

Investigating a Knowledge Exchange Network for the Reclamation Community

Alberta Innovates – Technology Futures

August, 2012



Oil Sands Research and Information Network

OSRIN is a university-based, independent organization that compiles, interprets and analyses available information about returning landscapes and water impacted by oil sands mining to a natural state and provides knowledge to those who can use it to drive breakthrough improvements in reclamation regulations and practices. OSRIN is a project of the University of Alberta's School of Energy and the Environment (SEE). OSRIN was launched with a start-up grant of \$4.5 million from Alberta Environment and a \$250,000 grant from the Canada School of Energy and Environment Ltd.

OSRIN provides:

- **Governments** with the independent, objective, and credible information and analysis required to put appropriate regulatory and policy frameworks in place
- **Media, opinion leaders and the general public** with the facts about oil sands development, its environmental and social impacts, and landscape/water reclamation activities – so that public dialogue and policy is informed by solid evidence
- **Industry** with ready access to an integrated view of research that will help them make and execute reclamation plans – a view that crosses disciplines and organizational boundaries

OSRIN recognizes that much research has been done in these areas by a variety of players over 40 years of oil sands development. OSRIN synthesizes this collective knowledge and presents it in a form that allows others to use it to solve pressing problems. Where we identify knowledge gaps, we seek research partners to help fill them.

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Table of Contents

LIST OF FIGURES	iii
DISCLAIMER	iii
REPORT SUMMARY	iv
ACKNOWLEDGEMENTS	vi
1 INTRODUCTION	1
1.1 Knowledge Exchange Workshop.....	1
1.2 Terminology.....	3
2 WORKSHOP FEEDBACK.....	3
2.1 Summary	3
2.2 Theme 1 – ‘What’	7
2.3 Theme 2 – ‘Why’	9
2.4 Theme 3 – ‘How’ – Part One.....	11
2.5 Theme 3 – ‘How’ – Part Two	12
3 NEXT STEPS	13
4 ACRONYMS USED IN THIS REPORT	14
APPENDIX 1: Workshop Notes.....	15
LIST OF OSRIN REPORTS	40

LIST OF FIGURES

Figure 1.	Distribution of participants at the focus discussion held in February 2012.....	2
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Alberta Innovates – Technology Futures

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- Developing new knowledge-based industry clusters; and
- Encouraging an entrepreneurial culture in Alberta

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REPORT SUMMARY

Alberta Innovates – Technology Futures (AITF) and other parties have been investigating reclamation research, development and deployment capabilities and capacities in the province for several months. The concept of a ‘Reclamation Centre’ was first discussed through a Challenge Paper distributed in August 2011 to a variety of participants in the reclamation community.

The original key challenge was to engage the reclamation community in a dialogue to determine the benefits of forming a ‘Reclamation Centre’ in the Edmonton area. We obtained feedback from researchers, practitioners, regulators and other individuals and organizations who are interested in reclamation. The response from the participants clearly articulated that there was no need for additional reclamation research capabilities in central Alberta (e.g., greenhouses, buildings and other infrastructure). However, there was a need for a central point for collection and distribution of knowledge, information and data related to reclamation activities.

A Knowledge Exchange Workshop was held in Red Deer on February 29th, 2012. It focused on centralization, collection, distribution and synthesis of knowledge, information and data related to reclamation.

The workshop was used to answer a series of questions identified by the steering committee around knowledge exchange and the aspects of "What" (what kind of information, data, knowledge to share, etc.); "Why" (why would the community benefit from shared information, etc.) and "How" (type of format used to share the information, etc.). The intention was to have multiple stakeholder groups represented by the participants and to distribute them evenly throughout the room during the discussion to stimulate insightful, constructive and comprehensive conversation. The desired outcomes were:

1. To gain an understanding of what the reclamation community needs (wants) in terms of information, knowledge and/or data;
2. To gain an understanding of why the reclamation community wants this information and how they intend to use it;
3. To obtain suggestions on how to best achieve this and ways to move forward.

It became obvious from the table discussions that to be successful, this initiative requires involvement from the entire reclamation community. This includes service/consulting organizations, oil and gas, mineable and in-situ oil sands, sand, gravel and other mining industries, academia, government, and applicable associations such as CLRA, ESAA, AIA, PTAC, etc. All of these industries and organizations have a role to play in collaboration within the reclamation community.

Overall the participants found the question of why access to information, knowledge and/or data would be helpful and who would utilize it, easier to address than specifically ‘what’ needed to be shared and how to share it. However, evidence of the potential benefits of a knowledge exchange initiative for the reclamation community is compelling enough to warrant further exploration of the concept.

Overall the conclusions from the discussion indicated the reclamation community was interested in multiple types of information and knowledge that could be shared through different mechanisms. The information required was a hierarchy of quality, from peer reviewed literature and knowledge to broadly defined grey literature and most importantly anecdotal practitioner experiences. A main desire is to have greater access to information, but also to the people who generated the information.

There were several challenges associated with this type of an initiative related to how the information would physically be shared and how to encourage more effective collaboration in the broader reclamation community. The participants concluded the information should be shared through a variety of mechanisms.

Although challenges were identified, the most important obstacles to overcome are to clearly identify the benefits for multiple users, determining a funding mechanism and how to get started. The issues associated with information and computing technologies (ICT) and large databases, intellectual property, QA/QC in data quality, privacy, links to other organizations, etc. could be resolved during the process.

Although there was agreement that the concept of exchanging information, knowledge and/or data within the entire reclamation community was feasible, it was determined that the scope and intent of the initiative must be clearly articulated to answer key questions such as who will do the work, what will it cost and who will participate. It was suggested to start the initiative small and grow it appropriately with well-developed and clearly defined goals.

ACKNOWLEDGEMENTS

The Oil Sands Research and Information Network (OSRIN), School of Energy and the Environment (SEE), University of Alberta provided funding for this project.

Alberta Innovates – Technology Futures wishes to thank the following organizations that sponsored the Workshop:

- Alberta Innovates – Technology Futures
- Alberta Institute of Agrologists
- Environmental Services Association of Alberta
- Oil Sands Research and Information Network
- University of Alberta, Faculty of Agriculture, Life & Environmental Sciences



1 INTRODUCTION

Alberta Innovates – Technology Futures (AITF) and other parties have been investigating reclamation research, development and deployment capabilities and capacities in the province for several months. The concept of a ‘Reclamation Centre’ was first discussed through a Challenge Paper distributed in August 2011 to a variety of participants in the reclamation community.

The original key challenge was to engage the reclamation community in a dialogue to determine the benefits of forming a ‘Reclamation Centre’ in the Edmonton area. We obtained feedback from researchers, practitioners, regulators and other individuals and organizations who are interested in reclamation. The response from the participants clearly articulated that there was no need for additional reclamation research infrastructure in central Alberta (e.g., greenhouses, buildings, etc.). However, there was a need for a central point for collection and distribution of knowledge, information and data related to reclamation activities.

