

Alberta Water Policy Update

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Alberta Environment and Water

Brief to Water Technologies Symposium 2012

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Outline

- Policy Challenges
- 2011-12 Highlights
- Looking Forward
- Questions

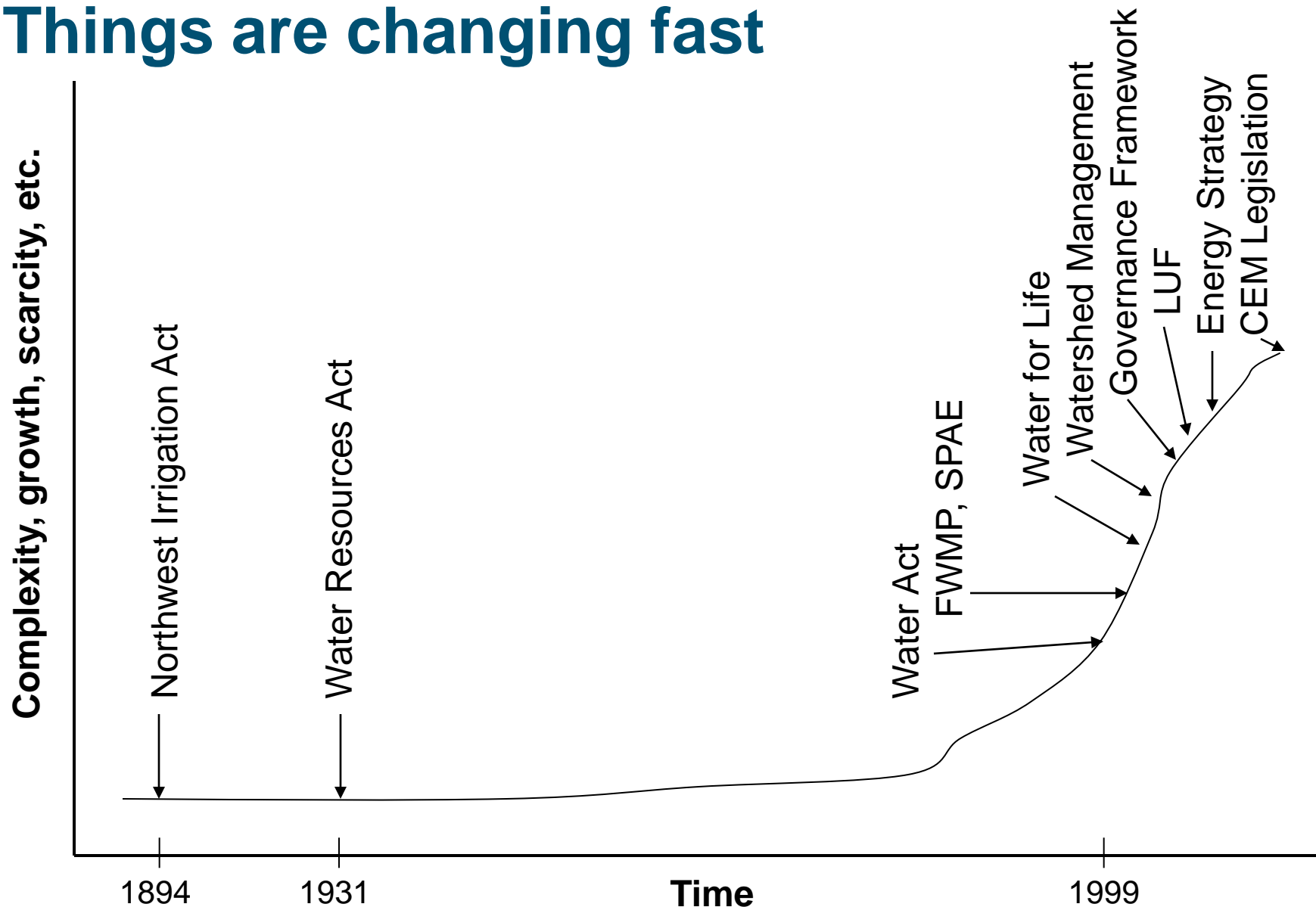


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Policy Challenges

Government
of Alberta ■

Things are changing fast



Water Management Challenges

- Increased demand and climate change require new adaptive solutions
 - Water is not only essential for humans, but also a critical factor for production
 - In the early days there was sufficient water for the environment due to level of demand
- Shift from abundance and room to grow, to a need for enhanced management
 - There are new realities for demand and a shifting paradigm (higher expectations for environmental implications) that is challenging the current system
 - No crisis today, but enhancements are needed to ensure prosperity for future generations
 - Enhancements required on all fronts – from oversight to use, all stakeholders need to be engaged including citizens
- Water is a whole system
 - Physical interrelationships between surface and groundwater, land use and landscapes
 - Environmental interrelationships with decisions impacting air, land, waste
 - Social interrelationships determining the social value of the use or preservation of water

