

Albertans demand a healthy environment



Impacts and Importance of Alberta and Oil Sands Resources for North America

- Alberta's population is predicted to grow from 3.6 million (2011) to 5.0 – 7.5 million by 2050. 81% of Albertans now live in urban areas (Alberta Finance & Enterprise, 2011).
- The Calgary-Edmonton corridor is now one of Canada's four most-urban areas.
- \$208.8 billion in major projects under way in Alberta in 2012 - 64% attributable to oil sands developments (Alberta Economic Development, 2011).
- In 2012 Canadian oil exports to the USA may reach \$50.4 billion/yr.
- Oil sands royalties predicted to reach \$10 billion by 2016 and \$52 billion/year by 2040 (CERI, 2012).



Importance of the Resource Sector to the Alberta Economy

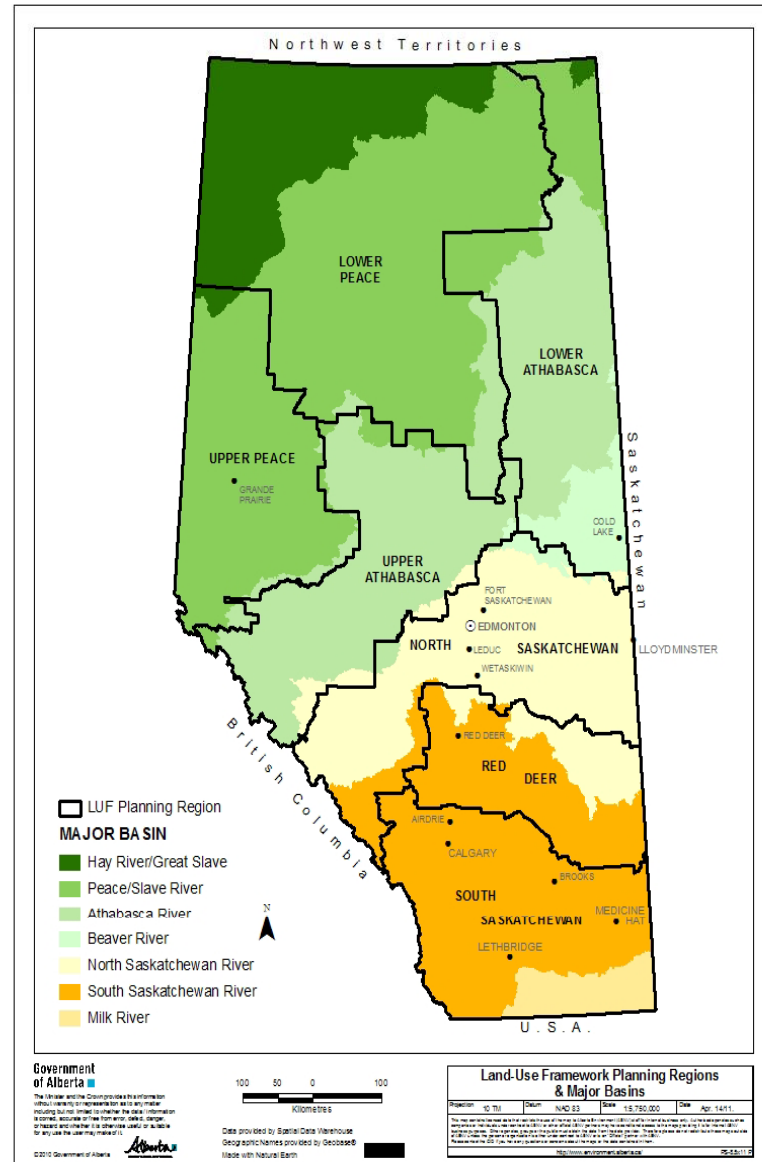
- ▶ 2000-2010 Alberta resource sectors accounted for 62% of provincial GDP*
- ▶ Alberta has more than 75,000 professional, engineers, geoscientists and technologists - among the highest per capita worldwide
- ▶ 2011-2020 Alberta resource sectors are predicted to add:
 - \$700 billion in incremental GDP
 - ~ 4 million person-years of employment
 - +\$110 billion in provincial revenue

*Alberta Chamber of Resources – ACR (2011)



The Government of Alberta's integrated natural resource management framework

- Cumulative effects management focus through the Land Use Framework and development of regional plans.
- Issued the Lower Athabasca Regional Plan (LARP) (2012).
- Moving to a single regulatory body for the upstream oil and gas industry, as proposed by Alberta's Regulatory Enhancement Task Force (2010).