1.1 Knowledge Exchange Workshop

Thus, a steering committee was established to identify the requirements and desired outcomes of a workshop to discuss the concept of a Knowledge Exchange Initiative for the reclamation community. The steering committee consisted of representatives from:

- Alberta Innovates - Technology Futures – Bonnie Drozdowski (acting chair), Quinn Goretzky and Peter Wong
- University of Alberta – Ellen MacDonald and Matthew Pyper
- Alberta Environment and Water¹ – Ryan Puhlmann
- Alberta Environment and Water and the Cumulative Environmental Management Association – Tanya Richens;
- Oil Sands Research and Information Network – Chris Powter
- Environmental Services Association of Alberta – Joe Barraclough.

The Knowledge Exchange Workshop was held in Red Deer on February 29th, 2012. It focused on centralization, collection, distribution and synthesis of knowledge, information and data related to reclamation across a variety of industries in Alberta.

The workshop was designed to answer a series of questions identified by the steering committee around knowledge exchange and the aspects of "What" (what kind of information, data, knowledge to share, etc.); "Why" (why would the community benefit from shared information, etc.) and "How" (type of format used to share the information, etc.). The intention was to have multiple stakeholder groups represented by the participants and to distribute them evenly

¹ Now Alberta Environment and Sustainable Resource Development

throughout the room during the discussion to stimulate insightful, constructive and comprehensive conversation. The desired outcomes were:

1. To gain an understanding of what the reclamation community needs (wants) in terms of information, knowledge and/or data;
2. To gain an understanding of why the reclamation community wants this information and how they intend to use it;
3. To obtain suggestions on how to best achieve this and ways to move forward.

Over 150 e-mail invitations were sent out to nearly 100 organizations, corporations or associations for participation in the Knowledge Exchange Workshop. Eighty-four people responded to the invitations, accepting or declining; forty-seven (47) individuals participated in the workshop. The distribution of participants and their associated stakeholder groups is provided in Figure 1. To encourage a diverse, insightful conversation, the participants were divided into seven tables with at least one representative from each stakeholder group present at each table. In the interest of anonymity, a list of participants is not provided. However, it is believed that key stakeholders in the reclamation community were represented by the participants.

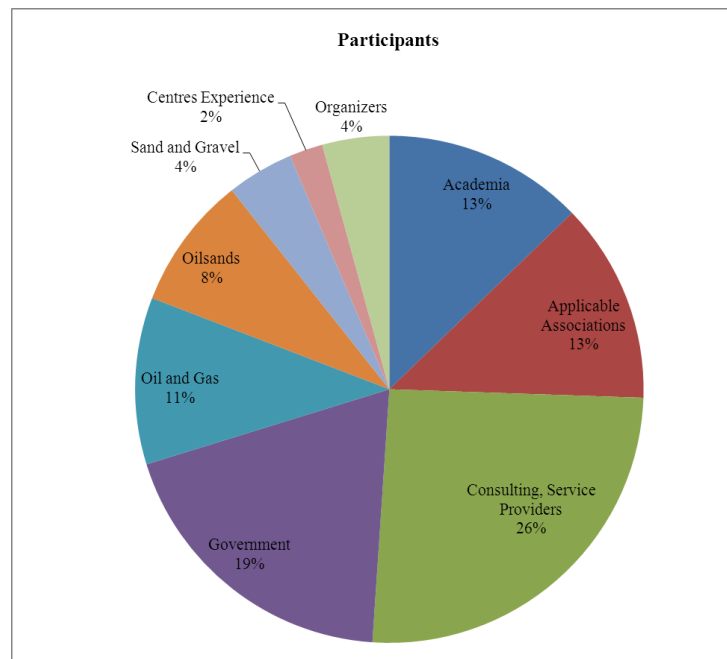


Figure 1. Distribution of participants at the workshop held in February 2012.

Government was represented by Alberta Environment and Water, Alberta Advanced Education and Technology, Energy Resources and Conservation Board, Canadian Forest Service, NRCan and Alberta Innovates - Technology Futures. Academia was represented by the University of

Alberta, Olds College, Lakeland College and NovaNait nBRI. Applicable associations were represented by the Environmental Services Association of Alberta (ESAA), Oil Sands Research and Information Network (OSRIN), and the National Research Council of Canada Industrial Research Assistance Program (NRC-IRAP). The oil and gas industry was represented by two organizations, the sand and gravel industry by one organization, the oil sands industry by four organizations and the consulting service industry by 11 organizations.

1.2 Terminology

Through the life of this project the phrases used to describe the concept changed:

- *Reclamation Centre of Excellence* was the phrase used in the Challenge Paper, and referred to both a research facility and a forum for exchanging knowledge.
- *Knowledge Exchange Initiative* was the phrase used in the supporting materials for the Workshop, and it included both the process to establish a sharing mechanism and the mechanism itself.
- *Knowledge Exchange Network* was the phrase that arose from the Workshop discussions. The term *Network* may imply a formal organization with staff or a virtual location where information is shared – no decisions have been made. We have replaced the phrase Knowledge Exchange Initiative used in the Workshop with the phrase Knowledge Exchange Network to make it easier to read this report, however neither the authors nor the participants are wedded to the name Knowledge Exchange Network.

The term *reclamation* is used broadly to encompass both reclamation and remediation.

The term *reclamation community* refers to individuals, employers, associations and organizations involved in reclamation activities in Alberta.

The term *reclamation practitioner* means regulators, planners, performers, materials and equipment suppliers, laboratory analysts, researchers, educators and professional organizations involved in reclamation work in Alberta.

2 WORKSHOP FEEDBACK

Notes from the table discussions are captured in [Appendix 1](#). A general summary of the feedback is provided below, followed by a more detailed summary of the comments from each workshop question.

2.1 Summary

In the Challenge Paper, several organizations were identified which currently work in, or are affected by, the reclamation community and that have a mandate which incorporates

collaboration, information exchange, networking and/or research. The organizations identified in the Challenge Paper are listed below, however this list is not exhaustive²:

- Alberta Agriculture and Rural Development
- Alberta Biodiversity Monitoring Institute
- Alberta Chamber of Resources
- Alberta Institute of Agrologists
- Association of Professional Engineers and Geoscientists of Alberta
- Alberta Soil Science Workshop
- Canada Centre for Mineral and Energy Technology
- Canadian Land Reclamation Association
- Canadian Oil Sands Network for Research and Development – Environmental Reclamation Research Group
- Cumulative Environmental Management Association – Reclamation Working Group
- Environmental Services Association of Alberta
- Evergreen Center for Resource Excellence and Innovation
- Foothills Research Institute
- Helmholtz Alberta Initiative
- In-situ Oil Sands Alliance
- Laurentian University Mining Environment Database
- NAIT Boreal Research Institute
- Oil Sands Developers Group
- Oil Sands Leadership Initiative
- Oil Sands Research and Information Network
- Oil Sands Tailings Consortium
- Oil Sands Tailings Research Facility
- Orphan Well Association
- Petroleum Technology Alliance Canada
- Regional Aquatics Monitoring Program

² At least one historical organization, the Reclamation Research Technical Advisory Committee, was also identified as a source of information.