2011-12 Highlights

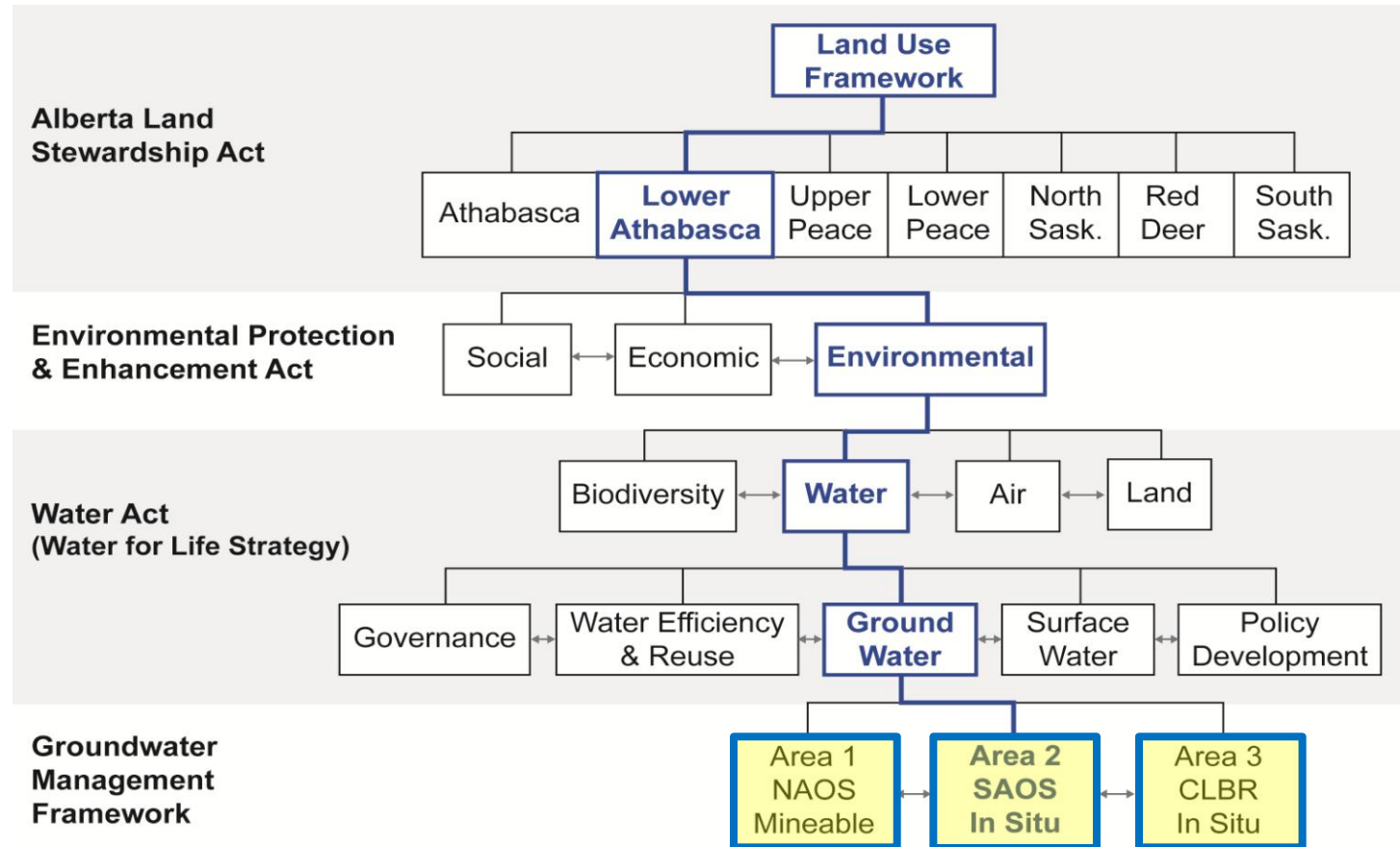
2011-12 Highlights

- Lower Athabasca Regional Plan
- Provincial Groundwater Inventory Program
- Water Conservation and Allocation Policy for Oilfield Injection
- Wetland Policy
- Water Well Drillers
- Groundwater Salinity Determination
- Analysis of Metals in Groundwater
- Guide to Groundwater Authorization
- Groundwater webpages

Lower Athabasca Regional Plan (LARP)

- Draft LARP released in August 2011 after public feedback
- Includes three draft Management Frameworks:
 - Air Quality
 - Surface Water Quality
 - Groundwater
