

Welcome!

We'll start at 9am MT



While you have a moment:

Check out the **Closure & Reclamation 101 Introduction Video** sent to you ahead of the workshop

Tech issues?

Contact **Rebecca Lafontaine** (+1 819 209 0309 text / rlafontaine@stratos-sts.com)

Music: Leela Gilday; North Star Calling Album (2019)

Land and Water Boards of the
Mackenzie Valley

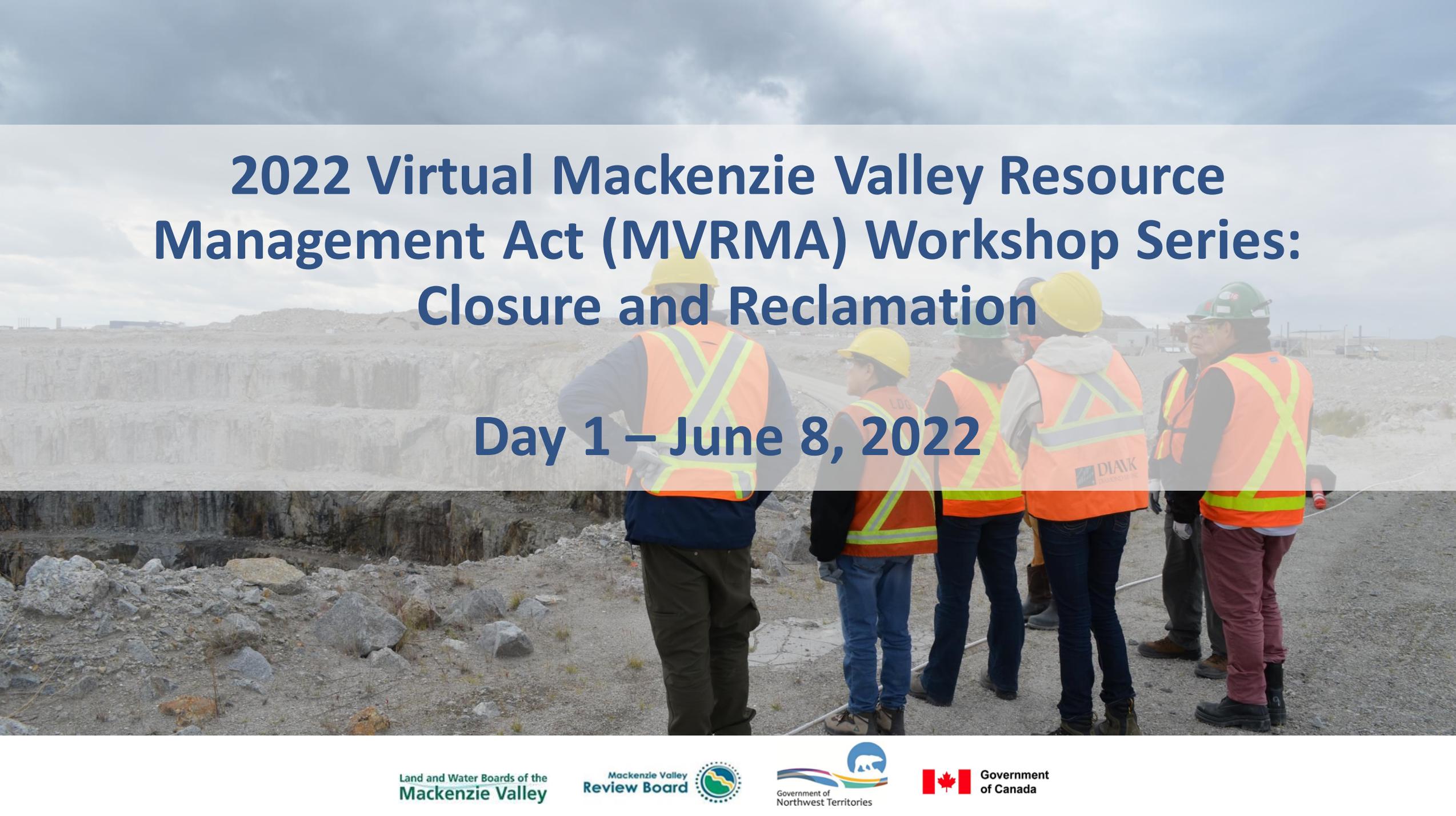
Mackenzie Valley
Review Board



**Government
of Canada**

2022 Virtual Mackenzie Valley Resource Management Act (MVRMA) Workshop Series: Closure and Reclamation

Day 1 – June 8, 2022



Meet the Team!

Stratos Delivery Team:

Michael van Aanhout, Facilitator

Julia Ierullo, Notetaker

Rebecca Lafontaine, Tech Support

MVRMA Workshop Planning Committee:

Sarah Elsasser (WLWB)

Ryan Fequet (WLWB)

Mark Cliffe-Phillips (MVEIRB)

Eileen Marlowe (MVEIRB)

Kate Mansfield (MVEIRB)

Tanya Lantz (MVLWB)

Shelagh Montgomery (MVLWB)

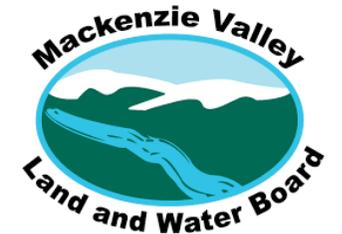
Jody Pellissey (WRRB)

Malorey Nirlungayuk (GNWT)

Melissa Pink (GNWT)

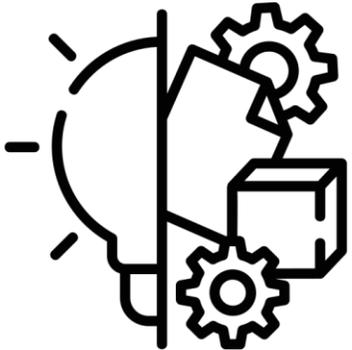
Marcy MacDougall (CIRNAC)

Michelle Lewis (CIRNAC)



Purpose of the MVRMA Closure and Reclamation Workshop

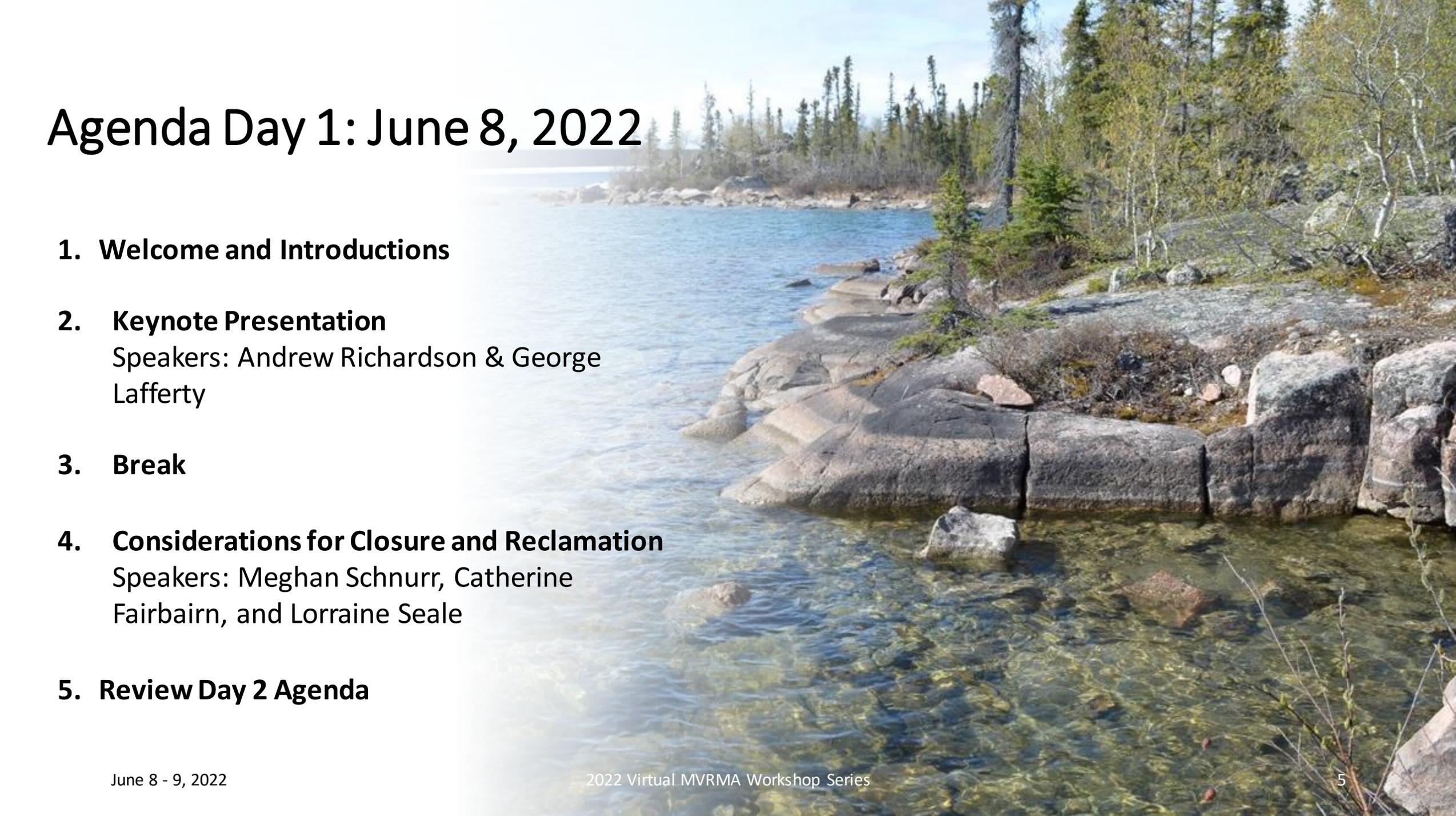
The purpose of this workshop series is to help familiarize participants with the co-management and integrated system of land and water management established through the MVRMA.



Share knowledge, ideas and experiences on existing co-management processes with regard to closure and reclamation.

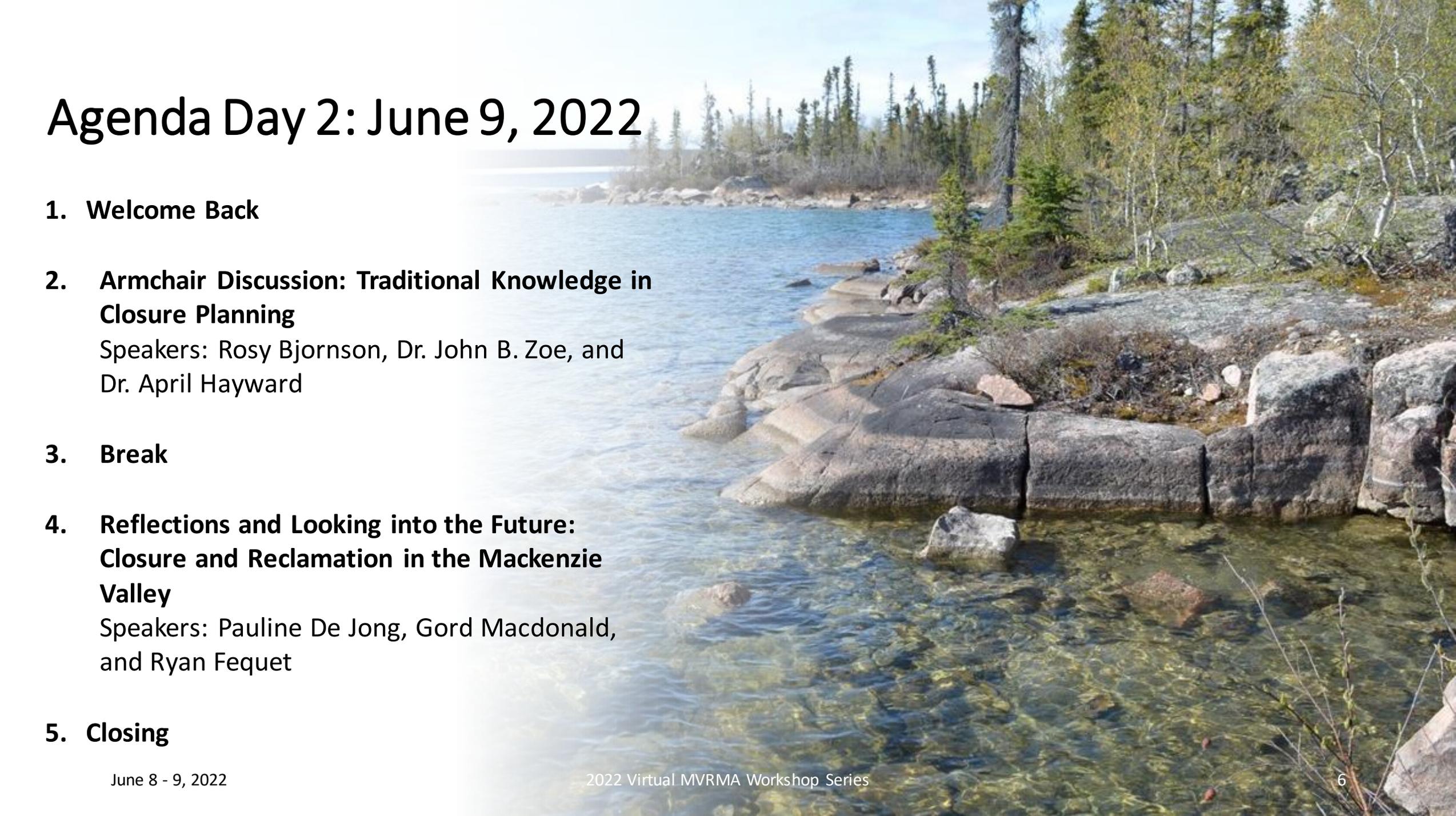
Provide information on current closure and reclamation-related initiatives, projects, and opportunities for engagement.

Agenda Day 1: June 8, 2022



- 1. Welcome and Introductions**
- 2. Keynote Presentation**
Speakers: Andrew Richardson & George Lafferty
- 3. Break**
- 4. Considerations for Closure and Reclamation**
Speakers: Meghan Schnurr, Catherine Fairbairn, and Lorraine Seale
- 5. Review Day 2 Agenda**

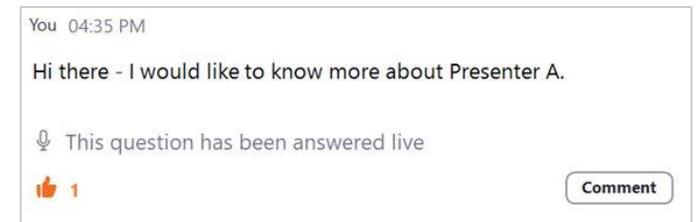
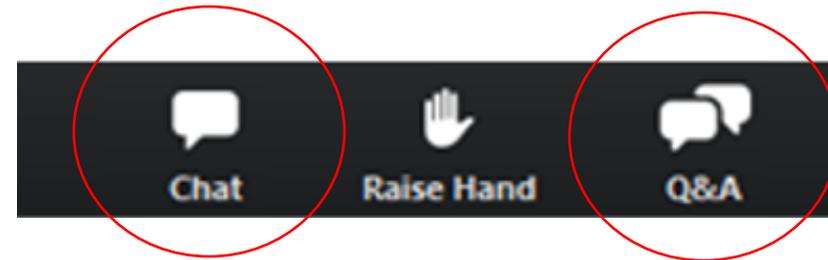
Agenda Day 2: June 9, 2022



1. **Welcome Back**
2. **Armchair Discussion: Traditional Knowledge in Closure Planning**
Speakers: Rosy Bjornson, Dr. John B. Zoe, and Dr. April Hayward
3. **Break**
4. **Reflections and Looking into the Future: Closure and Reclamation in the Mackenzie Valley**
Speakers: Pauline De Jong, Gord Macdonald, and Ryan Fequet
5. **Closing**

How to engage in our Zoom Webinar Today!

