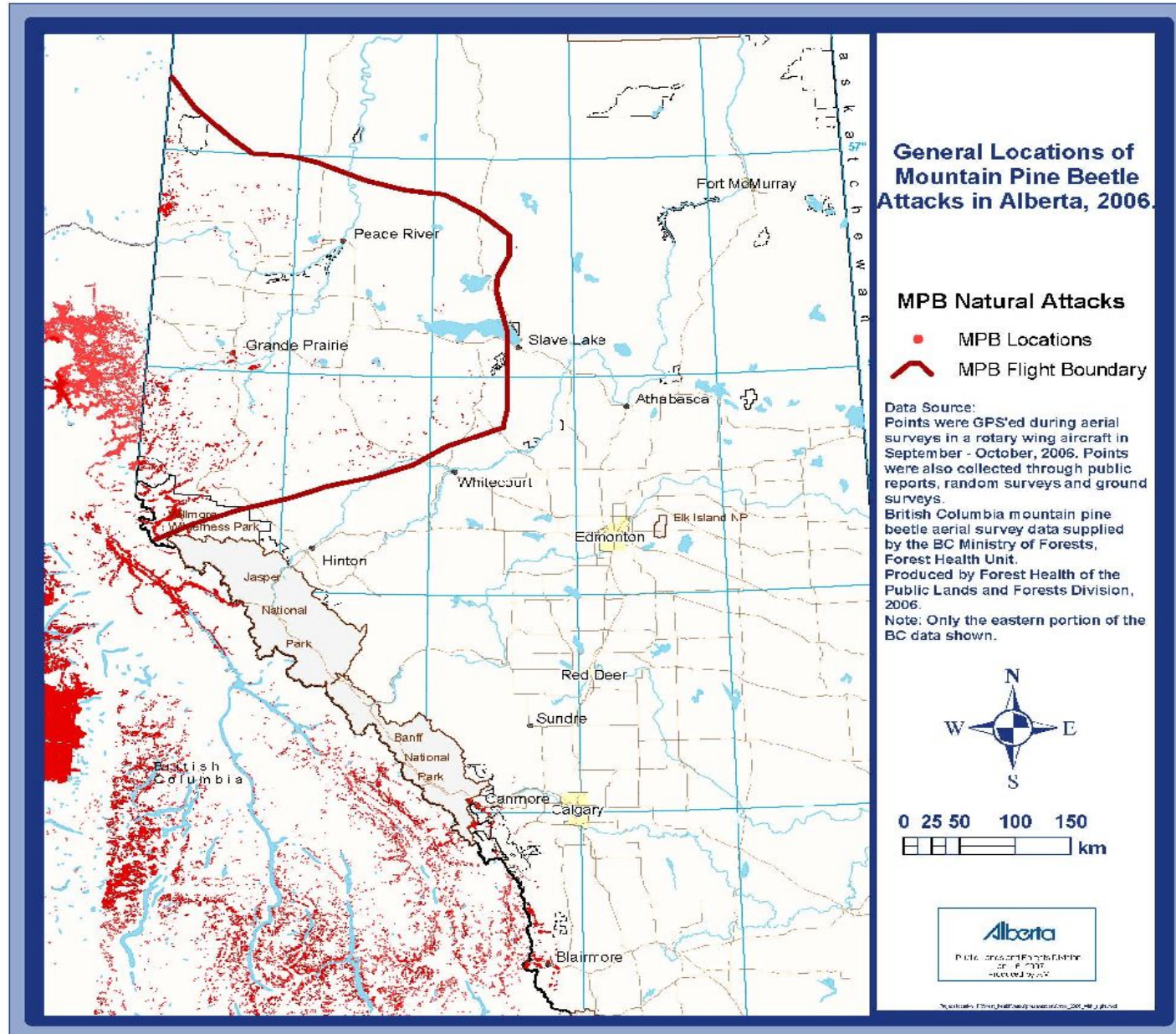
Still Relevant

- *“The overriding principle for all the zones is to protect the watershed values of the Eastern Slopes and to provide for public land and resource utilization in a manner consistent with principles of conservation and environmental protection”.*