- These frameworks outline monitoring, evaluation and reporting requirements, set early warning triggers to determine the need for action, and identify what actions may be taken
- New approach to accomplish cumulative effects management

LARP Groundwater Management Framework

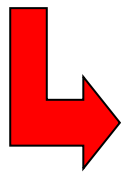


LARP Groundwater Management Framework (GMF)

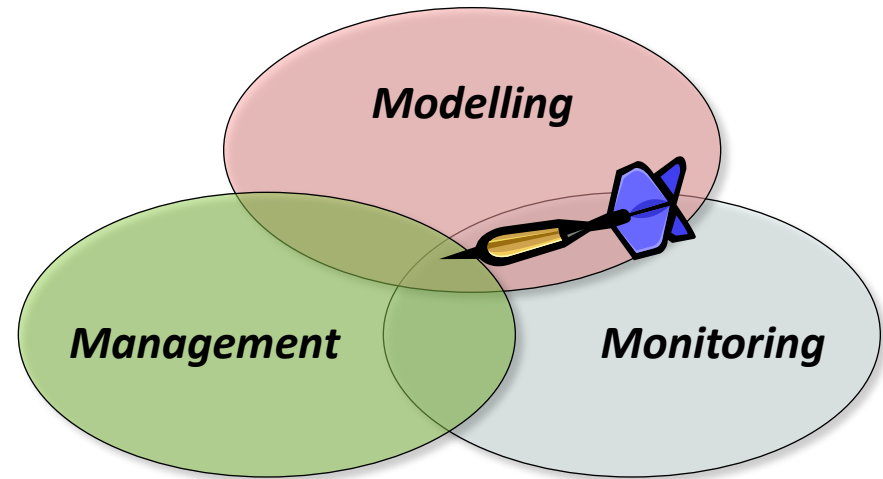
ESTABLISHMENT of scientifically-based trigger and limits values for identified effects indicators



MONITORING to assess the condition of groundwater quality and quantity within key aquifers



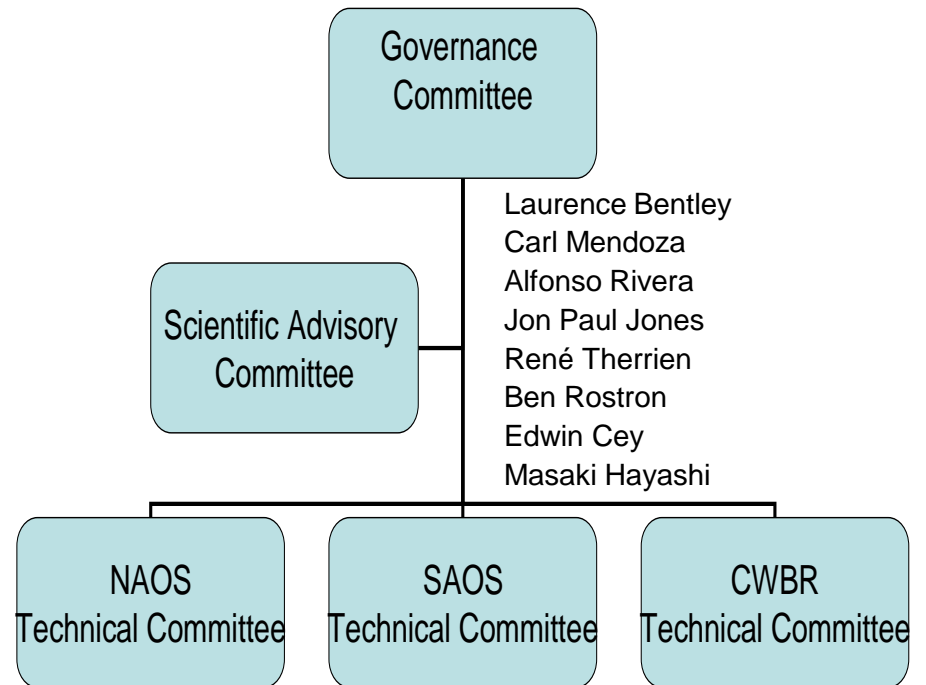
MANAGEMENT actions tailored to specified triggers and limits to ensure sustainability of regional groundwater resources



