

Petroleum Technology Alliance Canada

Oil and Gas Industry Collaboration through the Remediation Reclamation Research Committee

Allan Fogwill
Chief Operating Officer

PTAC

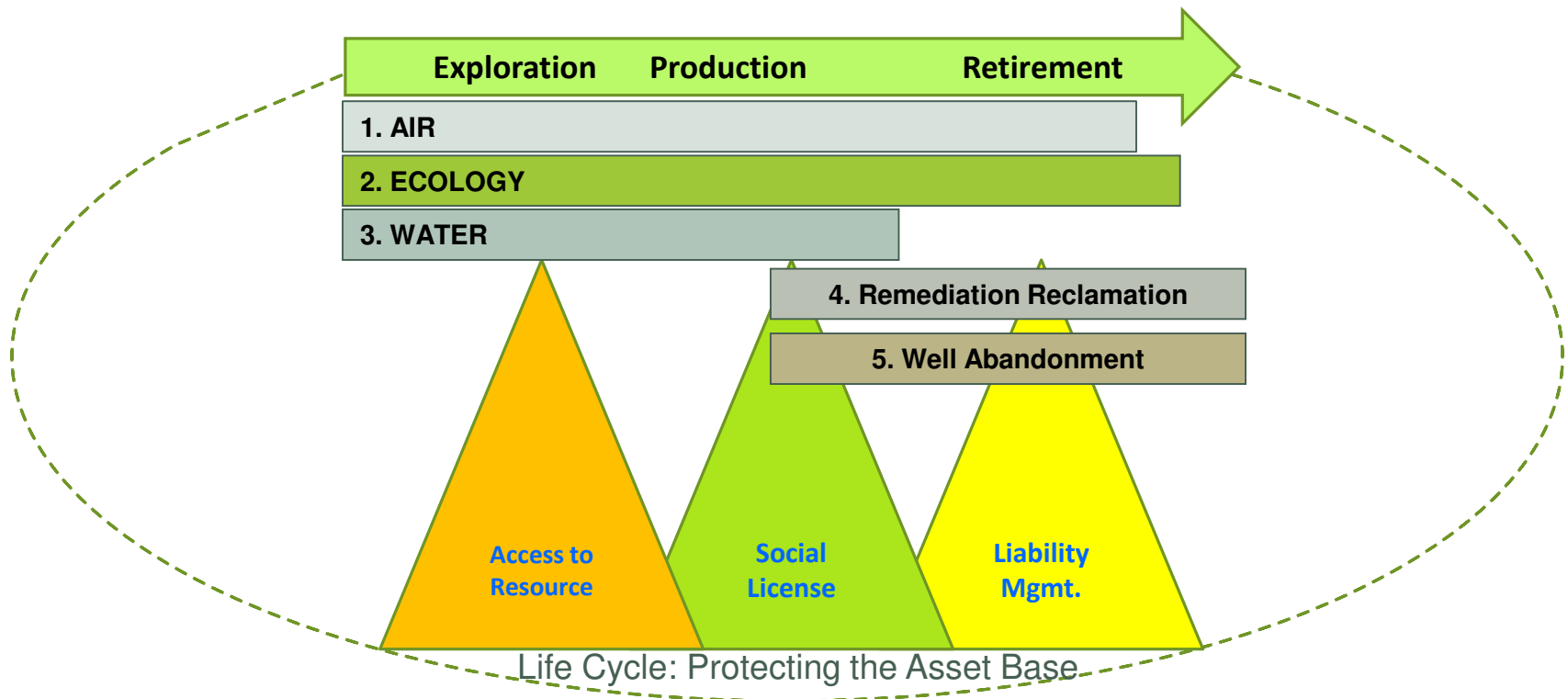
Driven. Innovative. Valuable.

- The Remediation Reclamation Research Committee (RRRC) is a technical arm of the AUPRF Program which conducts practical science-based studies to develop credible and relevant information to address knowledge gaps.
- The Alberta Upstream Petroleum Research Fund was launched to create innovation and collaborative R&D to minimize the environmental impacts of conventional oil and gas activities, economically.
- AUPRF is a collaboration funded by the Oil and Gas Sector working with government and regulators to create practical solutions.



AUPRF: Partnership for Performance Improvement

Collaboration Between Industry, Government & Regulators to Improve Environmental Performance



*Committee priorities, projects, and budgets are established by CAPP, and EPAC technical experts from member companies.

Remediation Reclamation Research Committee (RRRC)

- Ensures full and effective engagement with relevant regulators, stakeholders and subject matter experts through steering committee participation.
- Provides collaborative opportunities to match technical experts with funding to explore unique challenges and find defensible solutions
- Outcomes of the projects lead to the development of smart policies, regulations and best practices.
- Completed projects across the 5 topic areas have resulted in cost savings estimated (by industry) at \$93M annually.

