

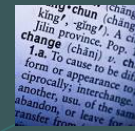
Alberta's Evolving Non-Saline and Saline Water Use Regulatory Requirements for Oil Sands Projects

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Presentation Overview

- Saline vs. non-saline water
 - Definitions, history, etc
- Current regulations
 - AENV
 - ERCB
- Drivers for new regulations
- Future/emerging regulations
- Questions



Alberta Regulations – Water

- Based on Total Dissolved Solids (TDS) conc.

- AENV for TDS < 4,000 mg/L

- Non-saline or fresh



- ERCB for TDS > 4,000 mg/L

- Saline or brackish



- AENV-ERCB MOU (Dec/07)

- Work closer together



Current Regulations - AENV

- Water Act (1999)



- Water for Life (2003, renewed in 2008)



- GW Evaluation Guideline (2006)



- Updated Oilfield Injection Guideline (2007)



- 3PC process for EIA Review (2007)



- Draft Bitumen/Non-Saline (2009)



Current Regulations - AENV



➤ Water Act (1999)

- Non-saline water (GW and SW)

- License 

- Moratoriums (area-specific)

➤ Water for Life Strategy (2003, renewed in 2008)

- Safe, reliable and sustainable water for all

- Healthy ecosystems



Current Regulations - AENV



- GW Eval. Guide. (2006)
 - Only applies to GW
 - Standardizes methods
 - Streamlines application process
 - Great job AENV!



Current Regulations - AENV



- Updated Oilfield Injection Guideline (2007)
 - Injecting non-saline H₂O
 - ERCB consultation
 - Tier 1, 2 and 3 investigations
 - Represent substantial, comprehensive filings
 - Lengthy and iterative application process



Current Regulations - AENV



- 3PC Review Process for EIAs (2007)
 - Implemented to de-bottleneck 
 - Consultants contracted by AENV
 - Review process expedited, but...

Current Regulations - AENV



- Draft Guideline on Non-Saline-Bitumen Contact (2009)
 - Where bitumen is in direct-contact with non-saline H₂O
 - Existing and planned projects
 - GW Management Plan (GMP)
 - Quantity and quality indicators (thresholds, limits, etc)
 - Monitoring and frequency
 - “Draft”..., but already being adopted
 - Dovetails into the GMF (see upcoming slides)



Drivers for New Regulations

- Evolving needs of AENV, ERCB, AE, etc
- Water for Life Strategy 
- Concerns of...
 - Local stakeholders 
 - Regional stakeholders
 - Global audience (bad press)



Scraping Bottom: The Canadian Oil Boom
National Geographic (Feb/09)



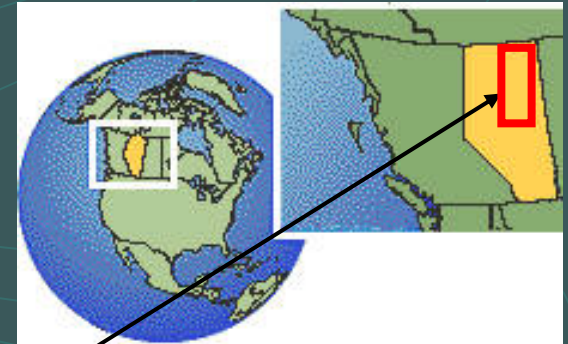
Emerging Regulations - AENV

- Land Use Frameworks (2010)
- Other
 - Non-saline definition ?
 - Water Act license and transfer process ?



Emerging Regulations - AENV

- Land Use Frameworks (2010) 
 - GW Management Frameworks (2010)
 - All 7 Alta river basins will have them
 - Lower Athabasca = 1st
 - Includes AOS, SAOS and CLBR regions
- GW management plans (existing and planned projects)
 - Existing project (within 1 year)
 - Planned project (with application)
 - Conventional monitoring
 - Thermal element monitoring
 - AEPEA (plant-site) as well as “regional” monitoring



Emerging Regulations - AENV

- Other
 - Definition of non-saline GW
 - Higher TDS value in other jurisdictions
 - License applications and transfers
 - Moratoria, license transfer process, etc



Before we continue...



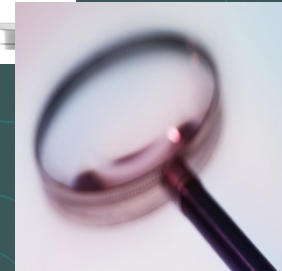
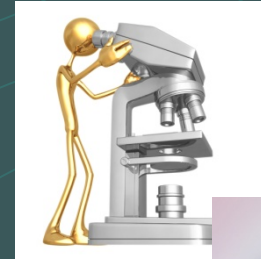
Current Regulations – ERCB

- EIA Review/3PC process (2007)
- Draft Thermal - Water Use (2009)

UPDATED

Current Regulations – ERCB

- EIA Review/3PC process (2007)
 - As energy regulator, input needed
 - Reviewer of non-saline use
 - Review of reservoir
 - Review of economics
 - Review of alternate water source study
 - Tier 1, 2 and 3 search radii
 - Application process iterative, open-ended



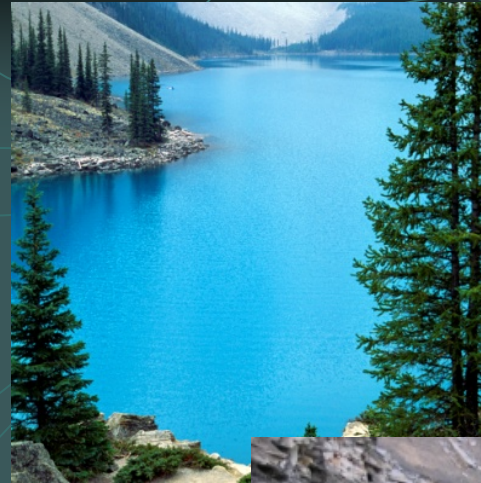
Current/Emerging Regulations – ERCB

- Draft Directive - Non-Saline and Saline H₂O Make-up
 - As proposed...
 - Limit of 10 % non-saline water use (annual)
 - Limit of 25 % of saline water use (annual)
 - Limited provision to recognize:
 - Efficient operators
 - Reservoir physics (reservoir retention beyond operator control)



Closure

- Thank You
- Questions



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