- University of Alberta – Centre for Restoration Ecology
- Wood Buffalo Environmental Association

The Knowledge Exchange Network is not intended to be competitive with these organizations, nor to duplicate their efforts. The intention is to be complimentary and enable a more effective and efficient mechanism for knowledge exchange amongst reclamation practitioners, the listed organizations, government and industry. Practitioners have identified it to be a challenge to keep up with all of the activities and work conducted by the various organizations.

The workshop discussion aimed to address three main questions:

1. What type of information is the reclamation community interested in exchanging,
2. Why is there an interest in exchanging this information, and
3. How might this best be achieved.

It became obvious from the table discussions that to be successful, the Knowledge Exchange Network requires involvement from the entire reclamation community. This includes service/consulting organizations, oil and gas, mineable and in-situ oil sands, sand, gravel and other mining industries, academia, government, and applicable associations such as CLRA, ESAA, AIA, PTAC, etc. All of these industries and organizations have a role to play in collaboration within the reclamation community.

Overall the participants found the question of why access to information, knowledge and/or data would be helpful and who would utilize it, easier to address than specifically ‘what’ needed to be shared and how to share it. However, evidence of the potential benefits of a Knowledge Exchange Network for the reclamation community is compelling enough to warrant further exploration of the concept.

Overall the conclusions from the discussion indicated the reclamation community was interested in multiple types of information and knowledge that could be shared through different mechanisms. The information required was a hierarchy of quality, from peer reviewed literature and knowledge to broadly defined grey literature and, most importantly, anecdotal practitioner experiences. A main desire is to have greater access to information, but also to the people who generated the information.

There were multiple explanations identified for why the reclamation community would benefit from increased access to information and knowledge. However, the most compelling reasons included:

1. Efficiency – cost savings, less redundancy, time
2. Identification of knowledge gaps

3. Adaptive management – prevention of redoing what’s been done, best practice identification and implementation
4. Increased awareness – transparency, public awareness and perceptions
5. Improved reclamation quality
6. Circular Learning – academic institutions learning from industry about issues and providing training opportunities that are relevant post-education and vice versa – industry implementing research findings
7. Professional competency mappings
8. Identification of commonalities between sectors and disciplines and application of that knowledge
9. Disintegration of silos (either sector-based or subject-based) to learn more about what the other groups are thinking/doing/learning
10. Landscape planning and effects

There were several challenges associated with a Network related to how the information would physically be shared and how to encourage more effective collaboration in the broader reclamation community. The participants concluded the information should be shared through the following mechanisms:

1. Web-based – database, blog, forum
 - a. Build on existing workshops, conferences, and training opportunities
 - b. Phased approach
2. Define box – start small with dedicated people
3. Seed funding required

It was also determined that to enhance collaboration in the broader reclamation community to enable the Network:

1. Contribution and use must be encouraged (i.e., participation must be active not passive)
2. Common goals must be identified and shared
3. Require a definition of “open and transparent” information exchange
4. Conferences, workshops and forums are required with this as a focus

Although several challenges were identified, the most important obstacles to overcome are to clearly identify the benefits for multiple users, determining a funding mechanism and how to get

started. The issues associated with information and computing technologies (ICT) and large databases, intellectual property, QA/QC in data quality, privacy, links to other organizations, etc. could be resolved during the process.

Although there was agreement that the concept of exchanging information, knowledge and/or data within the entire reclamation community was feasible, it was determined that the scope and intent of the Network must be clearly articulated to answer key questions such as who will do the work, what will it cost and who will participate. It was suggested to start the initiative small and grow it appropriately with well-developed and clearly defined goals.

2.2 Theme 1 – ‘What’

What type of information, knowledge and/or data is needed by reclamation practitioners?

Reclamation practitioners were defined as regulators, planners, performers, materials and equipment suppliers, laboratory analysts, researchers, educators and professional organizations involved in reclamation work in Alberta. Examples of broad and specific types of information were provided to help initiate and guide the conversation.

The feedback on the ‘type’ of information required was wide-ranging. While some people wanted access to very specific information, others wanted information relevant to best management practices and available technologies for use in reclamation. During the course of the conversation it became apparent that the knowledge regarding currently available and accessible information was variable and having a place and/or person to contact for clarification and assistance would be useful.

The Alberta reclamation sector is very interdisciplinary which increases the need for sharing knowledge and information. The general consensus from the table discussions was that there is a need to share multiple ‘types’ of knowledge, data and information. The first of which was information that is already available to the public, the second of which was grey literature and the third was practitioner experiences. During the discussion it was suggested that the first two types of information be made publically available and the third be accessible by members only to prevent misuse of information.

The information that is already available to the public, such as peer reviewed literature, knowledge and information, new and updated legislation, regulations, standards and guidelines, links to and explanations of government websites such as the Environmental Site Assessment Repository (ESAR), the Agricultural Region of Alberta Soil Inventory Database (AGRASID), etc., and all other relevant information. This information can often be difficult to access, especially the peer reviewed literature, and the participants felt it would be beneficial to have access to it from one centralized location.

It is believed that the benefits of having this information available from one centralized location were many, examples of which include:

- easier and better information available for cumulative effects assessments,
- increased transparency regarding the total land area affected by industrial disturbances in the province.

Information categorized as grey literature is the broadest category and could include materials such as:

- company annual reports
- baseline information from all areas of the province extrapolated from existing environmental impact assessments
- ongoing research projects (academic and non-academic)
- background soil metal and hydrocarbon concentrations
- a Green Area soil map equivalent to AGRASID
- linkages with existing databases from other applicable industries
- land use history
- case studies
- applicable technologies and their cost and availability, and
- information on the different stages of land use/development, conservation, construction/planning/monitoring, and reclamation/monitoring.

Understandably, there was concern regarding the amount of information and or data that a practitioner would be required to review to find the relevant information. Therefore, ideally this information would be synthesized to have broader applications, and increased usability. By synthesizing information it would also be easier to identify knowledge gaps to ensure the Reclamation Community continues to progress and improve. It was also thought that this format could be used as a mechanism to share information with jurisdictions outside of Alberta with similar industries and disturbances to maximize the value of the knowledge available.

The most sought after information discussed by the participants was practitioner experience or so called ‘anecdotal technology transfer’. This included information about what worked and what didn’t work for different stages of reclamation and across multiple industries. Relevant summaries of case studies on past reclamation successes, applicable machinery, seed mixes for different areas and disturbances, revegetation strategies, best management practices, etc., could help reclamation practitioners complete their work more effectively and efficiently.