LARP Groundwater Monitoring

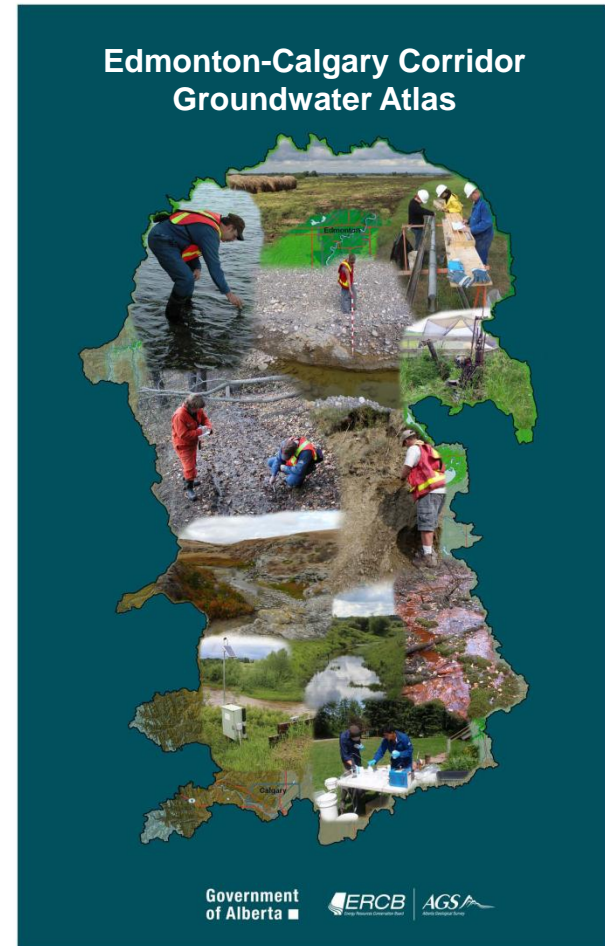
- Newly formed Regional Groundwater Monitoring, Evaluation and Reporting Group
- Implement monitoring as set out in LARP Groundwater Management Framework
- Alignment with Joint Canada-Alberta Oil Sands Monitoring Plan and outcome of Alberta Environmental Monitoring Panel recommendations