Oil Sands Environmental Management



Suncor. Photo by: David Dodge, The Pembina Institute

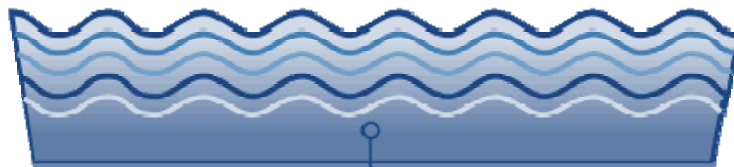


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Water use and quality



**AVERAGE ANNUAL FLOW
OF THE ATHABASCA RIVER
(833 M³/SEC)**



Oil sands water use
▪ less than one per cent of
average annual flow

- Strict weekly limits on water withdrawals based on seasonal flow
- Total water use by mining operations was less than one percent of average river flow in 2010; oil sands projects recycle 80-95% of water used
- In 2008, mining operations used slightly less water from the river than in 2002, but produced 36% more bitumen
- Zero-discharge for process-affected waters



Air quality

Nineteen real-time stations operate 24 hours a day, 365 days a year



At remote locations, air quality is monitored by 42 passive stations



SOURCE: Wood Buffalo Environmental Association



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Climate Change Management

- ❖ In 2007, Alberta became the first jurisdiction in *North America* to regulate large industrial GHG emissions.
- ❖ Facilities required to immediately reduce GHGs per unit of output by 12%
- ❖ Carbon price of \$15 per tonne is starting point
- ❖ Funding is available for projects that promote:
 - Energy conservation and efficiency
 - Carbon capture and storage
 - Alternative and renewable energy
 - Climate change adaptation

Results (through March 2012):

- 32 million tonnes of avoided emissions
- \$312 million into the Climate Change and Emissions Management Fund
- \$161 million invested in clean energy projects



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Land Reclamation

Managing Today

- About 600 km² of land have been disturbed by oil sands mining activity
- Reclamation is a condition of project approval
- About 67 km² of disturbed land is reclaimed or under active reclamation
- Industry has planted more than 7.5-million tree seedlings towards reclamation efforts.



Vision for the Future

- Progressive reclamation
- Recently granted nearly \$30 million to University of Alberta to fund reclamation and tailings research
- Enhancing reclamation practices helps ensure oil sands developed responsibly and minimize environmental impact



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Tailings Pond Management

Managing Today

- ❖ Groundwater monitoring and seepage capture systems
- ❖ Strong technical review for any new tailings facility
- ❖ Directive – faster reclamation; less fluid tailings
- ❖ First tailings pond reclaimed in 2010

Vision for the Future

- ❖ Zero growth in tailings



New management strategies and technologies will greatly reduce the size and lifespan of tailings ponds.



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Wildlife and Biodiversity



- Wildlife is protected in Alberta by provincial and federal laws and regulations
- Environmental Impact Assessments must include assessments on proposed development's affect on wildlife
- Operators are required to have wildlife management plans in place.
- Government is responsible for approving and ensuring the plans are being implemented effectively.
- Alberta's wildlife monitoring authority reports the region has a species intactness rating of 94%
- Government has committed to developing a Biodiversity Management Framework by the end of 2013



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“Social” Licence or “Reality hits Home”

- Many versions of the “truth”
- Credibility of Government reporting
- “A picture is worth a thousand words”