Discussions around the actual mechanism and the potential intellectual property and liability issues associated with openly sharing information were common, even during the initial discussions which were just focused on the types of information to exchange. Information quality and consistency was also an issue of concern, however it was felt that a multi-level system of data availability could help prevent concerns regarding quality assurance/quality control. A multi-level system of data availability would include varying levels of data quality, credibility and user access. Other issues identified included defining reclamation broadly enough to ensure conservation and construction practices were also included, identifying the appropriate group to acquire the knowledge and information to synthesize it for the broader reclamation community and the creation of Best Practices from what worked and what didn't.

The fourth potential area/type of information discussed included who is doing what and where. It was suggested that there was a need to know who could be contacted to get more information and links to databases of practitioners contact information would be beneficial.

2.3 Theme 2 – ‘Why’

*In what way would the reclamation community hope to benefit from a Knowledge Exchange Network?
Why would access to information, knowledge and/or data be helpful?
Who would be utilizing this information?*

Although there were many examples provided indicating the benefits of a Knowledge Exchange Network, the overall conclusion was that the benefit is simply greater access to knowledge and information in a practical and accessible manner. Greater and easier access to knowledge and information would have the following benefits:

- Increased Efficiencies
 - Cost savings (reduced replication – e.g., baseline data)
 - Reduced duplication of research
 - Possibly reclaiming sites faster
 - Better information base to go forward with in new projects
 - Better use/distribution of resources
- Improved Reclamation Quality
 - Increase ability to reclaim to a higher standard
 - Promote best practices and improve upon them as new technologies and research becomes available

- Public Credibility (provincially, nationally and internationally)
 - Capacity to demonstrate reclamation is occurring
 - Accountability and transparency of government and industry
 - Enhance provincial reputation (collaboration of academia, industry, regulators, consultants, NGO's)
- Identification of Knowledge Gaps
 - Applied research – need to ask the right questions and set up appropriate experiments to determine successes and failures
 - Planning/development
 - Longevity of different approaches
 - 'knowing what you don't know'
 - Communicating challenges
- Ongoing Knowledge Integration
 - Across disciplines (forestry, oil and gas, mining, sand and gravel)
 - Regionally, provincially, nationally and internationally sharing information – comparing regional differences and similarities increases our ability to collaborate outside of Alberta
 - Keeping an up to date database
 - Promoting best practices
- Learning and Training Opportunities
 - Beneficial to new practitioners, students, changes in job position, educators, entrepreneurs
 - Professional development opportunities
 - Field experience, internship programs
- Enhanced Ability for Regulators to Make Informed Decisions

It was suggested that anyone connected with the Reclamation Community could potentially use the information: academics, educators, consultant service providers, industry, government, municipalities, researchers, NGOs, students, the public, etc. However, the benefits of the information are dependent on the delivery mechanism and relevance. There were concerns raised regarding misinterpretation and misrepresentation of the information if it was available in an entirely public format.

2.4 Theme 3 – ‘How’ – Part One

*How should this information be exchanged/shared?
What type of mechanism should be used?
How can the reclamation community as a whole collaborate more effectively?
What are the foreseeable challenges and logistical requirements associated with a Knowledge Exchange Network?*

In general, the participants agreed that the mechanism required to share this type of information was an online, publicly available website and database. Some of the key characteristics of this site would include its searchability (multiple mechanisms – keywords, region, industry, people, etc.), and linkages with existing information and databases. As suggested previously in the report, it was discussed that not all information is appropriate to share publicly and a member access blog or forum may be appropriate for this component of the initiative. It was also suggested that workshops could be held to identify and discuss key issues and concepts and short information documents could subsequently be written and posted online which would eliminate personal liability and anonymity issues.

It was also suggested that there would be a need to have a relationship with existing collaboration and networking opportunities such as those provided by the Canadian Land Reclamation Association (CLRA) and the Environmental Services Association of Alberta (ESAA). It was determined that there was a requirement to have people dedicated to data collection, synthesis and validation, at least in the initial stages of the initiative.

The largest foreseeable challenge associated with more effective collaboration in the reclamation community as a whole is determining who makes up the “reclamation community”. However, it was suggested that there was opportunity to partner with associations such as the Alberta Institute of Agrologists (AIA), CLRA, ESAA and the Petroleum Technology Alliance of Canada (PTAC) who have it as part of their mandate to create opportunities for networking and exchanging information. It was also suggested that knowledge of upcoming events and professional development opportunities is often limiting, therefore a calendar of events from all relevant organizations and activities would be useful. This would enable the reclamation community to distribute their time and energy more effectively.

Synthesis of information into applicable, relevant documents requires collaboration, however contribution to this type of an initiative must be encouraged and training is required by educational institutions on how to synthesize and communicate the information effectively for the appropriate audience. Once the initial mechanism of collaborative synthesis of information has proven successful and beneficial it will be much easier to generate interest and participation.

A Knowledge Exchange Network for the reclamation community is a novel concept which has several foreseeable challenges. The main challenges identified by the discussions participants included:

1. Defining the “box” – what is “reclamation”
 - a. Reclamation is defined differently by almost everyone and can have very different implications based on the definition applied
 - b. Who defines the box and ‘houses’ the Network
2. Determining the nature of open and transparent information exchange and defining how to set appropriate boundaries
 - a. Who will provide the information and provide oversight to the applicability and quality of the information
 - b. Who will maintain the resource
3. Identifying the benefits or “carrot” for all users and trying to incorporate it into the system
 - a. To encourage active participation the relevance and benefits to all users must be obvious
 - b. How to entice active participation and motivate users to share information
4. Funding Mechanism
 - a. Seed funding to initiate the process – concern over longevity
 - b. User fees
 - c. Government funding
 - d. Industry funding
5. Amount and Quality of Data
6. Liabilities, Intellectual Property and Privacy Issues

2.5 Theme 3 – ‘How’ – Part Two

*Is the concept of exchanging information, knowledge and/or data within the entire reclamation community feasible?
If Yes – How? What would be required?
If No – Why not? Is there a way to overcome the challenges?*

There was overwhelming agreement that the concept of exchanging information, knowledge and/or data within the entire reclamation community was feasible, however there are challenges which would need to be overcome to ensure its success. The potential causes of failure for this

type of an initiative are many. Aside from the obvious ICT challenges and requirements associated with developing a functional, practical, and user-friendly infrastructure to share the actual information and knowledge, there are issues associated with the promotion and messaging of the Network to prevent misconceptions about duplicating efforts, and generating acceptance, buy in and active participation from the entire reclamation community, including government, industry, academia and service providers.

It was determined that the scope and intent of the Network must be clearly articulated to answer key questions such as who will do the work, what will it cost and who will participate. It was suggested that a business plan would help to determine the cost effectiveness and feasibility. The benefits to all users must be obvious at the onset therefore it was determined that a literature review or market scan to determine who has done something like this and what has worked and not worked for others would be beneficial.