- **Chat:** Use this for informal conversations; share your info when prompted
- **Q&A:** Use this for submitting a question for a speaker/panelist at anytime
 - Use the **‘thumbs up’ button** if you agree to someone else’s question to vote it up
 - We will not be able to answer all questions during this webinar, but all questions and comments will be reviewed



Perspectives on Closure and Reclamation Processes for Colomac



Andrew Richardson
Project Officer, CIRNAC



George Lafferty
Community Consultation Officer,
CIRNAC



Crown-Indigenous Relations
and Northern Affairs Canada

Relations Couronne-Autochtones
et Affaires du Nord Canada



MVRMA Virtual Series Colomac Remediation Project

June 8-9, 2022

Presented by: Andrew Richardson and George Lafferty



Canada

Presentation Overview

An aerial photograph of an industrial site, likely a mine or processing plant. The site features a large, multi-tiered tailings dam in the background, several large industrial buildings with light-colored roofs in the middle ground, and a body of water in the foreground. The surrounding area is a mix of forested land and cleared areas.

- Traditional Land Use
- Mine History
- Project History
- Project Partnership
- Capacity Building
- Project Closure and Celebration



Colomac Remediation Project

Traditional Land Use

The Indin (“Indian”) Lake area has been used extensively by the Tłı̨ch̨o since time immemorial

Bathurst/Bluenose caribou herds have sustained generations of Tłı̨ch̨o as a primary food source, as well as providing clothing and shelter

The area was also used extensively for trapping, hunting, fishing and gathering

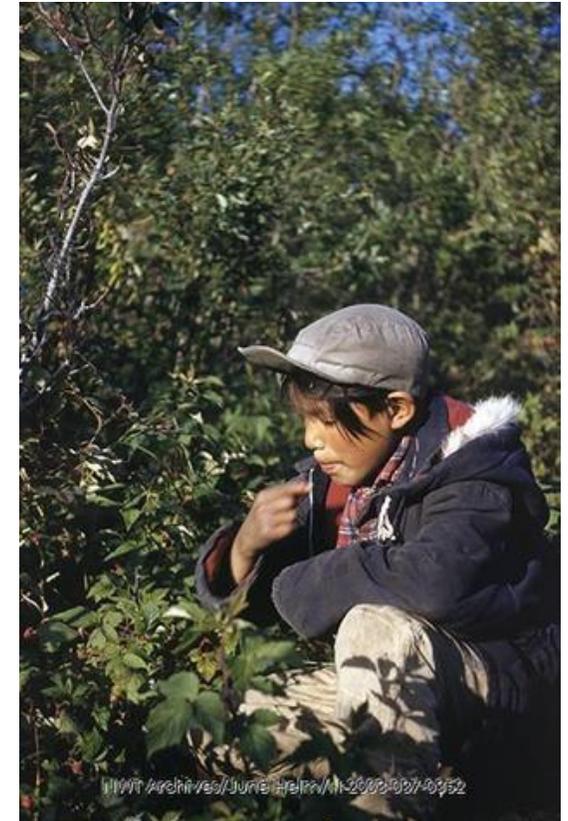
https://research.tlicho.ca/sites/default/files/watch_everything_a_methodology_for_boots_on_the_ground_caribou_monitoring.pdf



Silcock, K 2008



NWIT Archives/June Helm/n-2003-037-0348



NWIT Archives/June Helm/n-2003-037-0352

<https://gnwt.accesstomemory.org/n-2003-037-0352>





Colomac Remediation Project



Mine History

- Open pit mine
- 10,000 TPD mill
- Average grade 0.05 opt
- 535,000 troy oz recovered

- **35 M tonnes** waste rock
- **11 M tonnes** tailings





Colomac Remediation Project

Colomac at Abandonment c. 1999 ...



- Cyanide-impacted tailings ponds
- Poorly constructed tailings dams
- Wind blown tailings
- PHC-impacted soils and lake sediments
- Mill chemical contamination at surface





Colomac Remediation Project

April 1 1999
AANDC
Assumes
Colomac Site

1999-2002
Care &
Maintenance

2002-2005
Site Clean up
and
Remediation
Planning

2005-2011
Full Scale
Remediation

2011- present
Closure and
Monitoring





Colomac Remediation Project

Early Care & Maintenance





Colomac Remediation Project

Building the Partnership





Colomac Remediation Project

Site Tours & Meetings



Plate 3. Mine Inspection by the Dogrib First Nation and DIAND





Colomac Remediation Project

Remedial Action Plan Development

Agenda for the DIAND Evaluation of Remedial Options for Colomac Mine April 9, 10 & 11

April 9, 2003 (9:00 am to 5:00 pm)

1. Welcome and Introductions (Marc Lange)
2. Colomac Site Update (Scott Mitchell, Octavio Melo, Bill Cody & Emma Pike)
3. Objectives and Goals for Colomac (Octavio Melo)
4. Evaluation Framework (Lisa Dyer/Giselle Cotta)
5. Evaluation Guidelines (Lisa Dyer)
6. Understanding of Water Management Problem (Daryl Hockley/John Chapman)





Colomac Remediation Project

Remedial Options Planning





Colomac Remediation Project

Remedial Options Selection Process

Mine Component	Remedial Options Work-out (50% Remedial Action Plan)					Selected Remedial Option		
	Option 1 No Action	Option 2 Technical Option	Option 3 Technical Option	Option 4 Technical Option	Option 5 Technical or Hybrid Option	75% RAP	90% RAP	Details
Concrete – Mill Pad								
Concrete – Other Foundations								
Mine Openings (Vent Raises, Adit)								
Trenches (REX)								
Non-Hazardous Waste								





Colomac Remediation Project

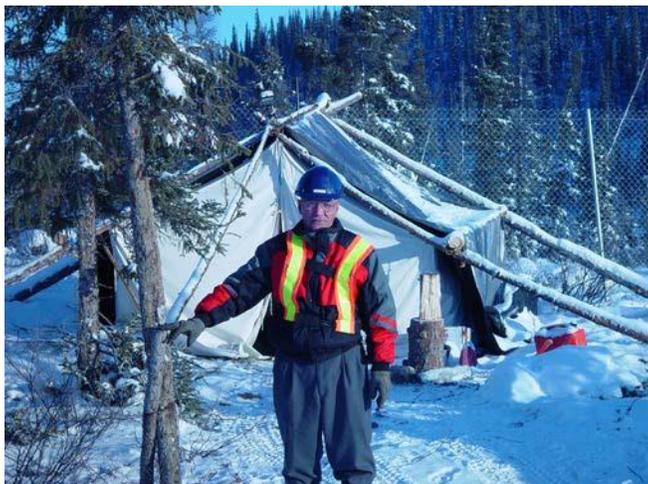
Regulatory Process





Colomac Remediation Project

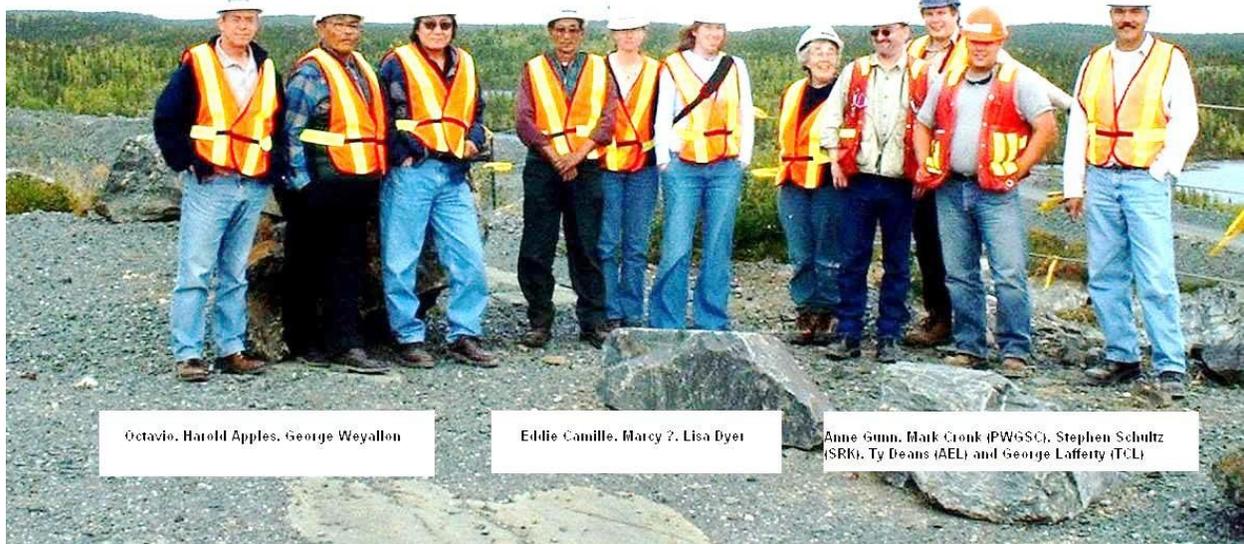
Tłıchǫ – Guided Wildlife Management Program - Caribou Fence Project





Colomac Remediation Project

Tłı̨ch̨o - Guided Caribou Management Program



Octavio, Harold Apples, George Weyallen

Eddie Camille, Marcy Z, Lisa Dyer

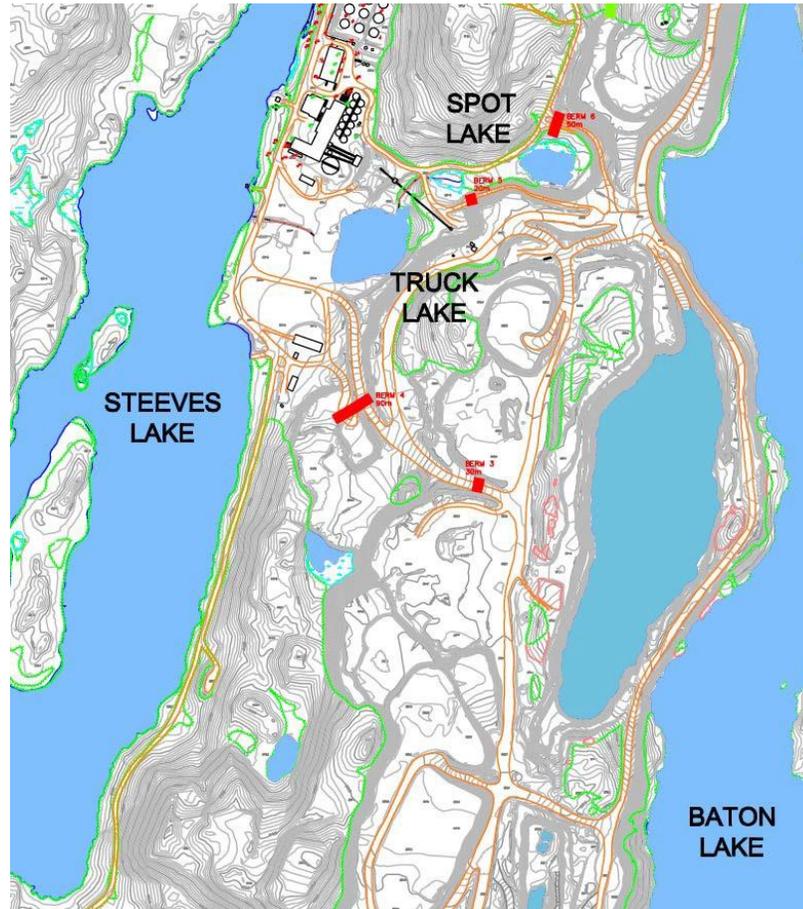
Anne Gunn, Mark Cronk (PWGSC), Stephen Schultz (SRK), Ty Deans (AEL) and George Lafferty (TCL)





Colomac Remediation Project

Caribou Pathways





Colomac Remediation Project

Fish Tasting and Palatability





Colomac Remediation Project

Capacity Building – OTJ and Mentorship





Colomac Remediation Project

H&S Training





Colomac Remediation Project

Tłı̨ch̨o Science Camps





Colomac Remediation Project

Project Completion Commemorative Monument - 3 plaques for 3 phases:

1. Pre-Development

2. Mine Operations

3. Site remediation & closure





Colomac Remediation Project



Colomac Remediation Project 1999-2011

Projet d'assainissement de Colomac 1999-2011

K'ààti Siinago?j Weghàlahoda 1999-2011

Eddie Paul Rabesca

Thank you for your contribution towards the cleanup of the Colomac Mine site

Merci pour votre contribution à l'assainissement de la mine Colomac

K'ààti Sqòmbak'è Siinagodlee t'à goxè eghàlaneedà gha masì ts'jwo





Colomac Remediation Project

Post Closure Monitoring Program 2012 - present





Colomac Remediation Project

LTMP Training Program – Awards Ceremony 2017





Colomac Remediation Project

Masi cho

Questions?





Let's Hear From You!

Share one abandoned mine that you know of

1

Open a web
browser on your
phone or
computer

2

Go to
www.menti.com
and Enter code
4978 8639

3

Or use QR code



Let's Hear From You!

What lessons could be learned from the Colomac mine site and be applied elsewhere?