Regulation and Guideline Impacts

- Remediation and Reclamation committee project results supported the following regulatory and guideline revisions/updates:
 - Stratified criteria for PHC *
 - Remote Green Zone Limits (F2-F3) *
 - Development of Subsoil Salinity Tool (SST) – Chloride *
 - Total Barium to extractable Barium (Barite)
 - Alberta Tier 1 Hydrocarbon Fraction F3 guideline change
 - Alberta Tier I for Boron
 - Salt endpoints in muskeg post brine release
 - Alberta Tier I Methanol
 - Alberta Tier I Sulfolane
 - Rapid Bioassay for Predicting Toxicity of PHC

2022/23 Policy Issues/Knowledge Gaps

Policy Issue	Knowledge Gaps
<p>Regulatory, Guidelines, Directives, Policies, & Criteria</p> <p>The development of accepted risk and science-based studies to protect the environment and reduce remediation costs.</p>	<ol style="list-style-type: none"> 1. Organics (PHC) Remediation 2. Inorganics (salinity, metals) Remediation 3. Research to support future updates to forested wellsite reclamation criteria: 4. Support the development and update of wetland reclamation closure policy 5. Research to support restoration requirements outlined in subregional planning for Caribou region 6. Effectiveness of restoration/reclamation treatments
<p>Risk Assessment</p> <p>Identify areas for broad application of risk assessment strategies that protect the environment and reduce management/remediation efforts.</p>	<ol style="list-style-type: none"> 1. Understanding risk assessment of receptors 2. Standardized approach of risk assessment based on residual mass vs numerical endpoints (i.e., Tier 2C) 3. Software tools to aid in the standardized application of Tier 2 guidelines using appropriate site-specific data.
<p>Reclamation and remediation technology advancement</p> <p>Technology improvements and finding new applications of existing and new technologies to reduce reclamation and remediation costs and timelines .</p>	<ol style="list-style-type: none"> 1. Petroleum hydrocarbon in fractured bedrock – effective remedial methods, associated risks, assessment effectiveness and relevance to environmental risk. 2. Practical remedial options for petroleum hydrocarbons, salinity, and metals impacts in wetland environments 3. Effective in-situ/ex-situ groundwater treatment system(s) for petroleum hydrocarbon and salinity impacted sites. 4. Technologies that address specific issues: small volumes, longer remediation timeframes (e.g., 10+ years), modified endpoints. 5. Native Grassland Reclamation BMP development: 6. Forested reclamation BMP Development 7. Use of remote sensing (e.g., ARUs, drones/UAVs, imagery), in reclamation



Alberta

Upstream Petroleum Research

Call for Proposals

We currently have an open call seeking proposals to address the knowledge gaps.

- Deadline to submit is October 21
- The expression of interest is a short online form which can be accessed here: <https://auprf.ptac.org/call-for-funding-applications/>
- EOI is a two-page form asking for high level information about potential projects – scope, leveraged funding, value add for the sector.

PTAC

RRRC Members

Alberta Environment & Parks

Premee Mohamed

Susan McGillivray

Alberta Energy Regulator

Nadia Cruickshank

Sara Blacklaws

PTAC

Allan Fogwill

Tannis Such

Lorie Mayes

Industry

- Linda Eastcott, Imperial Oil (Current Industry Chair)
- Christopher Boyd, Shell
- Debbie Tainton, CNRL
- Devin Scheck, BC OGC
- Jason Desilets, Cenovus
- Jeff Mills, OWA
- Jonas Fenn, White Cap
- Lisa Warren, Husky
- Mike Truzak, Enerplus
- Paul Hartzheim, CAPP
- Rick Rohl, ARC Resources
- Shawn Glessing, Cenovus
- Sonia Glubish, CNRL
- Tom Knapik, Plains Midstream



Innovators



Equilibrium Environment



RRRC Project Updates today

- Wellsite Groundwater Metals - Best Management Practices, Miles Tindal, Millennium EMS Solutions
- Numerical Modelling Approaches – Best Management Practices, Miles Tindal, Millennium EMS Solutions
- Re-Evaluation of F2 and F3 Petroleum Hydrocarbon Management Limits, Miles Tindal, Millennium EMS Solutions/Simone Levy, InnoTech Alberta
- Alberta Background Soil Quality System Project & Alberta Tier 1/2 Soil and Groundwater Guideline Calculator, Natalie Shelby-James and Simone Levy, Innotech Alberta / Paul Fuellbrandt, Statvis Analytics

RRRC Project Updates Today

- Evaluation of Reclamation Practices on Forested Upland and Peatland Well Sites, Natalie Shelby-James, InnoTech Alberta
 - Low Probability Receptor
 - Overview and Benefits, Ian Mitchell & Janice Paslawski
 - Application Demonstration, Andre Christensen and Cory Kartz (all Millennium EMS Solutions Ltd.)
 - Development of a Long-Term Chloride Water Quality Guideline Incorporating Harness-Modifying Factors, Tony Knafla, Equilibrium
 - Agronomic Receptor Evaluation for Direct Soil Contact, Ian Mitchell, Millennium EMS Solutions Ltd. and Sarah Thacker, Innotech Alberta
- Finalization of Research and Preliminary Selenium Soil Quality Guideline Derivation - Anthony Knafla, Equilibrium Environmental Inc.

Q&A Panel Discussion with all speakers

We will end the session with a Q&A Panel Discussion with all speakers.

To reach us for questions about projects or the AUPRF program

- Allan Fogwill afogwill@ptac.org
- Tannis Such tsuch@ptac.org
- Lorie Mayes lmayes@ptac.org