



THE OIL SANDS
DEVELOPERS GROUP

Energy From Athabasca

The Facts on Oil Sands Reclamation

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The History

In the Beginning...

- The oil sands industry is ~ 45 years old
 - 1/2 the average return period for forest fires in the region (80 years)
 - Approx. 1/4 the time required to develop old growth forest
- First reclamation activities on Suncor's Tar Island dyke (~1968)



- Initial revegetation focus was erosion control
- Reclamation was in its infancy – particularly for oil sands

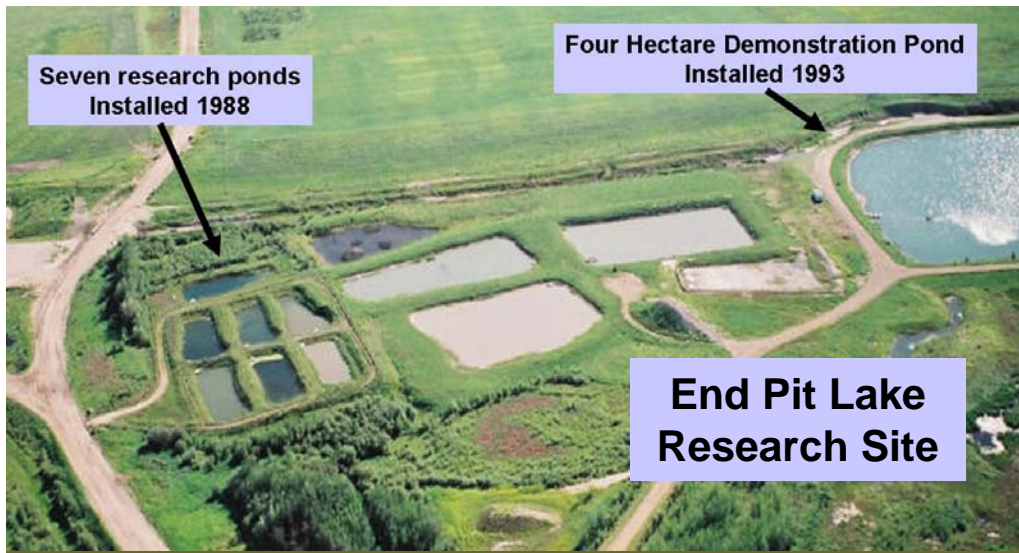
Adolescence

- Until late 1990's, only two companies operated oil sands mines
- Significant 'baseline' research undertaken
- Today 4 mine projects are operational, several are under construction or expansion, and several are in the regulatory process
- Additional resources, field trial sites and expertise are now available to enhance our knowledge of oilsands reclamation



On-going Research

- Reclamation research activities have been underway since the 1960's
- 1,000's of research reports, theses, field sites, etc. since that time
- Up to 10 universities and dozens of researchers involved at any time



The Facts

The Resource

- 173 billion barrels of oil resource
- Oil sands underlie 140,200 km² of boreal forest - 4% of Canada's total boreal forest



- Only 20% are shallow enough for surface mining - 0.1% of Canada's boreal forest
- 80% will require in situ techniques for extraction
- Most of the reclamation research and planning is focused on mining operations
 - Landform creation
 - Tailings materials
 - Fluid tailings

Disturbed vs. Reclaimed vs. Certified

- ~ 530 km² of land disturbed (2008)
- ~ 65 km² of land reclaimed (2008)
- 1.04 km² certified (2008)
- All land available for reclamation is reclaimed – progressive reclamation
- Much of the reclaimed land is adjacent to or part of on-going operations
 - Public access to land adjacent to on-going operations represents a safety concern, therefore, operators are unable to relinquish tenure - no ability to certify
- Tailings ponds account for large areas of the disturbance and are operational for 30+ years
- First tailings pond completely reclaimed by 2010
- First In pit lake in 2012



The Regulators

- **Alberta Environment**
 - Air, land, water, reclamation
- **Alberta Sustainable Resource Development**
 - Surface access, timber harvest, wildlife management
- **Energy Resource Conservation Board**
 - Carries out public interest test – ‘reclaimability’ key to passing the test



Reclaimed
wetland area

The Regulatory Process

- **Rigorous Environmental Assessment Process**
 - Stakeholder review and input
 - Regulatory review
 - Public hearings
- **Comprehensive Project Approvals**
 - Significant monitoring and reporting
 - Required involvement in regional multi-stakeholder forums
 - Inspections and compliance reviews
 - Industry is accountable for its commitments and regulatory requirements
- **Approval renewals every 10 years**

The Regulations

- **Alberta Environmental Protection and Enhancement Act:**

- “productive capability equivalent to that of the pre-disturbance landscape”
- “commercial forest on an area equivalent to the pre-disturbance area of commercial forest”
- “Life of Mine Closure Plan ... shall ensure, where practical, that reclaimed upland features have natural appearances characteristic of the region”
- “integration of landform, topography, and water bodies with adjacent undisturbed areas”

Regulators likely able to access corporate assets to pay for reclamation

The Reclamation Process

- Landform grading
- Cover soil salvage, placement
- Seeding
- Fertilizing
- Tree planting
- Seed collection
- Monitoring (soil, vegetation, weed, pest & wildlife)
- Biodiversity
- Research into all the above

Develop the Bones

Overburden



Tailings Sand



Landform Grading



Provide the Cover

Soil Placement



Final Graded Soil



Tree Planting



Tree Planting

Barley Nurse Crop



Watch it Grow...for Many Years...