1

Open a web browser on your phone or computer

2

Go to www.menti.com and Enter code **4978 8639**

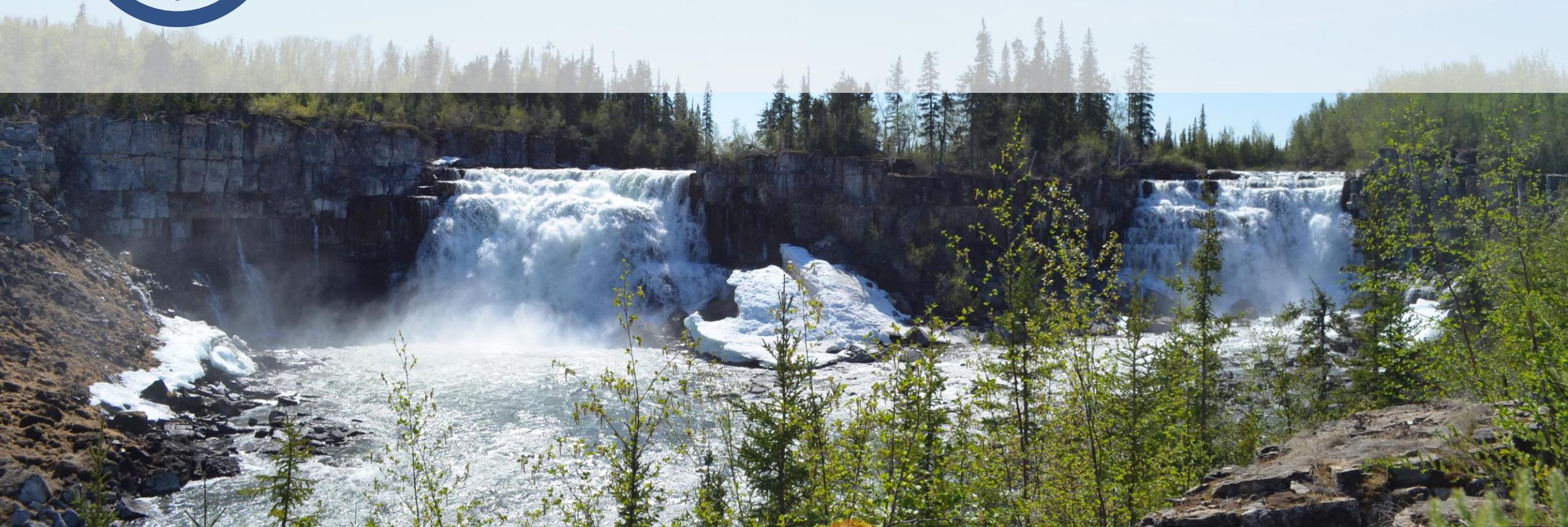
3

Or use QR code





Let's take a short break!



Considerations for Closure and Reclamation Guest Speakers



Catherine Fairbairn

Environmental Assessment Officer,
Mackenzie Valley Environmental Review
Impact Board



Meghan Schnurr

Senior Technical Advisor,
Wek'èezhìi Land and Water Board



Lorraine Seale

Director, Securities and Project
Assessment,
GNWT Department of Lands

Considering Closure during Environmental Assessment

MVRMA Workshop 2022

Catherine Fairbairn

Senior Environmental Assessment Officer

Mackenzie Valley Environmental Impact Review Board

cfairbairn@reviewboard.ca



What does the Review Board do?

- Environmental assessments in the Mackenzie Valley
- Look at the project and consider what impacts there might be



Review Board Legislative Responsibility



CONSOLIDATION

Mackenzie Valley Resource
Management Act

S.C. 1998, c. 25

CODIFICATION

Loi sur la gestion des
ressources de la vallée du
Mackenzie

L.C. 1998, ch. 25

Must consider:

- The environment
- Social, cultural, and economic well-being
- Way of life of Indigenous Peoples

Current to November 21, 2016

Last amended on September 1, 2016

À jour au 21 novembre 2016

Dernière modification le 1 septembre 2016

Published by the Minister of Justice at the following address:
<http://laws-lois.justice.gc.ca>

Publié par le ministre de la Justice à l'adresse suivante :
<http://lois-laws.justice.gc.ca>



Legacy sites and lasting contamination

Giant

Rayrock

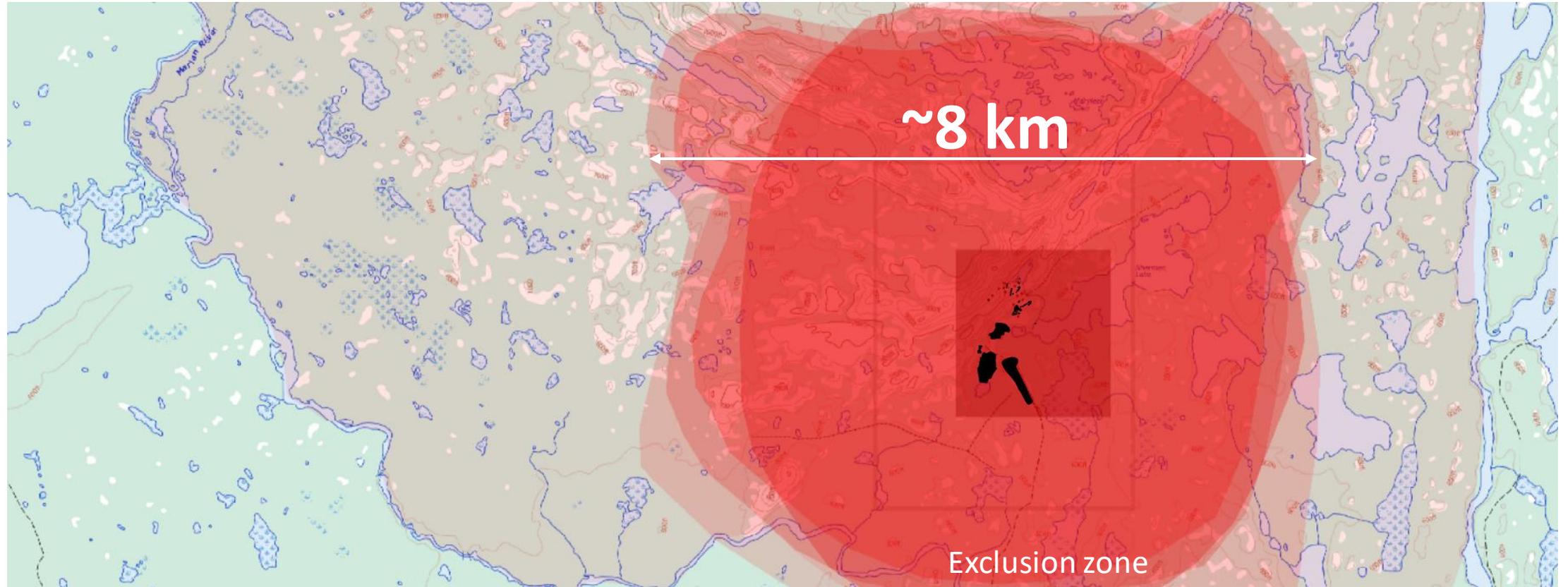
Pine Point



Giant Mine



Rayrock Mine



Pine Point Mine



Challenges of assessing closure in EA

- Closure is a long ways off
- Future conditions are unknown
- Projects change
- Don't want to limit technology choice in the future
- Some projects don't have a closure period



How does the Review Board assess closure?

- High-level, considers
 - Evidence from developer, like a conceptual closure and reclamation plans
 - Evidence from parties about impacts and mitigation during closure
- Focuses on goals and objectives of closure related to:

Sustainable
communities
and
landscape

Lasting
well-being

Way of life of
Indigenous
Peoples



Asking the right questions

Where should waste rock or waste products be stored?

What will the site look like up close and from a distance?

How will the site be used after closure?

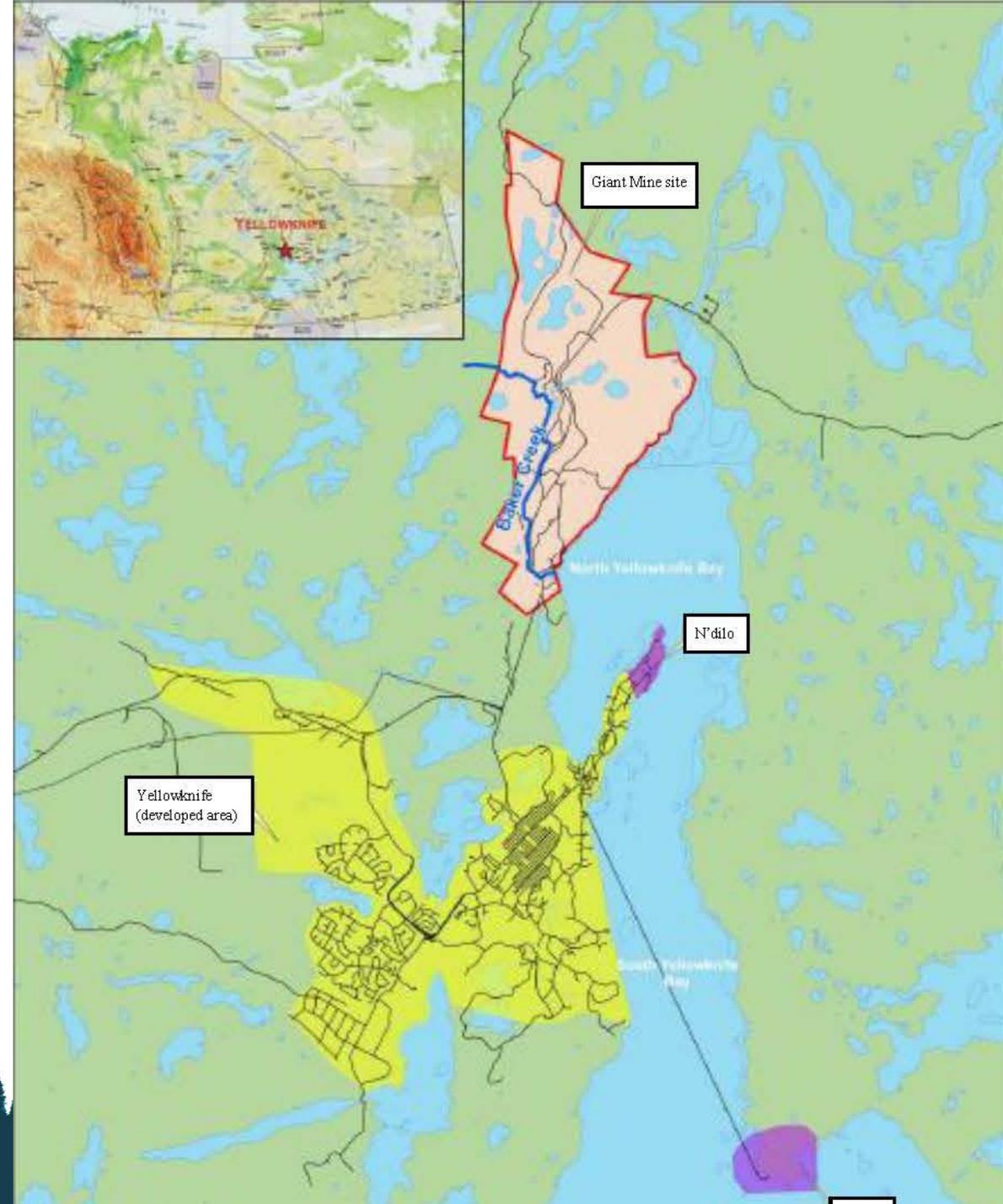
Long-term (perpetual) care of infrastructure?

What is the role of local stewardship and monitoring into the future?



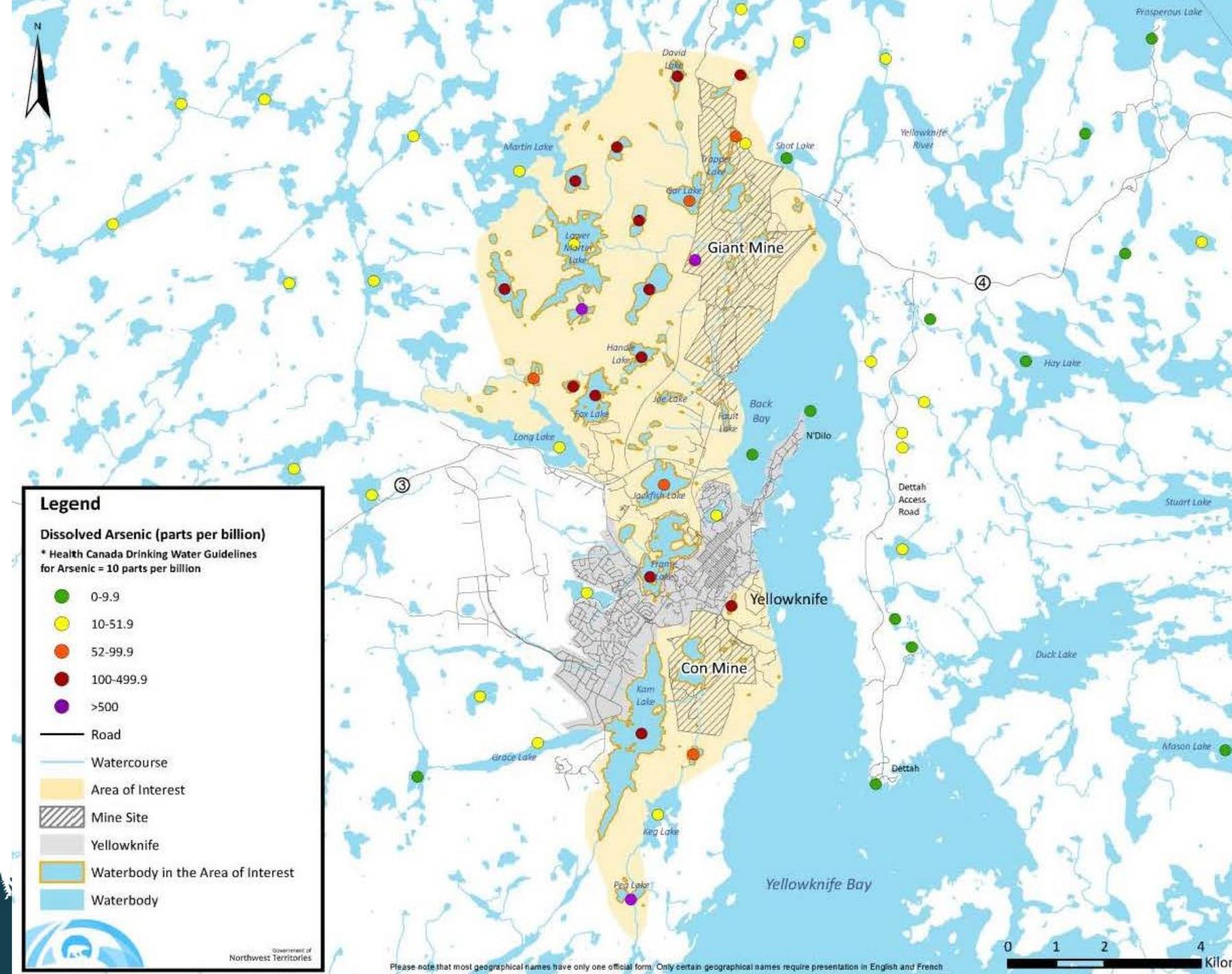
Case Study: Giant Mine

- Gold mine that operated for over 50 years
- Widespread arsenic contamination
- After bankruptcy, the mine reverted to federal care for closure



“Protect public health. Keep people safe. Don't make us live with the anxiety of the ‘what if’”

“...all residents... deserve to trust that our health and interests are looked after by the responsible entities, and that the land and water will not poison us.”



Case Study: Processed Kimberlite storage at Diavik



- Diamond mine on Lac de Gras
- Proposed putting excess tailings in pits





Lessons learned for future EAs



Talk about what acceptable closure looks like



Support the LWBs by helping to identify closure goals and objectives



Alternatives analysis and risk assessment



Be clear about what the permanent features of closure will be



Carefully consider social and cultural impacts



Conclusion



Masi! Thank You!