It was suggested that a phased approach be taken to determine the effectiveness and success of the Network; to use one industry and complete the process of website development, information and knowledge accumulation, synthesis and exchange. A successful first phase would generate interest and a positive momentum to expand into other areas. It would also ensure the scope of the Network not be overwhelmingly large at the onset of the project and would allow for a clear understanding of potential funding mechanisms and a cost/benefit analysis. To achieve success, one must first define it, which is a challenge with this type of an initiative due to multiple stakeholders and interests.

3 NEXT STEPS

The report draft was circulated to the workshop participants as part of a survey soliciting feedback on the concept of the Knowledge Exchange Network, the workshop and the summary report. Limited feedback was received, which may serve as a warning with respect to the difficulties of getting active participation in the Network.

The Steering Committee will meet to discuss the questions and suggestions brought up during the workshop discussion. The types of scoping questions that need to be addressed prior to moving the Network forward include:

1. How to identify the characteristics of an entity that would achieve the Knowledge Exchange Network goals expressed by the workshop participants. Examples of institutions or organizations which are conducting similar work such as OSRIN, ESAA, CLRA, CEMA, LUKN need to be looked at to determine useful characteristics for this entity and their current capacity to address all or part of the goals.
2. Funding opportunities to initiate the process.
3. Who should lead the next steps and, if applicable, the Network.
4. How to define success.

4 ACRONYMS USED IN THIS REPORT

AIA	Alberta Institute of Agrologists
APEGA	Association of Professional Engineers and Geoscientists of Alberta
ASPB	Alberta Society of Professional Biologists
C&R	Conservation and Reclamation
CAPP	Canadian Association of Petroleum Producers
CEMA	Cumulative Environmental Management Association
CLRA	Canadian Land Reclamation Association
DQO	Data Quality Objective
EIA	Environmental Impact Assessment
ESAA	Environmental Services Association of Alberta
ESAR	Environmental Site Assessment Repository
ICT	Information and Computing Technologies
IP	Intellectual Property
IT	Information Technology
LUKN	Land User Knowledge Network
MOU	Memorandum of Understanding
NGO	Non-Governmental Organization
O&G	Oil and Gas
OSRIN	Oil Sands Research and Information Network
PTAC	Petroleum Technology Alliance Canada
QA/QC	Quality Assurance/Quality Control
RFP	Request for Proposal
S&G	Sand and Gravel
SEE	School of Energy and the Environment

APPENDIX 1: Workshop Notes

Session #1- 'What' theme

What type of information, knowledge and/or data is needed by reclamation practitioners*? *reclamation practitioner – regulators, planners, performers, materials and equipment suppliers, laboratory analysts, researchers, educators and professional organizations involved in reclamation work in Alberta.

GROUP A

'BROAD' CONSIDERATIONS

- We need to get info out there to see what works in terms of reclamation
- Given new pattern of only 15% inspection, there is a greater disconnect between industry and government. This has reduced our effectiveness in seeing what works and what doesn't.
- We also need to look at resources in order to conserve
- A repository of research projects that included ongoing as well as abandoned research. Allow new users to go back and retrospectively monitor these projects
- We have lots of info from surveys
 - Survey data on pipelines (soils, water, vegetation, etc.), etc.
 - How do we access this info?
 - If we could compile it, would be useful to see how things have changed
 - If we could centralize this baseline info so everybody can access it
 - Certification info should be included
 - What is total land area affected? (info would be public)
 - What is in the process for approvals? (info would be public)
- All would be good info to pull into the report to public

'SPECIFIC' CONSIDERATIONS

- Quality is an issue – however it's a combination of different fields so may be okay
- We know there is a huge quantity of info but need to make it available

GROUP B

'BROAD' CONSIDERATIONS

- Natural exceedances – database of background soil chemistry (PHC, metals, salinity)
- Quality control needed to ensure representative background conditions, distance from site
- Baseline conditions – pre-site assessment repository to allow understanding of soil and vegetation conditions
- How much baseline information is needed? – baseline conditions affect reclamation success
- Green zone soil mapping equivalent to AGRASID
- Common portal for reclamation/background information – ability to add links to additional information/data points
 - Example Natural Resources.com
 - Searchable by keywords, subjects, parameters of concern

'SPECIFIC' CONSIDERATIONS

- Bibliography of research/papers/results to prevent “recreating the wheel”
 - Need to synthesize information
 - Journal articles are copyrighted and require \$ to review
- Challenge to find subject experts both internal and external to services companies, academia, industry
- Post reclamation successes – vegetation, seed mix, soil handling
 - What worked, what didn't work?

GROUP C

'BROAD' CONSIDERATIONS

- For an equal “playing field”: stronger PDA's/more comprehensive PDA's
- More effective and transparent method to make data public (public consultation)
- Need for comprehensive historical data on land use as well as soil and land data
- Need for comprehensive operating data such as expenses (costs/unit area) + transportation costs/energy use costs

- Do not need duplication of data collection/research
- Need a common knowledge base
 - Need an effective knowledge use platform
 - Need an effective method to guide upcoming personnel
 - Need synthesis of existing and ongoing information data collected
- Data should support “Best Available Technology” used effectively for reclamation practices of various industries (O&G, S&G, Coal)
 - This BAT needs to be validated to eliminate snake oil
- Better access to data will increase utility of data

‘SPECIFIC’ CONSIDERATIONS

- Baseline – for sand & gravel (pits): topsoil (TS) depth (pre-disturbance) (similar to O & G, etc.)
- Monitoring well data should be shared
- Clarity of responsibility where two or more industries share common land
- Land use history on a particular parcel – must be easy to access

GROUP D

‘BROAD’ CONSIDERATIONS

- Alberta reclamation sector is very interdisciplinary (cross-sector and profession) which places an even greater need for sharing
- ABA data:
 - Search engine specific to reclamation
 - Baseline information on well site status would be helpful
 - Ecological baseline info
 - We are open to data across the board – i.e., Peer, grey literature, anecdotal
 - Association have databases i.e., CEMA, Reclamation database (now [Oil Sands Environmental Management Bibliography](#))
 - Linkage of good existing databases
 - Information and knowledge interface outside of Alberta. What can we learn from other jurisdictions and share with them?

