Polling Questions
EPA 2015 Achievements

- Focus on transition from ‘ready to reclaim’ to ‘reclaimed’ status through a strong interdisciplinary group.
- Active portfolio with 46 active JIPs and 17 active EPA-led studies.
- Continued strong outreach on solicitation and advancing early stage research proposals through the Tailings Research Working Group and the Institute for Oil Sands Innovation.
- Refined the sharing best practices on established and emerging technologies through technology exchange events (workshops and field tours).
- Fast-track technology development from pilot to commercial scale for implementation of fines centrifugation.
- Completed mandate of the Tailings Measurement Steering Committee.
Tailings EPA Ambition

Our Aspiration is to strive to...

*Transform tailings from waste into a resource that speeds land and water reclamation.*
Tailings EPA Opportunity Areas

Tailings Opportunity Areas:

- Water-solids separation processes,
- Tailings materials conveyance,
- Tailings deposition/placement,
- Enhance tailings deposit densification, and
- Deposit capping to support reclamation.
Water-Solids Separation Processes

2015 Water-Solids Separation Processes Project Activity

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Successes

- Commercial-scale commissioning of Canadian Natural’s Non-Segregating Tailings technology and Syncrude’s Centrifuged Tailings technology.
- Continuous improvement on tailings thickeners, composite/consolidated tailings and thin lift fines drying at commercial scale (throughput and product quality and less water).
- Held several work shops and field tours in Fall 2015 to promote open exchange between operators on established and emerging technologies.
- Continued engagement with third parties for assessment of unsolicited novel water-solids separation processes including validation studies with NAIT and SAIT.

Learnings

- Room to improve establishing common best practices and operating standards for established and emerging processes, including thickener implementation.

Future Opportunities

- Greater continuous improvement through more open exchange of challenges in pursuit of maximum understanding and efficiency.
- Step change sustainability process opportunities.
- Better understand the challenges of introducing processed tailings into a reclaimed landscape, including a more holistic lifecycle analysis approach.
Successes

- Excellent cooperation with external agencies on improved understanding of pipe-flow physics, including through work conducted by the Saskatchewan Research Council.

Learnings

- Portfolio is light in technologies with transformative potential.
- Activity in support of advancing novel Tailings Material Conveyance solutions is modest (i.e. trucking and conveyor belt solutions).

Future Opportunities

- Solicit new concepts.
- Push operating window for established techniques like:
  - Pump throughput performance, and
  - Ability to handle greater densities of product.

**2015 Tailings Materials Conveyance Activity**

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<tr>
<th>Category</th>
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**Tailings Materials Conveyance**
Tailings Deposition/ Placement

2015 Tailings Deposition/ Placement Activity

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Successes

- Strong focus for publication of industry best practices, including beach fines capture, in order to share understanding and increase the pace of change.
- High activity levels and spirit of exchange in Enhanced Beach Fines Capture Working Group.
- Balanced portfolio: fundamentals of segregation combined with applied field scale solutions experimentation – combining theory with practice to find the best solutions.

Learnings

- Better understand mechanics /fundamentals and further improve field level execution to test applications.
- Seek added insight from globally recognized leaders in their field like Delft Netherlands.

Future Opportunities

- Establish industry best practice across a broad scope of activity, from technical fundamentals to field application.
Enhanced Tailings Deposit Densification

2015 Enhanced Tailings Deposit Densification Activity

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Successes
- Strong alignment between NSERC Industrial Research Chair and Collaborative Research Development programs with the University of Alberta and Carleton University respectively when working on COSIA Gaps.
- High activity levels and strong cooperation seen in the Deep Deposit Working Group and the newly created Deposit Capping Working Group.

Learnings
- Many technologies presented are at an early stage of investigation and have yet to be thoroughly evaluated.

Future Opportunities
- Improved engagement of international audiences like South Africa and Australia from other sectors to gain fresh perspectives and expertise.
- Establish industry best practices for:
  - In situ electro kinetic densification;
  - Wick drains, and
  - Surcharge consolidation.
- More publication of results.
## Deposit Capping to Support Reclamation

### 2015 Deposit Capping to Support Reclamation Activity

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### Successes
- Initiated ‘Ready to Reclaim’ to Reclaimed’ Working Group to maximize synergies between Land and Tailings EPA and better understand how treated tailings can contribute to a reclaimed landscape.
- Creation and staffing of a Deposit Capping Working Group—high levels of activity.
- Significant collaboration and investment in support of Base Mine Lake JIP.
- Strong multidisciplinary scientific community engagement, including multiple scientific chairs.

### Learnings
- Looking for more opportunities to flesh-out portfolio, both conceptual and for field demonstration.
- Limited experience in variety of methods to cap large commercial scale soft deposits.

### Future Opportunities
- Increased transparency on life cycle performance predictions, including better understand the implications for introducing varying qualities of tailings (like water content) into the reclaimed landscape.
- Increase speed of sharing insights from trials to spur faster improvement, broader expert engagement.
# 2015 Highlighted Projects

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<td>Continued in 2015</td>
<td>Industrial Research Charis in Oil Sands Geotechnique (COSIA)</td>
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<td>Carton University NSERC Collaborative Research Development (Imperial)</td>
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<td></td>
<td>Consolidation Columns (Syncrude)</td>
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<td>New in 2015</td>
<td>Applied Process Innovation Centre (Canadian Natural)</td>
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<td>Instrumentation and Control of Inline Flocculation (Shell)</td>
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<tr>
<td></td>
<td>Consolidation Columns (Shell)</td>
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Opportunities in 2016

- Tailings EPA agreement renewal – support at executive level for further five years of collaboration and improvement through innovation.
- Renewed enthusiasm to engage interested external stakeholders on collaborative develop of solutions.
- Continue to pool resources to develop innovative solutions faster and at lower cost.
- Improve technical gap descriptions and communicate in a more efficient and effective manner to support solution development.
- Continue to provide technical support to CAPP as new regulatory framework develops.
- Greater industry exchange on best practices.