Catherine Fairbairn
cfairbairn@reviewboard.ca



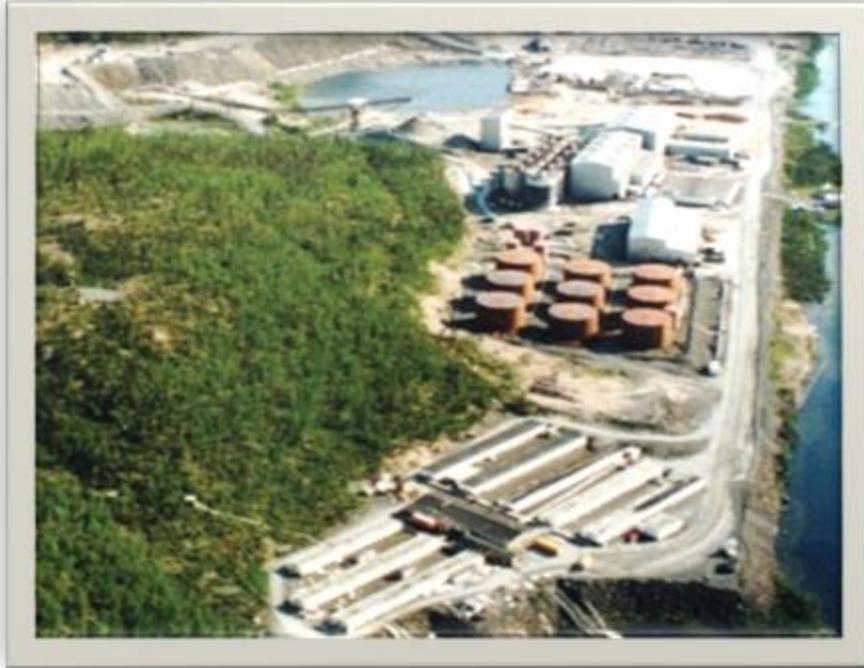
Land and Water Boards of the Mackenzie Valley

Expectations for Closure & Reclamation Planning



Closure and Reclamation

Land and Water Boards of the
Mackenzie Valley



Laws, Regulations, and Policy

Land and Water Boards of the Mackenzie Valley



<p>FIFTH SESSION SEVENTENTH LEGISLATIVE ASSEMBLY OF THE NORTHWEST TERRITORIES</p> <p>BILL 14</p> <p>WATERS ACT</p> <p>Summary</p> <p>This Bill substantially amends the Northwest Territories Waters Act (Canada) in accordance with the requirements of the Northwest Territories Lands and Resources Devolution Agreement.</p>					<p>WATERS ACT</p> <p>WATERS REGULATIONS</p> <p>The Commissioner in Executive Council, under section 6.1 of the <i>Waters Act</i> and every enabling power, makes the <i>Waters Regulations</i>.</p> <p>INTERPRETATION</p> <p>1. In these regulations,</p> <p>"Act" means the <i>Waters Act</i>; (<i>Loi</i>)</p> <p>"groundwater" means all water in a zone of saturation beneath the land surface, regardless of its origin; (<i>eau souterraine</i>)</p> <p>"undertaking" means an undertaking in respect of which water is to be used or waste is to be deposited, of a type set out in Schedule B; (<i>entreprise</i>)</p> <p>"watercourse" means a natural watercourse, body of water or water supply, whether usually containing water or not, and includes groundwater, springs, swamps and gulches; (<i>cours d'eau</i>)</p> <p>WATER MANAGEMENT AREAS</p> <p>2. The geographical areas of the Northwest Territories set out in Schedule A are established as water management areas.</p> <p>APPLICATION</p> <p>3. These regulations apply in respect of the water management areas established under section 2.</p>					<p>CONSOLIDATION</p> <p>Mackenzie Valley Resource Management Act</p> <p>S.C. 1998, c. 25</p> <p>Current to July 22, 2014</p> <p>Last amended on April 1, 2014</p> <p>Published by the Minister of Justice at the following address: http://laws-lois.justice.gc.ca</p>					<p>CONSOLIDATION</p> <p>Mackenzie Valley Land Use Regulations</p> <p>SOR/98-429</p> <p>Current to June 17, 2020</p> <p>Last amended on June 20, 2017</p> <p>Published by the Minister of Justice at the following address: http://www.laws.justice.gc.ca</p>					<p>CODIFICATION</p> <p>Règlement sur l'utilisation des terres de la vallée du Mackenzie</p> <p>DORS/98-429</p> <p>À jour au 17 juin 2020</p> <p>Dernière modification le 20 juin 2017</p> <p>Publié par le ministre de la Justice à l'adresse suivante: http://lois-laws.justice.gc.ca</p>				
<p>DISPOSITION</p> <table border="1"> <thead> <tr> <th>Date of Notice Date de l'avis</th> <th>1st Reading</th> <th>2nd Reading</th> <th>To Committee Au Comité</th> <th>Chap Pres</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>					Date of Notice Date de l'avis	1 st Reading	2 nd Reading	To Committee Au Comité	Chap Pres															
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Indian and Northern Affairs Canada / Affaires indiennes et du Nord Canada

MINE SITE RECLAMATION POLICY FOR THE NORTHWEST TERRITORIES

Canada

What's the LWB Role?

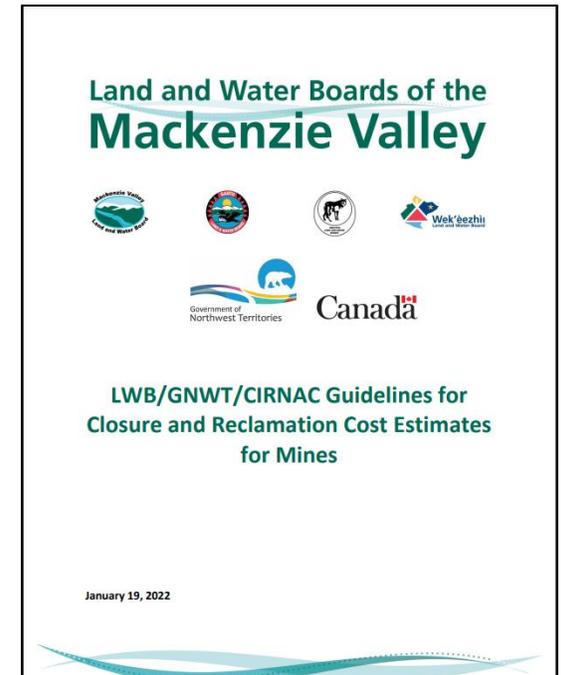
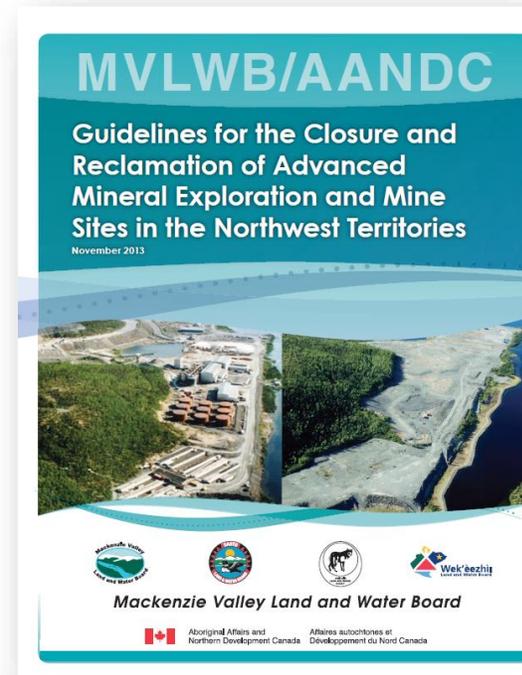
- Set out Licence/Permit requirements
- Approve submissions required by the Licence/Permit
- Determine amount of security deposit

The image shows two overlapping forms from the Wek'eezhii Land and Water Board. The top form is a 'Licence (Standard Rate Use)' for a water licence in the Northwest Territory, effective from July 30, 2013, to August 28, 2014. The bottom form is a 'Licence/Permit' for a water licence, also in the Northwest Territory, with a security deposit of \$10,000.00. Both forms include the Wek'eezhii logo and contact information.

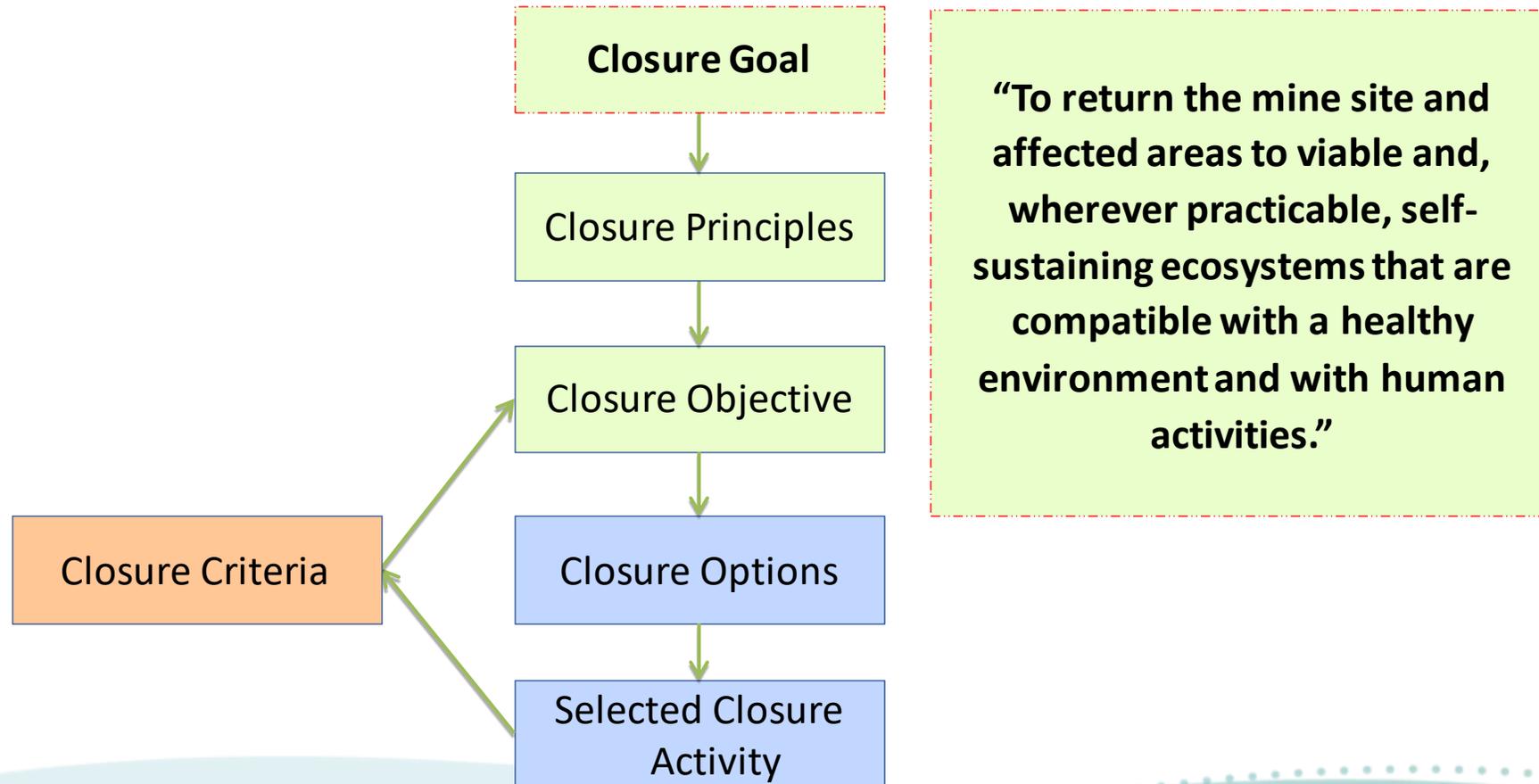
Closure Planning

- What is a Closure and Reclamation Plan?
- How are closure activities selected?
- What do closure activities aim to achieve?
- How will we know closure has been successful?

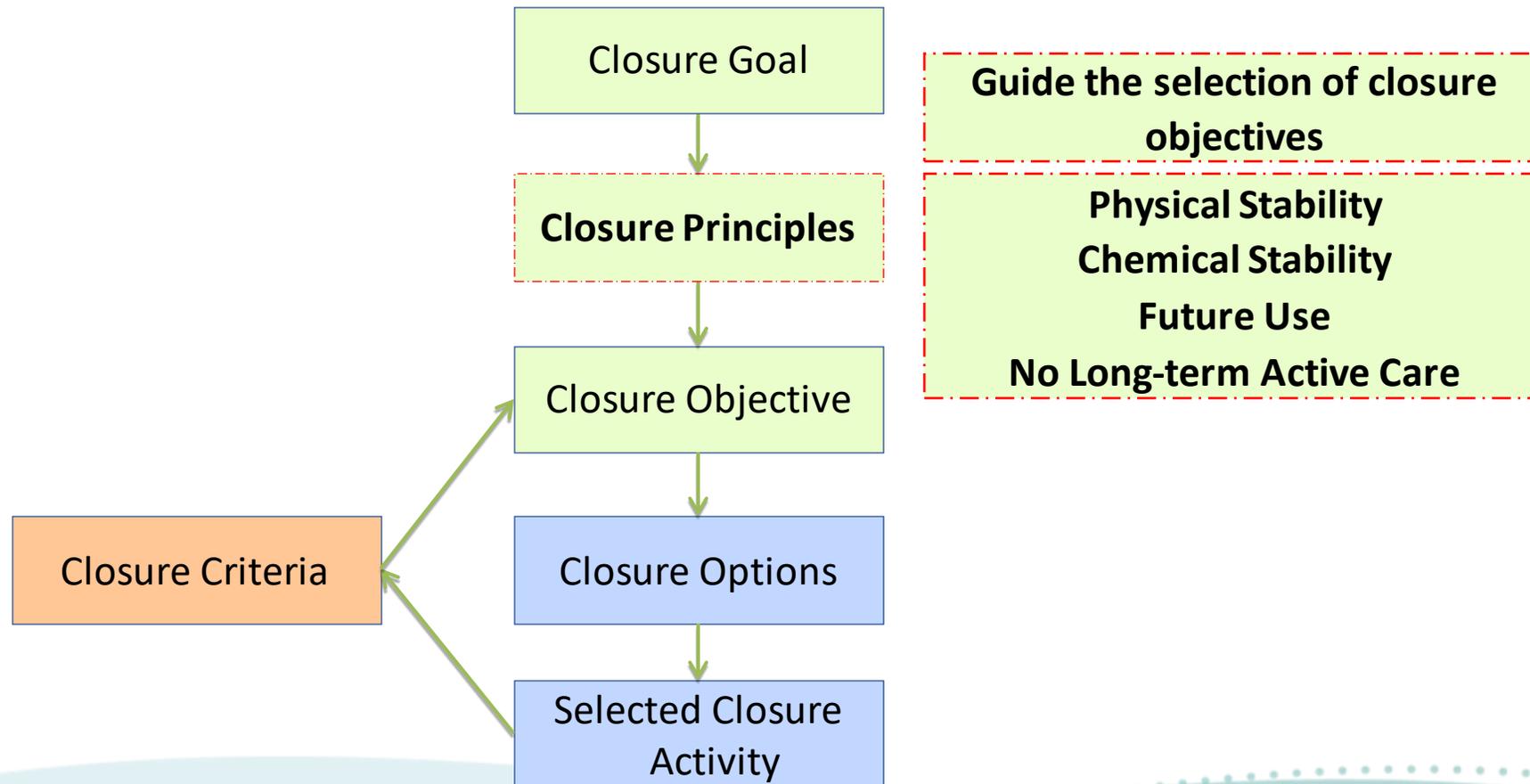
Land and Water Boards of the Mackenzie Valley