Regional Groundwater Monitoring Group for the Athabasca Oil Sands



Provincial Groundwater Inventory Program

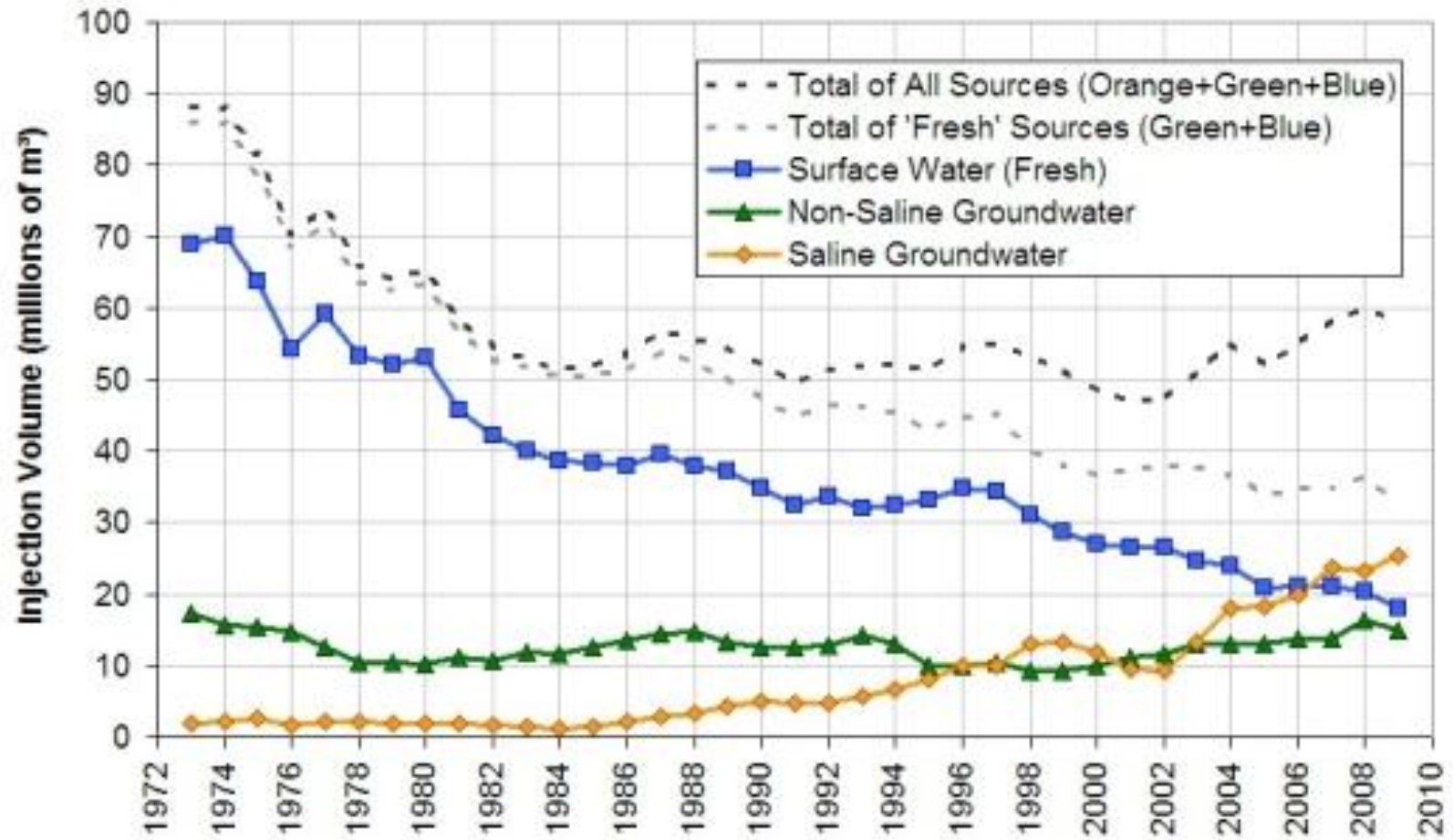
- Alberta Environment and Water and Alberta Geological Survey partnership
- Edmonton - Calgary Corridor (ECC) is the first pilot project and recently completed its first phase
- Release of Groundwater Atlas in November 2011
- Work continues in ECC and started in southern Alberta



Water Conservation and Allocation Policy Review

- *Water Conservation and Allocation Policy for Oilfield Injection* came into effect in 2006 to address concerns regarding non-saline water use in enhanced oil recovery operations
- Currently reviewing qualitative and quantitative evaluations of the 2006 policy outcomes
- Proposing to expand the policy to all upstream oil and gas sectors, including conventional waterflood, thermal in-situ, coalbed methane, hydraulic fracturing, etc.
- Draft policy to be completed by early summer 2012 for review by external stakeholders

Source Water Use Over Time



Data Source: Alberta Energy Resources Conservation Board (ERCB)