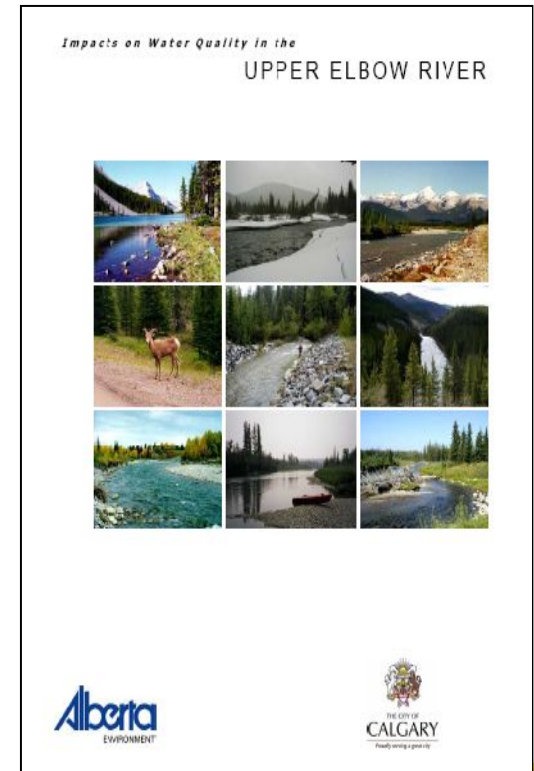
MPB Action Plan

- 2006 flight
- Largest dispersal flight
- Prevent spread



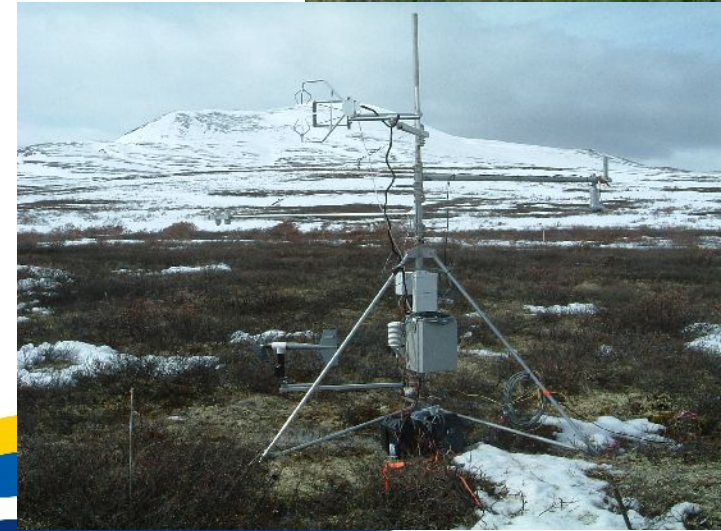
Effectiveness of the Policies

- Requires improved understanding of hydrologic processes
- Requires data and predictive tools to inform decision-making



Current Watershed Studies

- IP3 Marmot Creek Study
 - Strategic watershed
 - Interest in supporting continuation beyond 2009
- U of A Lost Creek Study
 - Located in Southern Rockies region
- Foothills Research Institute, Hinton
 - Fish and Watershed Study
 - MPB-Hydrology Study
- HEAD2 Watershed Study
 - Located in eastern Boreal Forest
- Long-term monitoring needed
 - Support hydromet observatory initiative led by WWCRC



Information for Decision Making

- Post-fire salvage and potential on-site and downstream impacts
- Strategic and operational decisions for MPB management
- Change in forest species composition and distribution under climate change
- What are priority watershed values to manage for?
- Define thresholds for management

Downstream Users

- City of Calgary
 - Major urban centers water quality treatment systems performance depends significantly on the quality of raw water they receive
 - Incremental changes in treatment needs translate into hundreds of millions of dollars in infrastructure upgrades to treatment plants

THE CITY OF CALGARY WATERWORKS
Water Quality Strategy

The City of Calgary Waterworks is actively working to ensure the clean, reliable supply of water you enjoy today will be there in the future. To do that, we take a source to tap view of water quality. This means that as water travels from the mountains, through our treatment plants and across the city through an extensive distribution system, we take steps to ensure you receive water that is clean and safe to drink. We work to ensure that generations of Calgarians will have a plentiful, safe supply of drinking water.