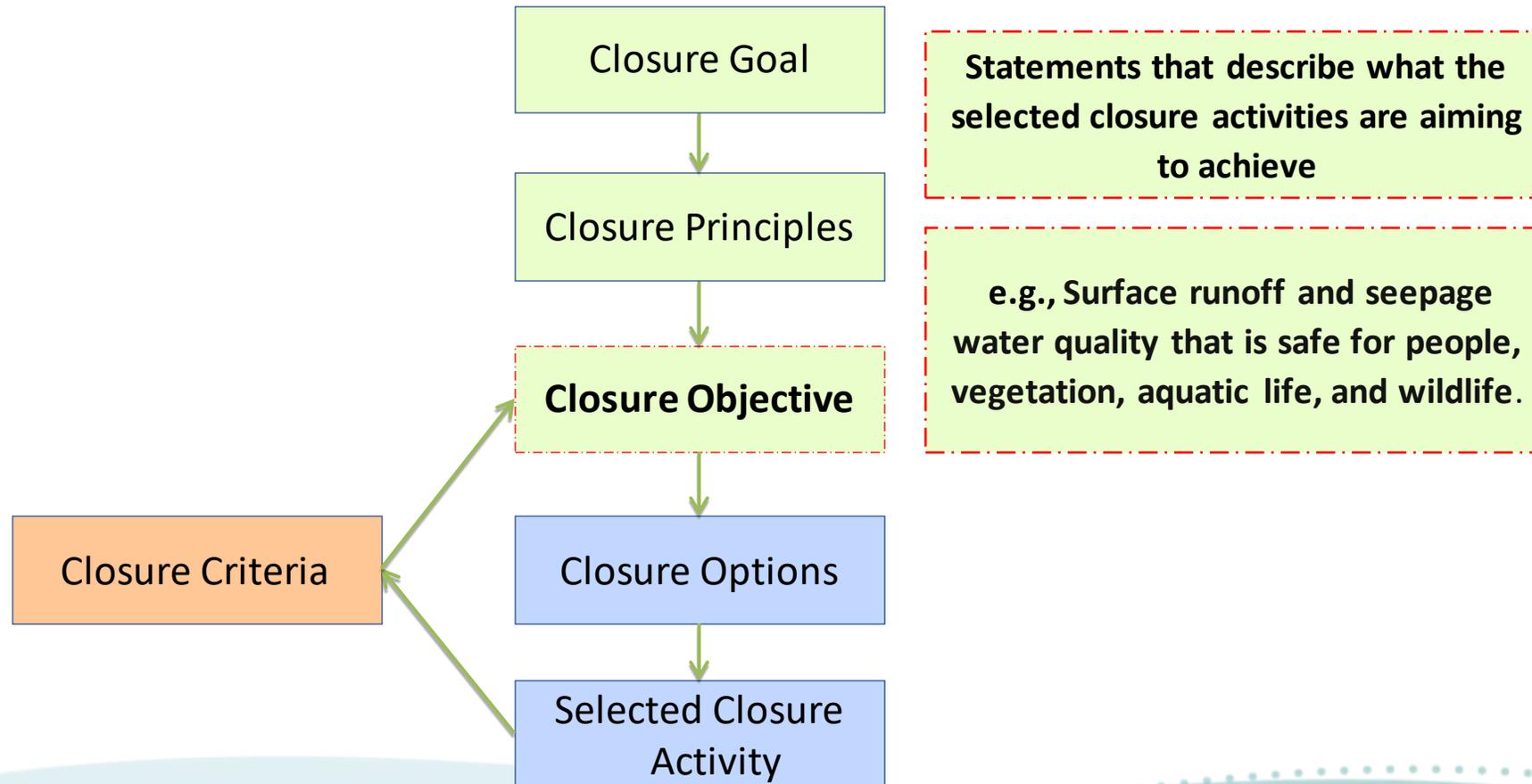
Objectives-Based Approach to Closure Planning



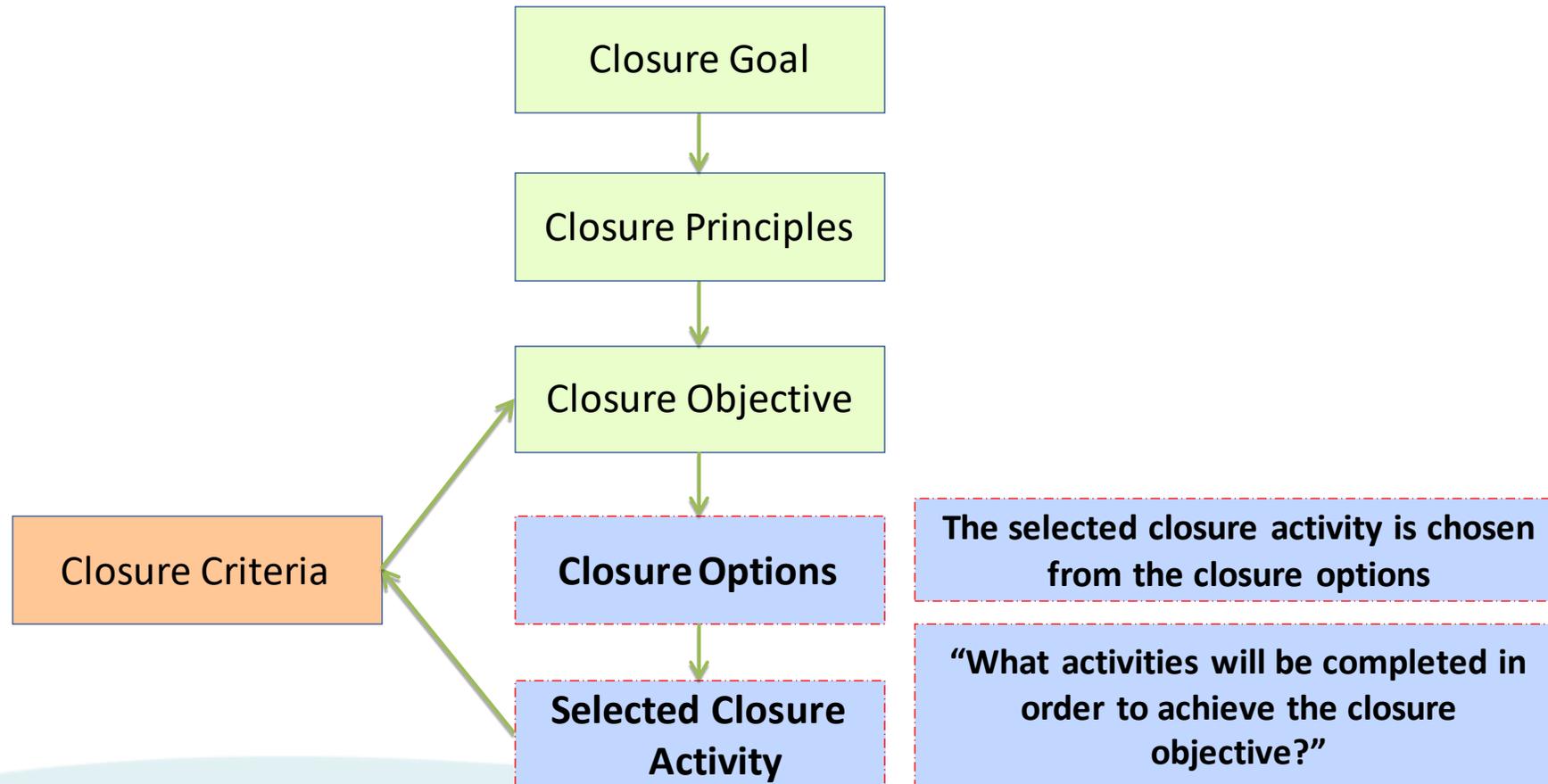
Objectives-Based Approach to Closure Planning



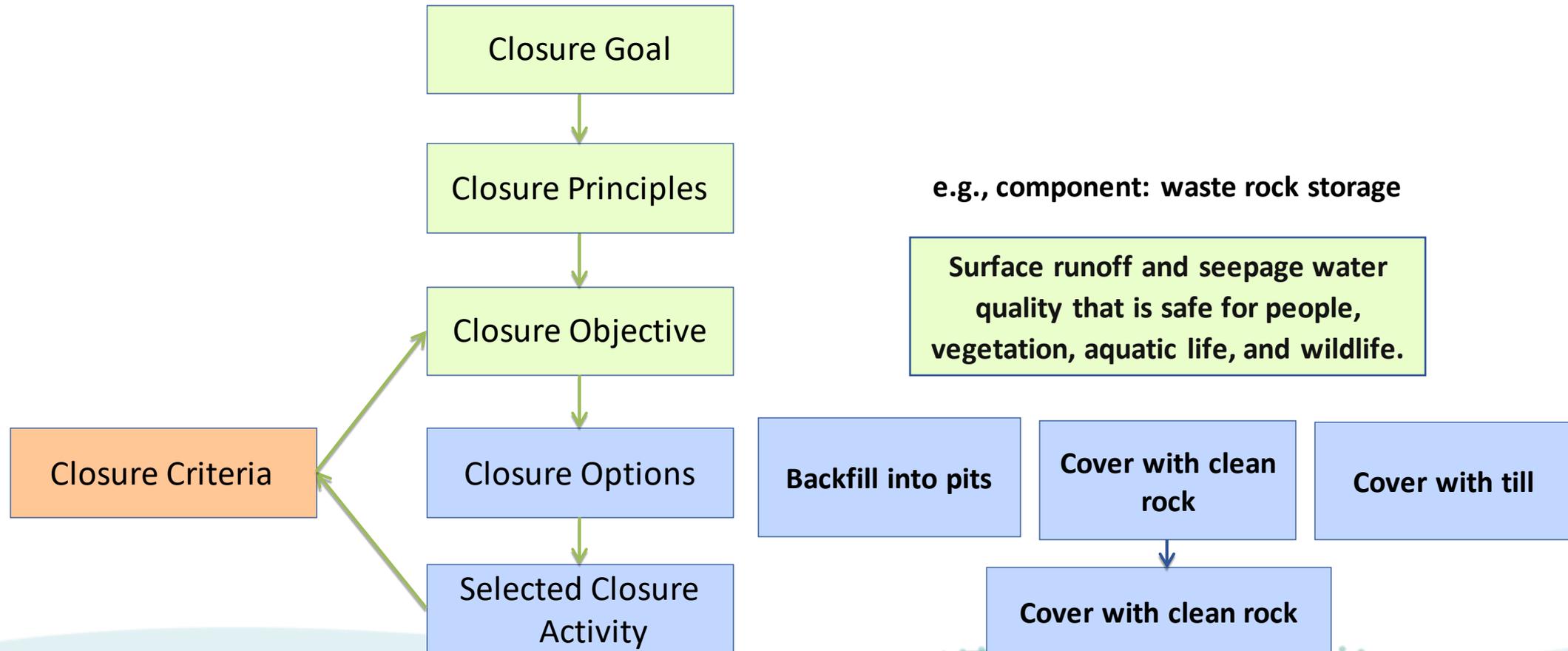
Objectives-Based Approach to Closure Planning



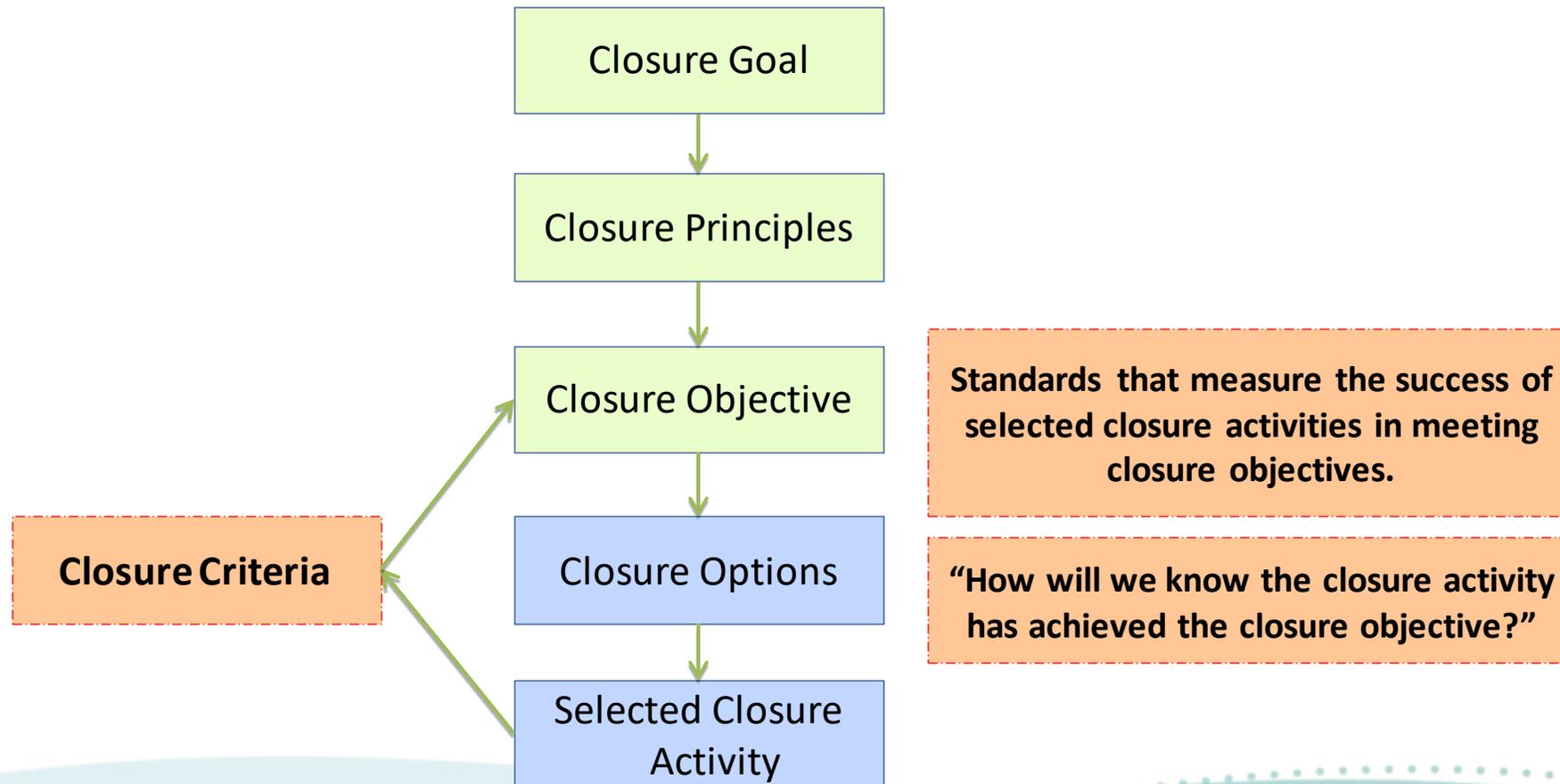
Objectives-Based Approach to Closure Planning