Draft Addendum - Thermal In-Situ Projects

- 2006 *Water Conservation and Allocation Policy* applies to enhanced oil recovery projects (conventional waterflood and thermal in-situ)
- Provides guidance and clarity on information requirements for assessment of *Water Act* applications for thermal in-situ projects
- Maintains the intent of the policy while detailing specific water source requirements for proponents of thermal in situ oil sands projects
- Key components
 - Staged licences with allocations variable in time
 - Details guidance on selecting the best water source
 - Requires a Quantitative Environmental Net Effects assessment
 - Clarifies required level of economic review of the project

Wetland Policy

- Wetland management currently governed by interim policy (1993):
 - Applies to White Area only
 - Based on wetland area, impacts/losses compensated at 3:1 ratio
- Alberta Water Council delivered recommendations for a new provincial wetland policy in 2008
- Most recommendations applied in developing Wetland Policy Intent
- Policy Intent is based on Relative Wetland Value
 - Relative importance of a wetland from an ecological and human perspective (biodiversity, flood mitigation, water quality enhancement, etc)
 - Value is used to ensure informed management decisions

Wetland Policy Intent

- Goal:
 - To conserve, restore, protect and manage Alberta's wetlands to sustain the benefits they provide to the environment, society and economy
- Outcomes:
 1. Wetlands of the highest value are protected for the long-term benefits of all Albertans
 2. Wetlands and their benefits are conserved and restored in areas where losses have been high
 3. Wetlands are managed by avoiding, minimizing and, if necessary, compensating for impacts
 4. Wetland management considers regional context

Wetland Policy- Key Supporting Products

- Alberta Wetland Classification System
 - Currently under development
 - Combines elements of Steward & Kantrud and Canadian Wetland Classification System
 - Accessible tool intended for wetland practitioners in Alberta
- Alberta Wetland Inventory
 - GIS-based inventory of Alberta wetlands
 - First-cut inventory provided ~90% provincial coverage
 - To be released on GeoDiscover Alberta shortly
- Wetland Value Assessment System and Value Inventory
 - Currently under development (Western University, University of Alberta)
 - Foundational component of a value-based wetland policy

Water Well Drillers

- Exploring options for certification of drillers who construct vertical and horizontal boreholes for “closed loop” geothermal systems
- Water wells constructed for “open loop” geothermal systems are required to be drilled by approved water well driller and constructed in accordance with *Water (Ministerial) Regulation*.
- Working with Alberta Water Well Drilling Association to host training workshops for drillers on electronic submission of drilling reports
 - 46% of reports received online in 2011
- AWWDA is an active partner in the **Working Well** program, aimed at providing water well owners with information and tools needed to manage and protect their drinking water supplies