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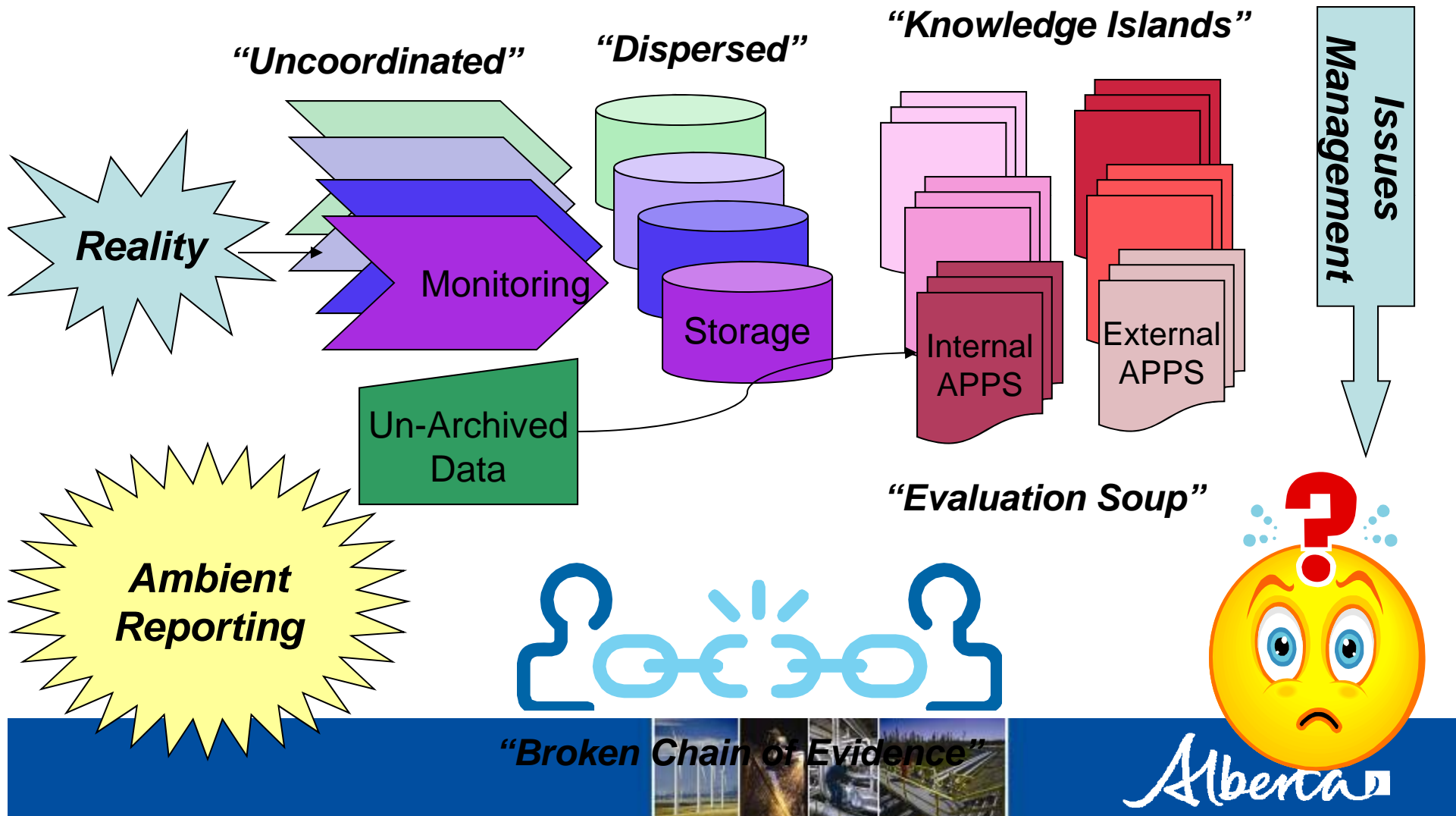
Environmental Monitoring – Government’s Direction

- Government responds to “expert” advice – accepts recommendations
- Fundamental change in the monitoring system – “game changer”
- Public arms-length agency to lead the system
- Province wide system, beginning in the oil sands region



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Current Monitoring System



What is the new system that is desired?

- Coordinated and directed
- Integrated amongst media – air, land, water, bio-diversity
- Science based
- Open and transparent – data and information



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Actions Underway

- Management Board appointed to guide efforts
- Create the “agency” within the next year
- Implement and operate the Joint Oil Sands Monitoring Program with Environment Canada
- Determine funding for the overall province wide system
- Develop an enhanced reporting mechanism



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Environmental Monitoring

Joint Canada-Alberta Implementation Plan for Oil Sands Monitoring

New integrated and transparent environmental monitoring program:

- Improve understanding of the current state of the environment and enhance our ability to detect environmental change and manage cumulative effects
- Developed by scientists from Canada and Alberta governments
- Reflects the *Integrated Environmental Monitoring Plan for the Oil Sands*

By the time the three-year plan is fully-implemented in 2015, there will be:

- More sampling sites over a larger area sampling more substances;
- Sampling will take place more often; and
- Sampling methods will be improved.

A highly transparent and rigorous monitoring program:

- External expert peer reviews
- Information shared with public in an open data management program



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Oil Sands – Your takeaways . . .

- Alberta has the opportunity to fill important global energy supply gaps – economic robustness for Alberta and Canada.
- Technology development and innovation has enabled the realization of the opportunity – both in the extraction/production and in minimizing footprint and emission impacts.
- As a global leader, Alberta must act through policies and regulatory approaches to achieve responsible oil sands development – cannot discount the potential effects on the environment.
- Environmental monitoring must be a foundational activity that informs on the state of the environment, and must be linked to policy and regulatory decisions.



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