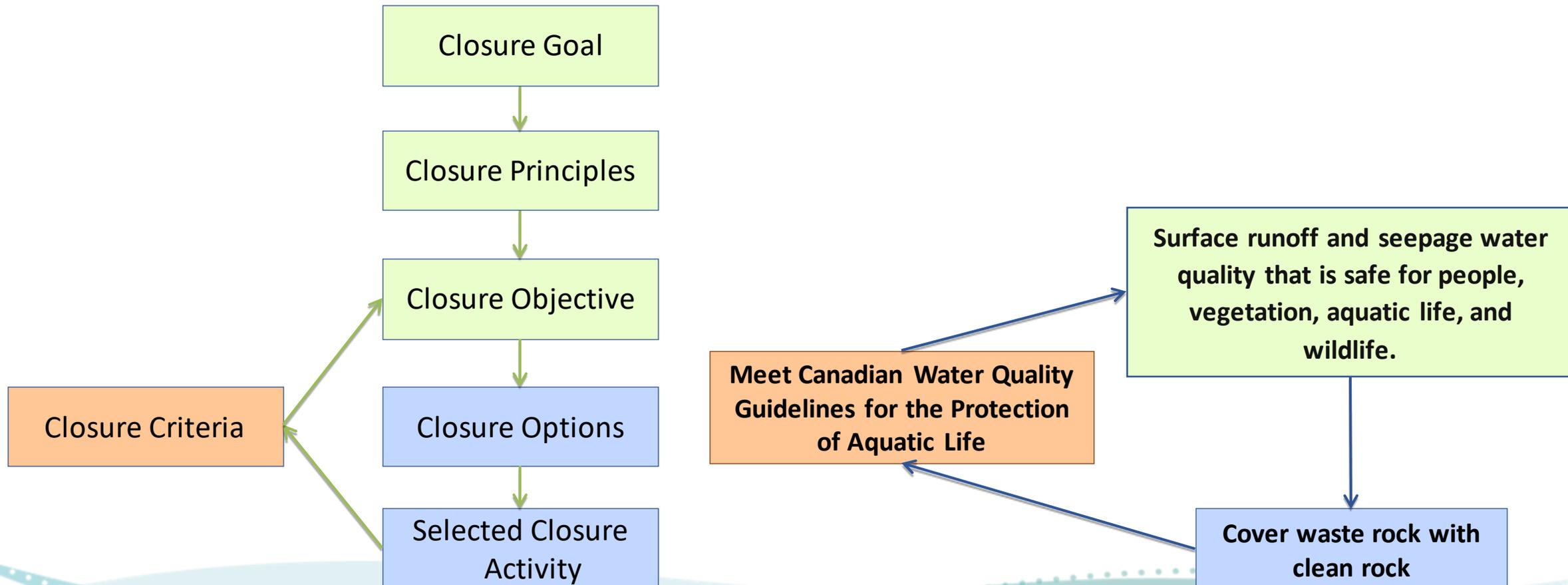
Objectives-Based Approach to Closure Planning



Objectives-Based Approach to Closure Planning

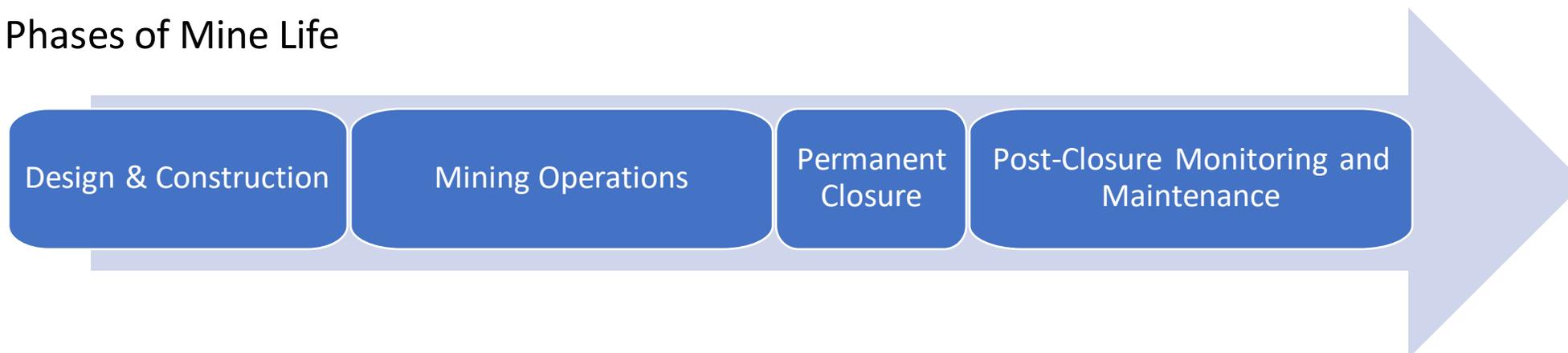


Objectives-Based Approach to Closure Planning

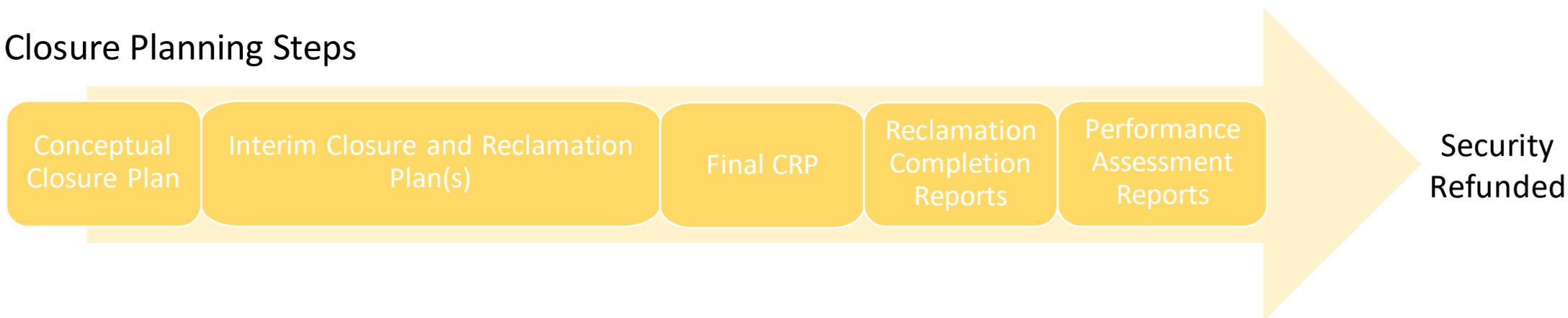


Closure Planning throughout the Project Life

Phases of Mine Life



Closure Planning Steps

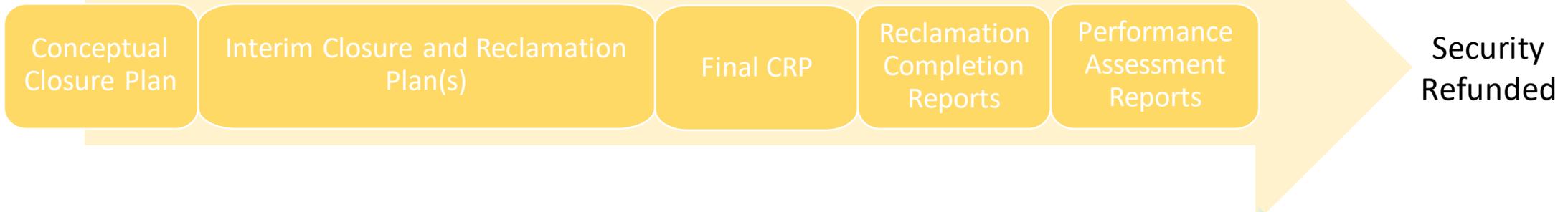


Closure Planning throughout the Project Life

Mine Life

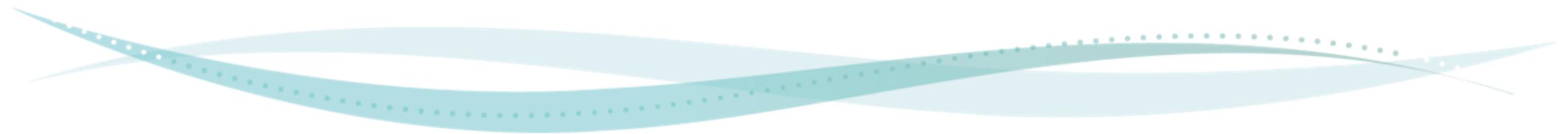


Closure Planning



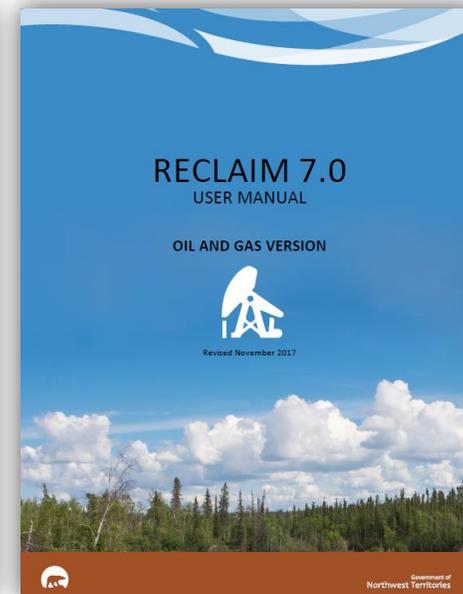
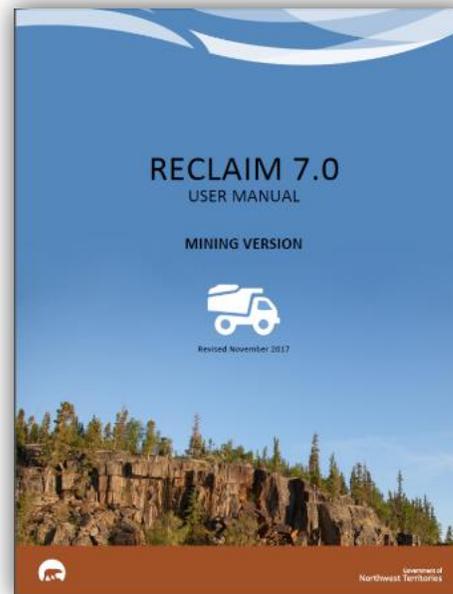
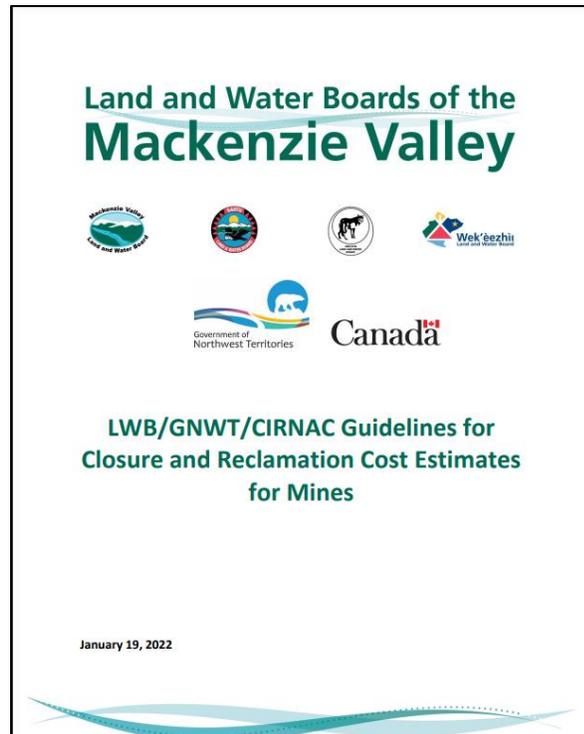
Progressive Reclamation

- Takes advantage of cost and operating efficiencies;
- Opportunities for learnings;
- Shortens the timeframe for achieving the closure objectives post-closure; and
- Opportunity to reduce the site liability/security.



Guidance Related to Security

Land and Water Boards of the Mackenzie Valley



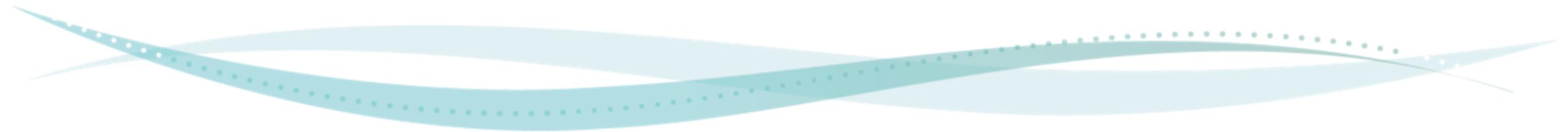
Changes to Security

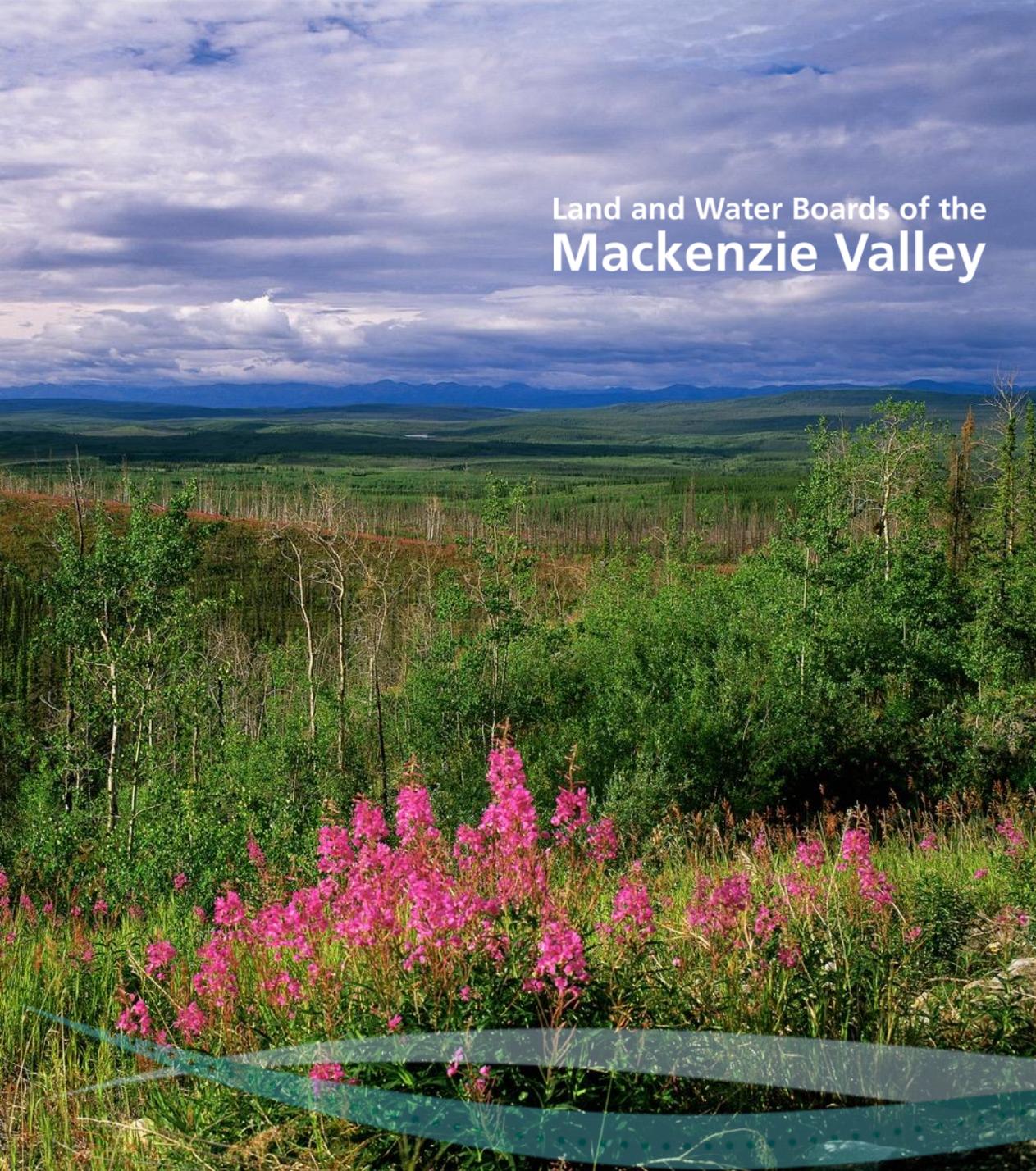
Land and Water Boards of the
Mackenzie Valley



Throughout the life of a Project security may change:

- a) Change to Project;
- b) Change in Closure Plan;
- c) Change in associated closure costs; and/or
- d) Progressive Reclamation.