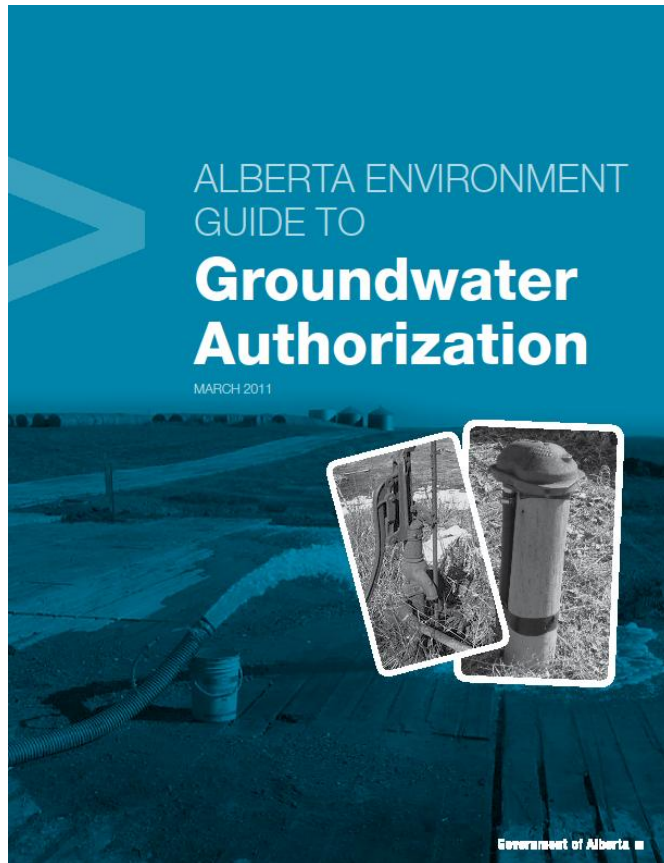
Groundwater Salinity Determination

- Discrepancies in total dissolved solids (TDS) levels in industrial source wells
 - Retests in 2009 for ERCB “re-classified” some groundwater from saline to non-saline
 - Discrepancy was due to different methods for determining TDS and not necessarily changes in geochemistry
- The TDS method standard that is to be applied is referenced in the *Standard Methods for the Examination of Water and Wastewater*, published jointly by the American Public Health Association, American Water Works Association, and the Water Environment Federation, 1998, as amended.
- Groundwater Information Letter 1/2010 on website

Analysis of Metals in Groundwater

- The project was initiated in response to a need identified by departmental staff involved with contaminated sites
- The purpose is to identify a consistent, science-based approach for measuring mobile metals in groundwater
 - Methodology will also apply to other areas (eg. EPEA approvals, GoA provincial monitoring network)
- Recommended analysis is for:
 - Total metals where a domestic use aquifer (DUA) may be impacted
 - Dissolved metals in fine-grained media
- Stakeholder consultation is ongoing
- Implementation planned for January 1, 2013

New Policy Document



- Update of 2003 Groundwater Evaluation Guide
- Provides updated evaluation requirements in support of licence/approval applications under *Water Act*
- Distributed to regional offices and provided on website

New Groundwater Webpages

Government of Alberta
Environment and Water

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- > River Management Frameworks
- > Surface Water Quality Program
- Water Information Centre
- > Respect our Lakes
- Water Allocation
- Water Quantity
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Provincial Groundwater Inventory Program

In 2008, an ambitious program was launched to map and inventory groundwater resources in Alberta. The Provincial Groundwater Inventory Program is a joint partnership between Alberta Environment and the Alberta Geological Survey. The **Edmonton-Calgary Corridor** was selected as the initial pilot project because of significant growth and development in this area.

Data for the Edmonton-Calgary Corridor project has been collected in various ways. Airborne geophysical surveys were conducted to map various rock types. Thousands of existing water well and oil and gas drilling records were used in conjunction with the airborne data, and supported by the drilling of boreholes, groundwater sampling and other field-based activities. The information was used to construct a geological model which will be used to build a regional groundwater flow model by adding various water inputs and outputs. This will enable better understanding of the occurrence and movement of groundwater in the subsurface. Enhanced understanding of the groundwater supply allows for better management of this valuable "hidden" resource.



Source: Alberta Geological Survey

Products that have been released for the Edmonton-Calgary Corridor project are listed below. A significant milestone has been reached with release of the [Edmonton-Calgary Corridor Groundwater Atlas](#). The educational atlas

Looking Forward

Unconventional Oil and Gas

- Early days in Alberta, however activity is poised to accelerate quickly – expanding activity in Cardium play, initial drilling in other plays
- Strong foundation of legislation and directives, as well as experience
- Government recognizes that increased activity associated with hydraulic fracturing needs regulatory enhancements
- Cross-ministry regulatory review is underway
- Potential enhancements include
 - improved tracking of water use and sources
 - reporting and disclosure of fracture chemicals / fluids
 - baseline groundwater monitoring
 - play-based development requirements (cumulative effects)
- *Water Conservation and Allocation Policy* review and update
- CAPP Hydraulic Fracturing Operating Practices and Guiding Principles

Water Management Vision

- All Albertans are stewards of Alberta's water
- Albertans act responsibly in managing and conserving water, to ensure the environmental, economic and social health of the province
- Albertans recognize the importance of living within the capacity of the natural environment as a means of ensuring sustainability of water
 - Requires the right level of knowledge by Albertans, and meaningful engagement with all stakeholders, including citizens
 - Need to have the right conversation about solutions based on a recognition of water for communities, for the environment and for the economy

Moving Forward

- Emphasis of water in new Department name
- Faced with water management challenges in Alberta despite tremendous efforts over the past several years
- Many of these challenges require a broader discussion on water
- Public engagement and stakeholder consultation
- Initial emphasis placed on education and awareness

Questions?