Watershed Protection

The Bow and Elbow Rivers are the sources for Calgary's water. We actively participate with stakeholder groups such as the Elbow River Partnership and the Bow River Basin Council to protect and restore our watersheds to ensure we have a high quality raw water source.

We are participating in the development of the Alberta's Water for Life strategy, designed to provide a blueprint for managing our water resources in this province. As part of a multi-stakeholder group we are working to develop a watershed and source protection framework that will ensure effective management of the watershed to protect Calgary's raw water sources.

Plant Upgrades

The City of Calgary Waterworks will be investing \$200 million in upgrades to Calgary's water treatment plants. The City's two water treatment plants — Bearspaw and Glenmore — will improve our ability to produce high quality drinking city.

Quality, Quantity, Environmental Protection
Ensuring Tomorrow's Water Today

Ensure means to make safe. The processes and technologies chosen for the Water Treatment Plant Upgrades were designed to meet the latest water quality standards with consideration of emerging regulatory and best-practice trends, thereby ensuring tomorrow's water quality, today.

When completed, the upgraded plants will satisfy the water quantity demands of Calgary's forecasted population growth for 15 years or more. Calgary's progressive Zero Discharge approach sets an example for environmental stewardship in the handling of treatment plant residuals. All of these program considerations ensure tomorrow's water, today.

Glenmore Water Treatment Plant Upgrades
Ensuring Tomorrow's Water Today

...singly stringent regulatory requirements of our existing systems and processes to meet. The upgrades will improve impurity detection to remove bacteria and viruses and a combination of byproducts that come from the ...

...overall plant capacity to ensure we ... Once they are expanded, either of the up to 550 million litres of water per day, as one of our plans to meet the demand ...

...to meet the needs of a growing ... complex, we will have the capacity to City of Calgary for the next 25 years.

...City's commitment to environmental ... reduce the impact our treatment plants ...

THE CITY OF CALGARY WATERWORKS

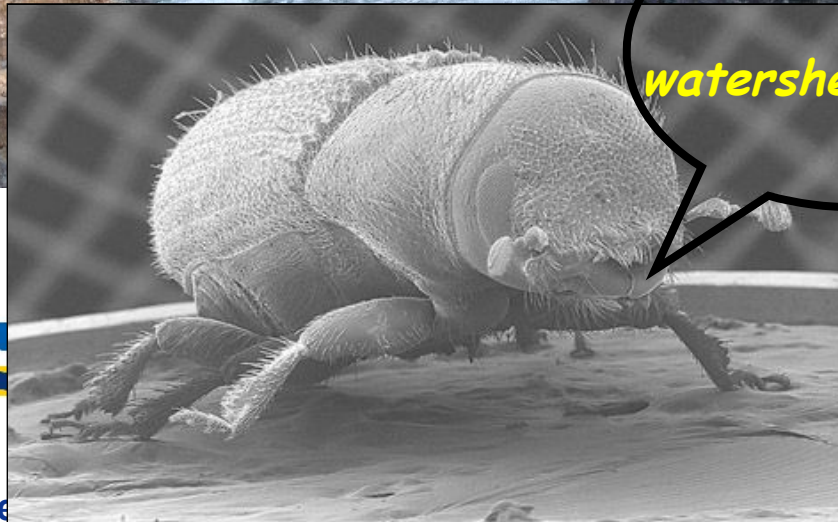
www.calgary.ca call 3-1-1

Conclusions

- Minimize risk of
 - *Large-scale pine beetle infestation*
 - *Large-scale wildfire*
 - *Resulting large-scale hydrologic impacts*
- Healthy watersheds that continue to meet social, environmental and economic needs of society



Thank You



watershed values