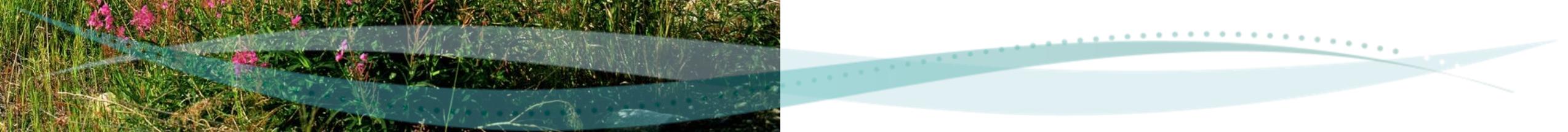


Land and Water Boards of the
Mackenzie Valley

Masi cho!

“Experience shows that closure is as much a managerial and stakeholder engagement issue as it is a technical one, requiring the continual testing of assumptions and recommendations to match evolving conditions and expectations.”

International Council on Mining and Metals





Reclamation Securities Management: Overview

Lorraine Seale, GNWT Department of Lands

MVRMA Workshop: Closure and Reclamation

June 8, 2022



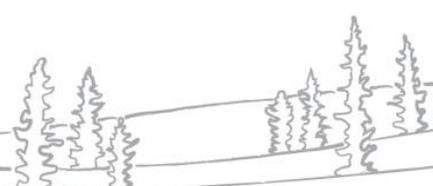
Overview

- MVRMA context
- What is a security deposit?
- How is security calculated?
- What is the form of security?
- How much security does GNWT hold?
- When can security change or be returned?
- Next steps



MVRMA context

- The components of the integrated and coordinated system in the Mackenzie Valley work together and consider many factors to make good resource management decisions, regardless of ownership or jurisdiction
- Many opportunities for Indigenous governments, residents, and others to participate in closure planning and security determination
 - environmental assessments (MVEIRB)
 - Land and Water Board processes
- GNWT participates in these processes
- Information and submissions are available on the boards' public registries



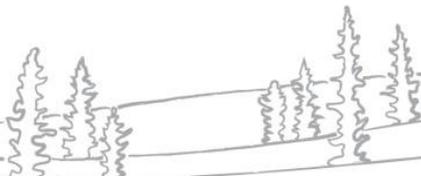
What is a security deposit?

- Funds held by the appropriate authority (GNWT, federal government, or other landowner) that can be used in the case of abandonment of a project to maintain and reclaim the site
- Can be held under land use permits, water licences, land leases (dispositions), and in some instances, Environmental Agreements for specific projects
- Securities are set and held for large and small projects



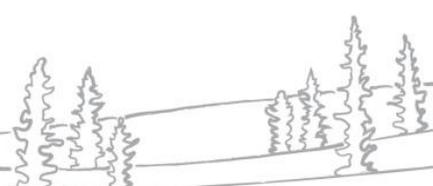
How is security calculated?

- For land use permits and water licences, the applicable Land and Water Board determines the security amount, after seeking input from the proponent and reviewers
 - GNWT submits estimates to Boards
 - proponents, Indigenous governments, and others may also submit estimates
- The amount is based on the estimated costs of closing and reclaiming the site (i.e., the closure cost estimate) using a model such as RECLAIM or the land use permit estimator.
- The amount must reflect the third-party contractor costs required to implement the Closure and Reclamation Plan
- **The closure cost estimate is developed based on the current approved Closure and Reclamation Plan for the project.**



What is the form of security?

- The GNWT has the authority to decide what forms of security are acceptable.
- All security held by GNWT must be absolute, irrevocable, and unconditional.
- The GNWT's preferred forms of security are:
 - Cash
 - Irrevocable letters of credit (ILOCs)
- Other forms can be considered on a case-by-case basis.



How much security does GNWT hold?

- As of June 1, GNWT holds a total of approximately \$738 M in reclamation securities.

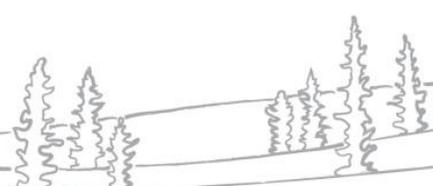
Mine	LWB Security Deposit	Other (eg leases, environmental agreements)	Total held by GNWT
Gahcho Kué (De Beers)	\$81 million	\$0	\$81 million
Ekati Mine (Arctic)	\$262 million	\$20 million	\$282 million
Snap Lake Mine (De Beers)	\$74 million	\$20 million	\$94 million
Diavik Mine (Diavik)	\$199 million	\$29 million	\$228 million

- The Government of Canada holds the security for the Imperial Norman Wells Operations (\$180 M).



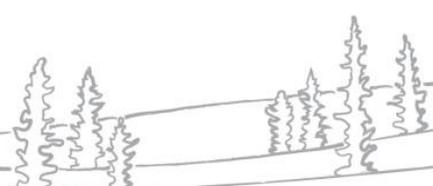
When can security change or be returned?

- Security amounts may change due to:
 - new development or changes to development;
 - change/refinement in Closure and Reclamation Plan; or
 - change/refinement in associated closure costs.
- Security can be returned following:
 - Progressive reclamation
 - Final closure of a site
- Reclamation must be verified and reviewed before security can be returned
 - Board processes and public registries
 - Landowner processes

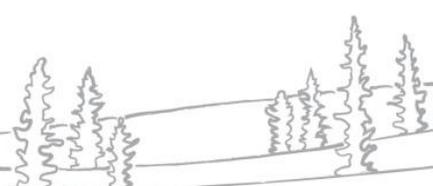


Next steps

- GNWT participation in regular updates to Board guidelines and other policy tools
- Continuing development and implementation of GNWT legislation, regulations, and policy, within the context of integrated and coordinated resource management



Mársı | Kinanāskomitin | Thank you | Merci | Haǵ' |
Quana | Qujannamiik | Quyanainni | Máhsı | Máhsı |
Mahsì



Let's hear from you!

Share one key takeaway from today's session

1

Open a web browser on your phone or computer

2

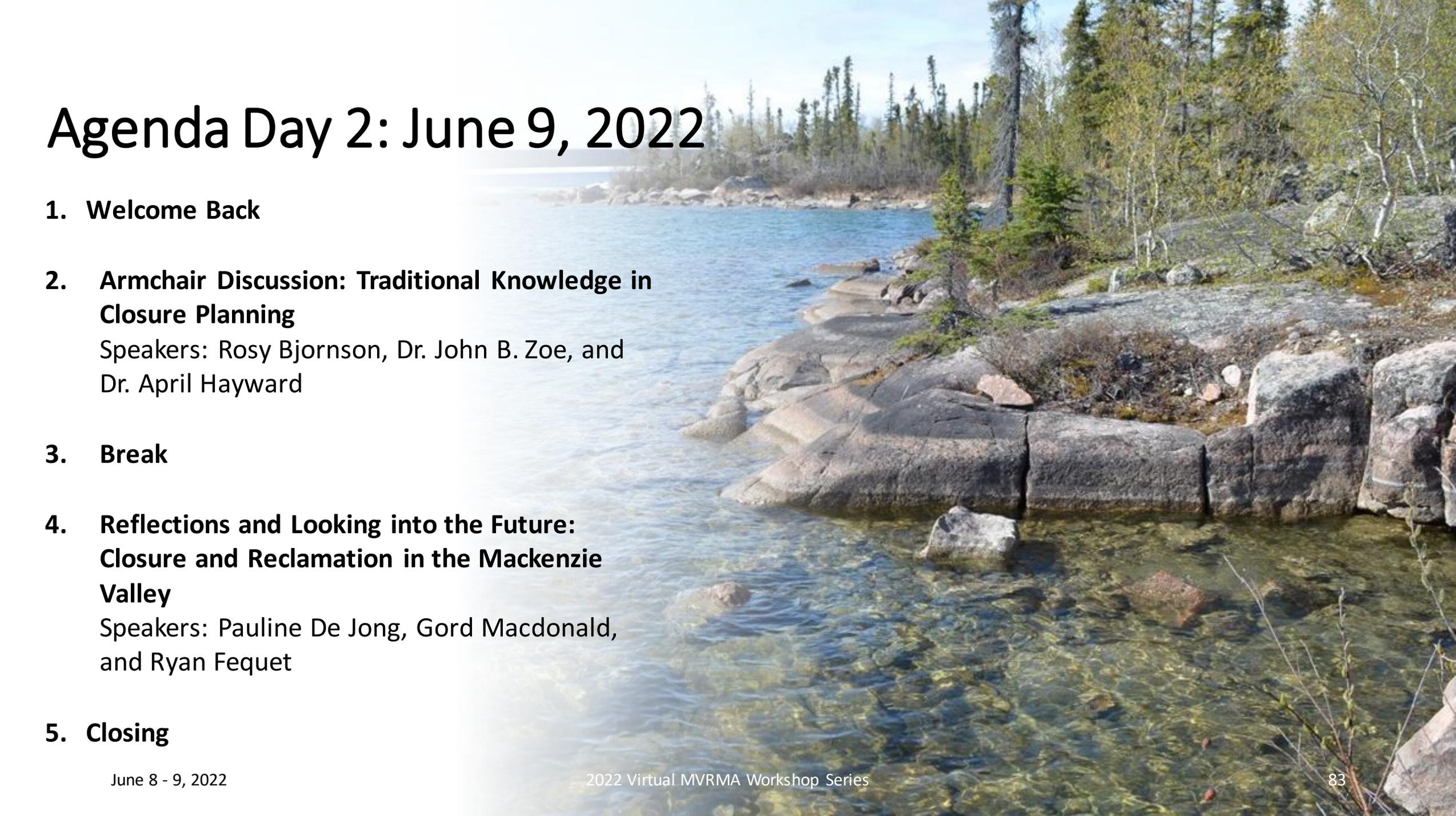
Go to www.menti.com and Enter code **4978 8639**

3

Or use QR code



Agenda Day 2: June 9, 2022



1. **Welcome Back**
2. **Armchair Discussion: Traditional Knowledge in Closure Planning**
Speakers: Rosy Bjornson, Dr. John B. Zoe, and Dr. April Hayward
3. **Break**
4. **Reflections and Looking into the Future: Closure and Reclamation in the Mackenzie Valley**
Speakers: Pauline De Jong, Gord Macdonald, and Ryan Fequet
5. **Closing**

Thank you!
See you tomorrow.



Welcome!

We'll start at 9am MT



While you have a moment:

Check out the **Closure & Reclamation 101 Introduction Video** sent to you ahead of the workshop

Tech issues?

Contact **Rebecca Lafontaine** (+1 819 209 0309 text / rlafontaine@stratos-sts.com)

Music: Leela Gilday; North Star Calling Album (2019)