'SPECIFIC' CONSIDERATIONS

- There is a vast amount of information but it is silo'd and site specific. There is no repository
- A lot of the data is IP of the client
- A repository record of site conditions would be helpful
- Research community is a client
- Baseline survey data; soils; remediation data; machinery; stripping
- Small medium enterprise community is a target group
- Reclamation enterprises are very competitive
- C&R general reports should be shared. Likewise closure plans
- Soil monitoring programs
- However there are thousands of these reports. Can they be synthesized to identify gaps and be helpful?
- We need a “parking lot” to identify what people need to know. A blog!
- Need a system to share what worked-what didn't. It could be tagged by geographic region
- Search mechanism
- We all do “look, see trials”. How is this captured and shared?
- Need to share info on what did we try?
- Grey literature is big in oil sands. Annual reports capture this
- There is a need to share because the sector is emergent
- Cross sector info from forestry to Oil and Gas
- There is a third category of knowledge (anecdotal)
- Conferences and seminars are a very good way to share
- From a research perspective, we need to know who is doing what and where
- Technical notes would be helpful
- Repository of contacts and recent projects
- As the system evolves, we can go back in time to identify past projects
- It needs to be an IT, searchable forum. Simple clear. Contacts; areas of specialty; project name; key words; location; timeframes; regulatory drivers. ...clearing house

- OSRIN is a good model
- PYXIS Innovation: database integrator – tie to Geomatics

GROUP E

'BROAD' CONSIDERATIONS

- Vetting info for quality
- Ability to keep pace with regulatory changes and best management practices
- Communicating key regulations to students
- Gap between knowledge and understanding/applications

'SPECIFIC' CONSIDERATIONS

- Sharing of research, best management practices
- Generating best management practices, monitoring data sharing
- Repository of baseline i.e., Soils classification, chemistry at appropriate scale
- Consistent quality of data
- Share successes and failures
- Research item morphing into real world application/synthesizing
- Solution based research

GROUP F

'BROAD' CONSIDERATIONS

- Shared experience – what works/didn't work, summaries, catalogue results to make it simple to find
- How to get companies to release all results – encourage companies to share info / keep it simple
- Understand end land use for a site (equivalent land capability) and manage by-products so as to prevent challenges to reclamation. Materials (by-products/wastes) applied to land should benefit land and contribute towards achieving reclamation.

'SPECIFIC' CONSIDERATIONS

- Integrity – central repository – who submits data/who screens and reviews data?
Who gets it to the public???

GROUP G

'BROAD' CONSIDERATIONS

- Business case develops cost savings-images/Best Practices/Best Successes
- Case studies
- Industry knowledge exchange
- How do we capture failure
- Video imagery knowledge exchange
- Demonstration sites
- Native plant species bank?
- Streamlining guidelines and criteria (end land use you are trying to target)
- Industry info – is it proprietary?
- e.g., Clara Qualizza – CONRAD regional hydrology synthesis
 - Compiled all the info
 - Synthesized a bunch of different projects and told a story resulting in best practices
- Rather than just a data repository – Learning experience about what worked and what did not
- Sand and gravel industry looking for information and knowledge to help them do their job better
 - Willing to share with others
 - Failures could be difficult to share because of bad press or legalities
 - Synthesizing data – integration and synthesis of data would be appreciated
 - When encouraging information review (peer review discussion) you are getting some quality
- Regional knowledge base:
 - How do you achieve a specific end land use?
 - Reclamation vs. construction

- In-situ salvage
- Proof of concept
- Consolidate info already out there
- Historical repository of a range of industries that have been applied
- Quality and quantity depends on the nature of the disturbance – well site vs. gravel pit vs. oil sands (*in-situ* vs. mining)
 - Reclamation certification on well sites vs. approval based facilities
- What we are doing: giving a certificate before it's really back to equivalent land use capability...
- Quality issue: break it into different landscape type or different disturbance types and even one more level up = eco-regions

What is the reclamation community currently missing that is preventing efficient and effective exchange of information, knowledge and/or data?

GROUP C

- Broader access by public/industry (collaboration/coordination)

GROUP G

- Effective synthesis of information / data
 - You need a place to house it - repository for data
 - A group to do it (the right group)
 - What is working and what did not (best practices)
 - Frequency of best practices synthesis report – annual could be cumbersome vs. 3 to 4 years
- Integrating information and tools that have been developed in other provinces, countries and industries
- Define reclamation broadly to include construction (problems of reclamation start with construction practices – need reclamation learning's to move to helping construction best practices) – focus on construction as part of reclamation process

Session #2- 'Why' theme

In what way would the reclamation community hope to benefit from a Knowledge Exchange Network? Why would access to information, knowledge and/or data be helpful? Who would be utilizing this information?

GROUP A

- Cost savings to companies (not reinventing the wheel), as we have access to a larger array of information
- Reclaim to a higher standard
- Assist in raising the bar in reclamation
- Capacity to report to the public that reclamation is occurring ('public credibility' – public can access it and see it happening)
- Increased efficiencies
- Industry use information for planning
- Consultants can use as a tool in reclamation
- Academics can use information to report to broader scientific audience
- Reporting to public on different zones – active, reclaimed but not certified, certified (interim reclamation)
 - The previous point is difficult as numbers are reported differently e.g., 15 wells reclaimed but all on the same pad
- Public audience will grow if they are kept properly informed
- Centralization of information could allow for better informing when developing new building/sub-divisions – developers, municipalities
- Help us in identifying gaps in knowledge if we have information centralized – focus future applied research that is useful
- Integration of knowledge across reclamation disciplines (i.e., Forestry, Oil and Gas, Mining)
- Access to information of previous development would be useful in planning. Also to know what works in different regions
- New landowners can benefit from using information to guide them

GROUP B

Benefit:

- Time, efficient, reduced redundancy
- Baseline data = reduced cost
- Streamline EIA process
- Academic? Understanding of problem, what has been done before (gaps, issues identification) + experimental design – Data Quality Objectives (DQO)’s
- Long-term monitoring? Not industry – needs to come from government
- Importance to ask right questions DQO’s – experimental design/what reclamation is succeeding?
- Well site scale – consultants
- Applied research (why?) – academics

Larger scale – e.g., mining industry } + Δ access data from work happening
in same area
Smaller scale – e.g., conventional oil } + cross learning between the two

Academic:

- Even “published” papers are not readily available publicly
- Problem finding them – single pathway finding information (more ‘science’ less us) (cookie cutter approach)

Consulting:

- Finding info in shorter amount of time
- Less “spinning wheels” – better use of \$\$

Industry:

- Lack of planning / pre-plan: need more time
- Training (of consultants) = relates to Academic as well
 - Relevant – useful for students to have field experience
 - Retrain for industry

- Will still need experience (minimum 2 years)
- Competency matrices
- Internship programs – 4 months not long enough (8 would be better, more useful)
- Reclamation: = evolving field. Challenging for new hires, especially commitment (hire for attitude – better fit vs. grades – e.g., ‘tree planters’ = resilient)
- Cannot get 10 year project manager

GROUP C

- Reduce duplication of efforts (cost and time)
- Improve efficiency
- Promote best practices
- Increase public and stakeholder confidence
- Reduce Alberta’s reputational risk
- Gives you an elevated starting point
- It increases the exportability of Alberta’s expertise
- Land use

Disadvantages of sharing the information:

- NGO’s may take advantage of information and misinform the general public

Who:

- Municipalities
- Any planning agency
- Public

GROUP D

Who would utilize data?

- consultants, researchers, government, NGOs, stakeholders, public, media, lawyers

Why would access be helpful?