Make it Better Tomorrow

Seed Collection



Native Species



LFH



Coarse Woody Debris



Snag Trees



The Controversy

Oil Sands Industry - a Focus

- Recent Media and NGO reports have criticized the environmental performance of the oil sands industry
- Reclamation has been a focus
- Pembina report 'Fact or Fiction – Oil Sands Reclamation' summarizes issues well but needs some balance

Recommendation 1

- ***Require restoration of oil sands mines to self-sustaining boreal forest***
 - ‘Self sustaining boreal forest’ does not necessarily mean exactly the same as what was there before
 - There are many aspects to a natural boreal forest – need to understand end land use – forestry is only one option
 - Stakeholder input key to defining a self-sustaining boreal forest
 - Reclamation plans will not be approved without self-sustaining boreal forest as a goal

Recommendation 2

- ***Establish a set of transparent reclamation standards***
 - The standards are available¹ but have not been communicated effectively outside the oilsands industry – we need to do a better job of communication
 - Multistakeholder committees (e.g. CEMA Reclamation Working Group) are refining guidelines as new research becomes available
 - Project approvals dictate reclamation prescription:
 - “The approval holder shall reclaim a minimum of 20 percent of the disturbed land within the Athabasca River Valley as land capability class 2, using upland soils...”*
 - “The approval holder shall place an average total depth of 0.5 m of cover soil and subsoil combined, on all reclamation areas of land capability Class 1 through 5”*

¹ e.g. Revegetation Manual, Land Capability Classification System

Recommendation 3

- ***Prohibit the creation of liquid tailings***
 - Industry does not want liquid tailings
 - Need cost effective alternative
 - Considerable research on-going
 - Better tailings techniques (e.g. CT) more effective at dewatering tailings
 - Newer techniques (e.g. thickened tailings) will likely be applied to the next generation of oil sands projects

Recommendation 4

- ***Reform the reclamation security policy to protect Canadians***
 - Reclamation security protects the public from oil sands company insolvency
 - Risk must be shared between industry and government
 - New reclamation security legislation will provide better ‘insurance’
 - Reclamation liabilities reported as part of annual corporate financial reporting
 - Existing legislation effectively secures corporate assets if reclamation is not completed

Recommendation 5

- ***Institute a total disturbance area cap for each project to ensure reclamation occurs at the same time as development***
 - Projects must follow approved Conservation and Reclamation Plans and seek annual mine plan approvals
 - Reclamation is progressive – as land is available, it is reclaimed
 - Because an area is not certified, does not mean it is not ‘reclaimed’ – large areas of uncertified reclaimed land attracts wildlife and invasion of native species
 - Need new ‘interim certification’ process for land reclaimed but not returned to the crown

Recommendation 6

- ***Increase public transparency of Corporate Reclamation Performance***
 - Industry agrees
 - Much data is reported (annual reports, sustainability reports, corporate web pages, etc.)
 - Need to get reclamation performance data more widely disseminated and understood – forums like this are key

Recommendation 7

- ***Require Environmental Compensation to Offset Mining Impacts***
 - Mining impacts are temporary
 - Uncertified but reclaimed areas provide wildlife habitat and function similarly to adjacent natural boreal forest habitat
 - An average one hectare oil sands surface mine disturbance produces ~10,000 bbl of bitumen and \$450,000 - \$800,000 of social value (i.e., royalties, taxes) – it is “out of production” for about 60 years – with the ~ \$10,000/yr in social value more than compensating for the mining impacts

The Reality

Work in Progress

- The oil sands industry is a relatively young industry
- Reclamation on a large scale has only been on-going for 15-20 years
- We are meeting our commitments – on a trajectory that will get us to closure



- Most of the techniques required for reclamation have been and are being developed by the industry itself
- Significant input has come from stakeholders and regulators on reclamation prescription and end land use
- Work will continue

Communication

- The oil sands industry faces unique reclamation challenges for which there are no analogues
- We have worked hard and have been quite successful at understanding and meeting these challenges
- We have not communicated this effectively but are beginning to do so
- The oil sands industry is open to your comments and suggestions
- For additional information:

www.oilsandsdevelopers.ca

<http://www.canadasoilsands.ca/en/>

OSDG member company websites

Thank You

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