- New reclamation practitioners can access/do research
- Reduce duplication
- Identify gaps
- Discussion of opportunities
- Connection to right people (i.e., ‘linked in’ for reclamation practitioners)
- Open CONRAD to public
- Industry access sector for land use framework sharing (i.e., integrated land use with regulatory endpoints in synchronization)

Benefit:

- Government/Public – more supported by available information that is scientific and not duplicated
- Accountability
- Transparency
- Increased base knowledge
- Enhanced reclamation practice and economic value
- Identify cost effective measures
- Meet standards
- Apply learning (i.e., good or bad) across sectors (i.e., coal, minable oil sands)

Fragmentation at landscape level:

- Movable porthole available
- But no porthole for *in-situ* oil sands or common oil and gas or forestry or S & G – but different drivers for land use – regulatory/reclamation closure

GROUP E

- Cost effectiveness
- Best management practices adoption lead to long term betterment
- Public relation and reputation

- Greater stakeholder awareness
- Distribution of resources
- Increased credibility
- Further opportunity
- More integrated professional opportunities
- Organizational improvements possibilities
- Enhanced opportunities for joint ventures
- Allow for better decision makers (regulatory)
- Aid in changing mindsets and evolving
- Breaking it down to pure information rather than maintaining specific silos
- Helps everyone in the reclamation sector
- Improving quality of conversations
- Benefits directly to practitioners
- Spurs enhanced critical thinking

GROUP F

- Learn from past experience and expand
- Helps new practitioners, students, change of position
- Everybody, Educators, Inventors
- Expedite reclamation projects

GROUP G

What:

- Reclamation success
- Project efficiency
- Public perception/social license
- Sustainability (step toward the concept)
- Improve reclamation quality

Why:

- Greater access to knowledge/information exchange in a practical and accessible way
- Stronger body of knowledge/synthesis of information will strengthen the knowledge base
- Encourage use of data
- Increasing focus on reclamation/environment
- Improving reclamation standards by identifying and improving best practices
- Simplify access to information
- Collaboration outside Alberta
- Communicating success outside the industry to the public, NGOs etc.
- Communicate challenges outside industry to possibly bring in new technology
- Identify knowledge gaps

Who:

- Government, regulators
- Students
- Academics
- Industry (e.g., service providers, individuals in industry, industry groups, etc.)
- Public – inform on issues, challenges, reclamation practices
- NGO

Session #3- 'How' theme

How should this information be exchanged/shared? What type of *mechanism* should be used? By *mechanism* we mean – committees, networks, internet website/database, expansion of a model like OSRIN?

GROUP A

- Accessible online system – could be tied in with library system
- Publicly available – industry, government, academics

- May be issues related to public availability of sensitive information – some companies may be concerned about sharing it
- Database – information more than reports
- Need for it to be searched multiple different ways – keyword, region, industry
- Perhaps not put out raw data but reports instead – go to person to get raw information
- Searchable map function, keywords, people

GROUP B

- Look at existing database/information link to
- Electronic base; being able to access remotely, from anywhere, anytime
 - \$\$ member (senior buy in, regulator and industry)
 - QA/QC
 - Log-in
 - 1. Regulatory
 - 2. Baseline data
 - 3. Completed studies/research
- Research needs/opportunities
- Academics

GROUP C

- Comprehensive database (website); dedicated website
- Digital library
- Piggy back onto other conferences, like CLRA, AIA (Information Session)
- Social media
- People dedicated to it, how to access, validate
- Need for information is high, but how, who to put it together (Cost/Benefit)
- Who is the audience?
- Cross-organization
- Accreditation

GROUP D

- Information exchange; comprehensive website to guide searchers to applicable database/website (search engine)

Mechanism:

- Blogs
- Forums
- Detailed abstract – collaborators
- Interconnected search engine – use links?
- No meta data sharing? Inherent risks of data pollution – go to contact for data (i.e., communications person, manager, archivist)
- Anecdotal information on to forms
- Hierarchy of information quality five-star scale?
- Foreseeable challenges
 - Motivation to share
 - Legislation requirements
 - IP
 - Oversight of forums/blogs
 - Dollars
 - QA/QC
 - Technically possible to get search results from multiple organizations?
 - Maintenance?
 - Utility to start data bank
 - Multi-stakeholder environment – relevance to all

GROUP E

- Websites
- Webinars
- Forums
- Industry associations
- Who regulates contents and who provides resources?

- Who ensures the quality of data?
- Starting point using vetting research
- Start with issues of commonalities
- Central site with branching to participating organizations
- Directory, scope of practice
- Run it through existing associations
- User pay
- Membership organizations need to be charged a reasonable amount
- Create partnerships with existing organizations
- Access database
- Start with definitions of site
- Grant basis to start up
- ESAR format

GROUP F

- One point of contact – online – simple
- Online must be flexible
- PDF format
- Cost factor – RFP to find house - Steering committee to choose house
- We agree the expansion of a Model like OSRIN is a good idea – Cost savings?

GROUP G

- Many venues already exist (e.g., Alberta Soil Science Workshop) – need better coordinator
- Website – design important
- Coordination role needed (e.g., Alberta Land Use Knowledge Network)
- Funding mechanism – user fees?; Government or Industry
- More engagement on non-technical forums (e.g. surface rights groups, community groups)
- Must be shared objectively – both good and bad, success and failures

- Need process for handling proprietary information – make public after?? A defined time period?

How can the reclamation community as a whole collaborate more effectively

GROUP A

- Have more informational updates in the community (i.e., CLRA). More than one year update at CLRA and regionally based updates
- There are many organizations that sort of do this – CLRA may be a good group to do this
- Streamline all of these organization (e.g., CLRA, AIA, PTAC)
- Really need to spend more time talking to each other
- Most effective method is really getting people together
- Need to have a better mechanism of making people aware of different workshops that are out there
- Building a multi-agency approach to funding that is adjudicated by an overseeing committee (well-integrated)

GROUP B

- Formal communication
- Informal communication (transparent to public/government)
- “chats” / groups

GROUP C

- Common goals; understanding
- Who makes up the reclamation community? – those practices, directly affected
- Where does this go, after this workshop
- Liability?
- Effective coordinating body; keep it small and effective

- Differentiation between members access and general public access

GROUP D

- Logistical requirements – metrics on temporal scale for development; Business plan/outline; Search engine that can search other engines

GROUP E

- MOUs
- Forums
- Blogs
- Websites
- ESAR adapted
- ESAA/CLRA
- AIA/APEGA/ASPB
- Inclusion of all disciplines participating in reclamation
- CLRA model organization for inclusion and longevity
- Varied board composition

GROUP F

- Understand everyone does have Wisdom - Park your ego at the door
- Workshops, Quarterly Newsletter that would foster exchange of ideas and information

GROUP G

- Become more open in sharing information
- Clarify knowledge gaps that are priorities
- Online forums
- Regulatory or financial drivers (i.e., Approvals drive participation)
- Company commitment – time and finances are challenges
- Standard format for presentation of data

- Technology roadmaps, gap analysis
- Document who has the expertise in reclamation practice areas (i.e., Linked In)
- Training people to synthesize data and communicate. Who is your audience? Synthesizing for a technical audience needs different skills than for a public audience. Provide context for communicating reclamation issues
- Public communication forums
- Reclamation industry information sharing. Gathering information from the existing forums and consolidate in one place

What are the foreseeable challenges and logistical requirements associated with this type of knowledge exchange initiative?

GROUP A

- Everybody is continually trying to do more with less!
- Shear amounts of data will be a challenge
- How do we fund this? Perhaps from industry, CAPP, government
- MONEY!
- Privacy issues of data sharing
- Maintenance of the knowledge exchange initiative

GROUP B

- Privacy/intellectual property
- Cost (cost must be less than benefits)
- Volume of information/management
- Data quality
- Buy in from various parties
- Liabilities
- There will be a push back from others doing data sharing (CEMA, OSRIN, ...)

GROUP C

- Buy in; stakeholders involvement. Where are the First Nations at this workshop?
- Communication
- Outcomes
- Liability
- Cost
- Proprietary/privacy
- Official languages
- Validation
- Compel industry to supply data
- It has to be voluntary
- How can it be used for promotion
- There has to be a drive; not just a carrot
- More security (\$ from Royalties) from industry to go to reclamation; to create a funding pool

GROUP E

- Defining the 'box'. What is reclamation?
- Funding longevity
- Gate-keeping
- MOU aspect who is in/who is out?
- Proprietary constraints

GROUP F

- Cost (Budget) – equipment, system development, people
- Desire – maintain interest
- Get funding from registered companies
- Who would do newsletter – Incentive – Identify heads of groups and discuss to help each other, get pertinent information
- How does this help me do my job

- Get list of participants in reclamation and what they do

GROUP G

- Proprietary information. What does it mean to be open and transparent? What are the boundaries? Proprietary information can drive innovation.
- Funding mechanism
- Need a dedicated group to organize and maintain the effort. Needs an intentional effort, will not happen on its own. Identify who will make a commitment. Can an existing group take it on (i.e., Alberta Land Use Knowledge Network)
- University role – Masters?? Agriculture program based on literature review
- Team approach – needs a suite of skills

Session #3 - ‘How’ theme continued

Is the concept of exchanging information, knowledge and/or data within the entire reclamation industry feasible?

“NO” RESPONSES

GROUP A

- Existing intellectual property

GROUP B

- Not without a defined scope
- Need to overcome IP, privacy, liability issues
- Not without a funding or revenue source

GROUP C

- Proprietary issues

GROUP D

- None reported

GROUP E

- None reported

GROUP F

- None reported

GROUP G

- Finance can be an issue
- Intellectual property
- Data sets ownership can be an obstacle in data dissemination
- Inventory paper base, data base to digital form can be challenging/expensive
- Intents/scope/model at the beginning should be clear and understood

“YES” RESPONSES

GROUP A

- ‘iRECLAIM’ – name of the tool
- May be able to tie into zones and land use framework
- Under very specific parameters. Would have to be well defined
- We have to make it work. It is in our best interests to do this well
- Yes, with conditions – phased in approach with dedicated resources
- Volunteer steering committee approach on a small scale
- We need to decide what information we want to use, format we want to display it in
- Need two processes – IT people and accumulating information (i.e., data collection group). Need to see how effective it is. Look at ongoing maintenance costs and to expansion (pilot for two years)
- Need to do a scan of potential data base options
- User friendly, need multiple ways of finding it (i.e., keyword, author, title, location)

- From the onset it needs to be public information and known that who is involved – benefit to reclamation in the long haul
- ‘That there is an economic benefit’

GROUP B

- If appropriate motivation for active participation (contribution to model)
- If a starting point is defined with intent to expand capabilities (start small)
- Need seed money to initiate tool and encourage participation (people resources)
- If promoted & messaged properly within industry, government, etc.
- If quality is assured and trusted
- If able to proceed under guidance of a steering committee to keep a specific focus
- If a paid committee is responsible for the initiative
- If able to use existing info from other initiatives without “reinventing the wheel”

GROUP C

- Yes, “BUT...”
- Full industry support required
- Cost/benefits to be determined
- Build it like a company
- Assurance to prevent potential liabilities/backlash
- Study other groups to learn from success/failures
- Funding: Government and Membership Dues

GROUP D

- How? Start small with one sector (i.e., oil sands or coal mines or in situ) then add the others once the structure works – tight focus then stage
- Start with in situ – future of production, standards higher, ties into purchasing?? seat based?? reclamation; lots of gaps. Big enough to start with then add modules
- Secondment ideal for people to lead, but government and energy will not give up staff – too much work
- In kind contributions to the structure from industry, government and consultants

- Some type of group structure to develop business plan – need time frame to maintain momentum
- Steering Committee – little time for people, some travel – ACR?? NADFC?? Once structure built then more difficult to get people to run
- Finance – good example. Took two years to get from idea to first initiative in place
- Liability issue?
- Not a pilot or demo – more a core then add layers to it like an onion
- Who leads? Who has a vested interest? There is an optics issue of who leads
- Multi-stakeholder holder Board to drive business plan – then form a director based stand-alone organization. One of the stakeholders to provide a ‘broom closet’ to get started
- CLRA could host. They are an ‘honest broker’. No vested interest, have a national reputation and a good network of people
- Funding sources – private and public. NSERC?? – College – University collaboration program for three years
- Initial funding from government or universities? After 2 to 3 years must be self-sustaining
- User funded at different levels guaranteeing different right access

GROUP E

- Yes, if defined scope, scale at reasonable rate
- Yes, if there is a willingness
- Yes, if there is enough buy-in in a MOU/Charter
- Define who is going to do the work
- Yes, if we are all on the same page
- Yes, if you sell it right, participants need to see the benefits

GROUP F

- How – establish house
- All examples suggested are needed
- Cost factor

GROUP G

- It will be feasible because it delivers value to the reclamation community
- There is a logistical challenge
- Should not duplicate already existing entities (OSRIN, ESAA etc.)
- Existing associations can be used to accommodate distribution of the reclamation knowledge. Existing entities should be approached to check what their interests/concerns to do this are. A model should then be proposed on how to share knowledge
- Organizations like the Alberta Soil Science Workshop can be checked to see if they can contribute to hosting the reclamation knowledge network
- Regulators (AEW) can ‘push’ industry/consultants to submit data in a certain format to enable to input the searchable data base
- Baseline data should be made open to the public

LIST OF OSRIN REPORTS

OSRIN reports are available on the University of Alberta's Education & Research Archive at <https://era.library.ualberta.ca/public/view/community/uuid:81b7dcc7-78f7-4adf-a703-6688b82090f5>. The Technical Report (TR) series documents results of OSRIN funded projects. The Staff Reports series represent work done by OSRIN staff.

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