Land and Water Boards of the
Mackenzie Valley

Mackenzie Valley
Review Board

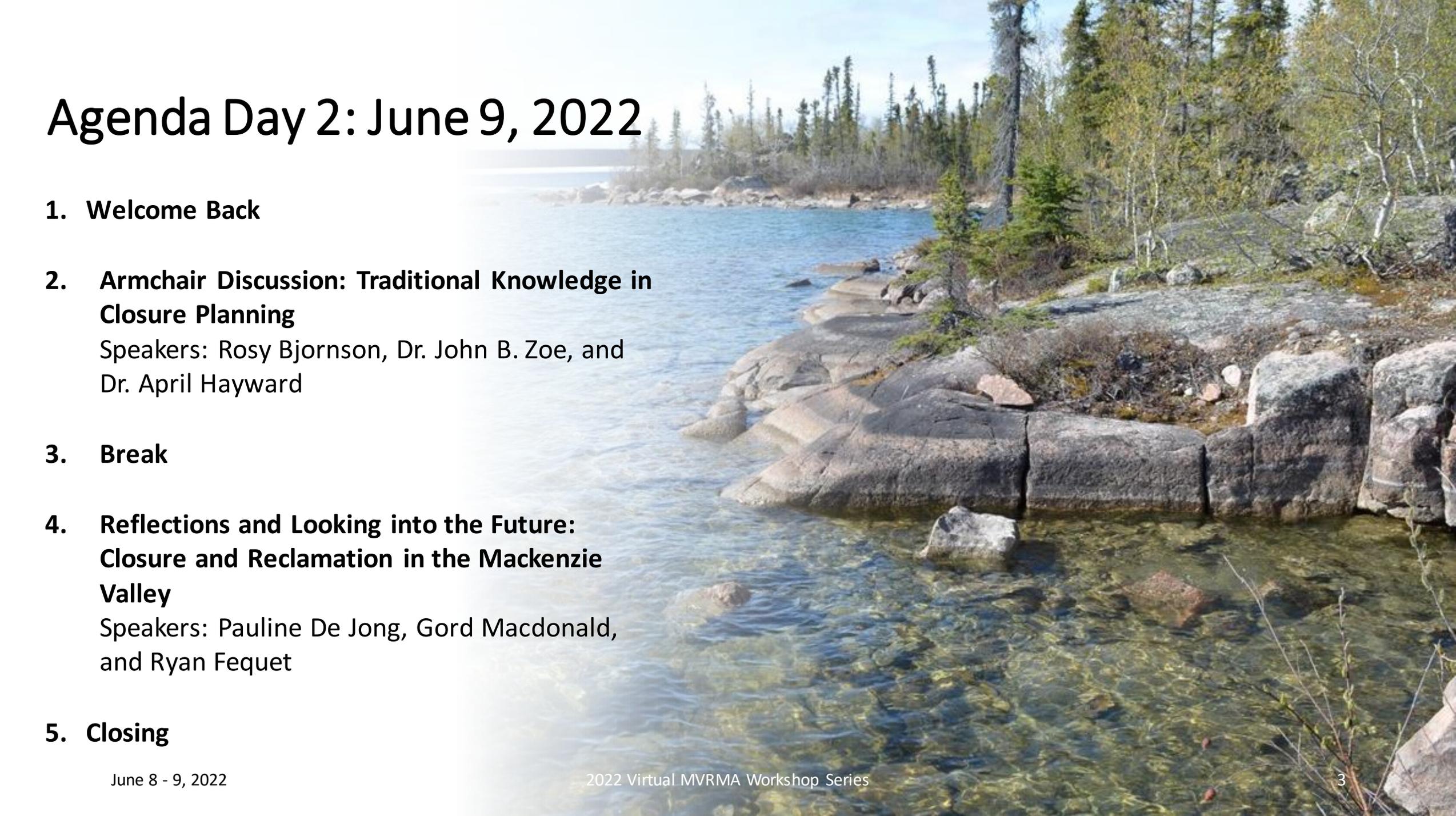


**Government
of Canada**

2022 Virtual Mackenzie Valley Resource Management Act (MVRMA) Workshop Series: Closure and Reclamation

Day 2 – June 9, 2022

Agenda Day 2: June 9, 2022



1. Welcome Back

2. Armchair Discussion: Traditional Knowledge in Closure Planning

Speakers: Rosy Bjornson, Dr. John B. Zoe, and Dr. April Hayward

3. Break

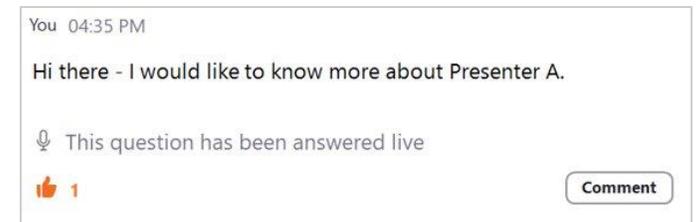
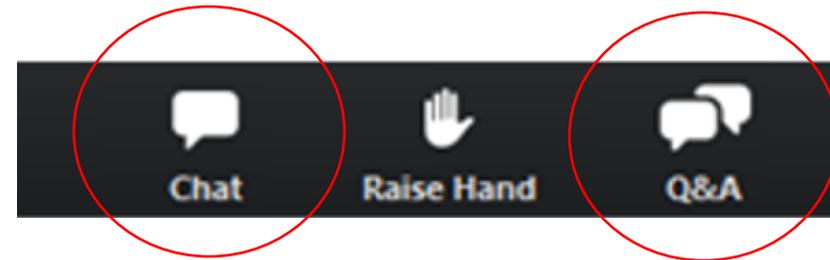
4. Reflections and Looking into the Future: Closure and Reclamation in the Mackenzie Valley

Speakers: Pauline De Jong, Gord Macdonald, and Ryan Fequet

5. Closing

How to engage in our Zoom Webinar Today!

- **Chat:** Use this for informal conversations; share your info when prompted
- **Q&A:** Use this for submitting a question for a speaker/panelist at anytime
 - Use the **'thumbs up' button** if you agree to someone else's question to vote it up
 - We will not be able to answer all questions during this webinar, but all questions and comments will be reviewed



Let's Hear From You!

Share one thing that caught your interest
from yesterday's discussion

1

Open a web
browser on your
phone or
computer

2

Go to
www.menti.com
and Enter code
4978 8639

3

Or use QR code



Armchair Discussion Panelists



Rosy Bjornson

Environment Manager, Ni Hadi Xa



Dr. John B. Zoe

Senior Advisor,
Tłıchǫ Government

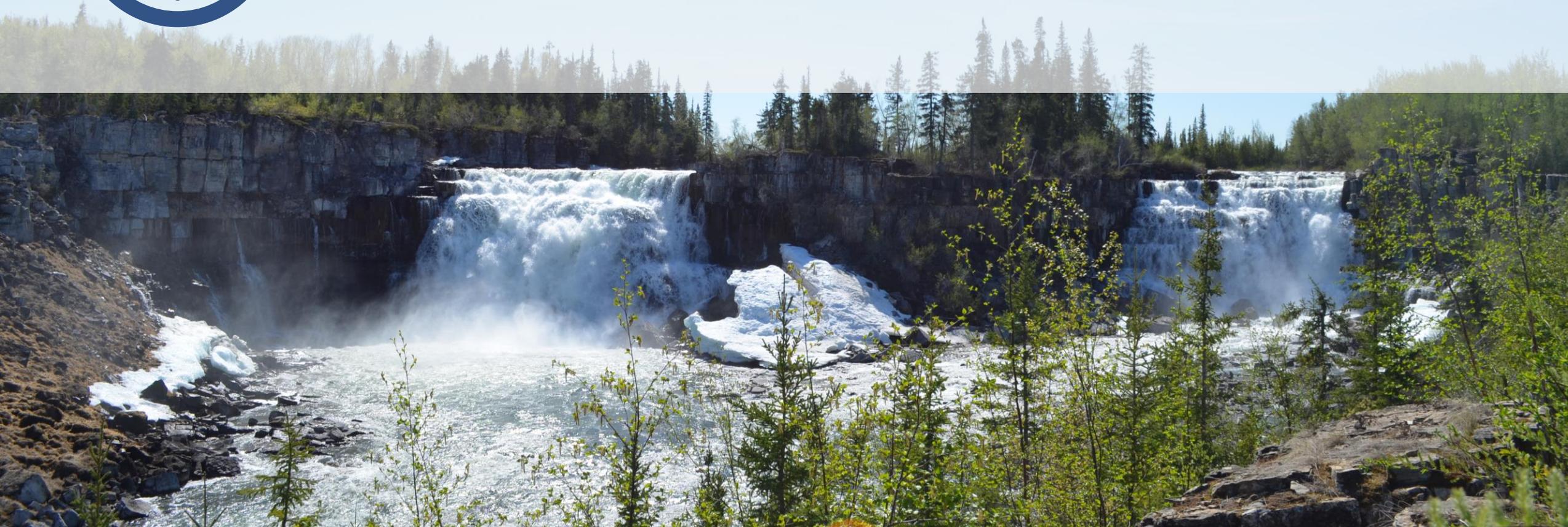


Dr. April Hayward

Chief Sustainability Officer,
Mountain Province
Diamonds Inc



Let's take a short break!



Reflections and Looking into the Future: Closure and Reclamation in the Mackenzie Valley Guest Speakers



Pauline De Jong

Regulator, Office of the
Regulator of Oil and Gas
Operations



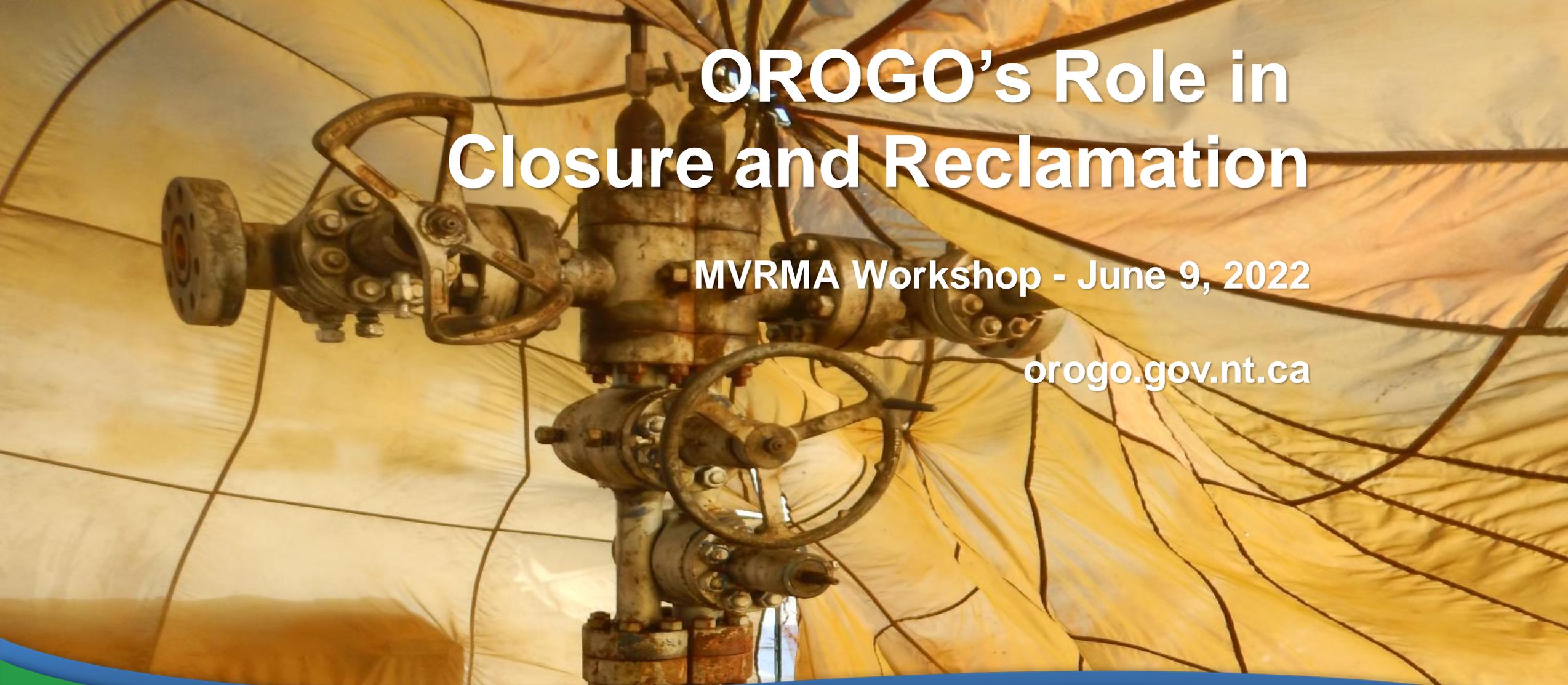
Gord Macdonald

Principal Advisor, Sustainable
Development, Diavik Diamond Mine



Ryan Fequet

Executive Director, Wek'èezhìi
Land and Water Board



OROGO's Role in Closure and Reclamation

MVRMA Workshop - June 9, 2022

orogo.gov.nt.ca

OROGO
NWT OFFICE OF THE REGULATOR OF OIL AND GAS OPERATIONS

BOROPG
BUREAU DE L'ORGANISME DE RÉGLEMENTATION DES OPÉRATIONS PÉTROLIÈRES ET GAZIÈRES DES TN-O

Contents

- OROGO's role in closure and reclamation
 - Under the *Oil and Gas Operations Act* (OGOA)
 - As part of the integrated resource co-management framework in the Mackenzie Valley
- Upcoming oil and gas closure and reclamation activities in the Mackenzie Valley.

Role Under OGOA: Site Closure

OROGO regulates the abandonment and decommissioning of oil and gas infrastructure:

- Wells
- Pipelines (including gathering systems)
- Other facilities (separator shacks, tanks, batteries, etc.)

More information on OROGO's requirements:

- *Well Suspension and Abandonment Guidelines and Interpretation Notes* (revised May 2022)
- *Application Guidelines and Interpretation Notes – Well Suspension and Abandonment* (February 2021)

With Other Regulators

- Oil and gas activities are usually also regulated by other regulators.
- Abandonment activity is often completed early in the overall closure and reclamation process.
- OROGO coordinates with:
 - Other regulators
 - The oil and gas land tenure system

Upcoming Closure Activity

Driven by deadlines in the *Well Suspension and Abandonment Guidelines and Interpretation Notes*.

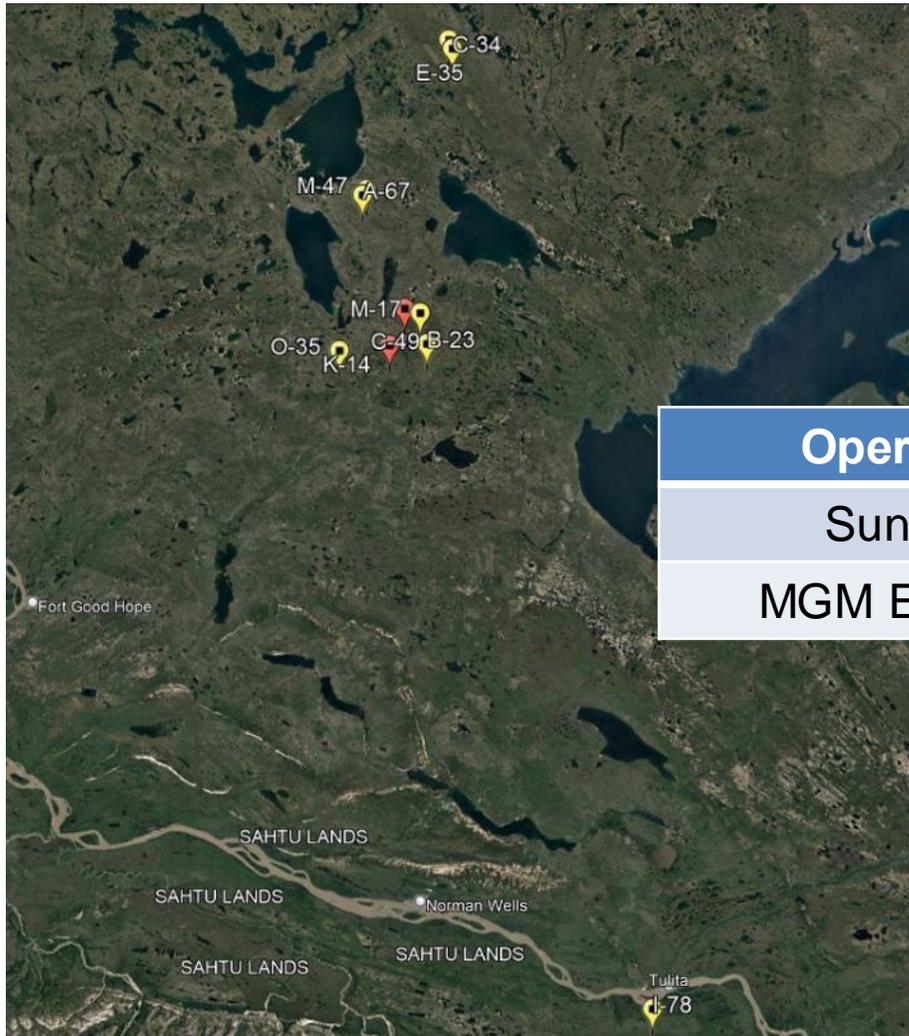
- 50+ abandonments in 2022-23.
- 10 abandonments in 2023-24.
- 20 abandonments in 2024-25 and 2025-26.

Upcoming Closure Activity: Gwich'in

Aurora College
Training Well
(Inuvik)



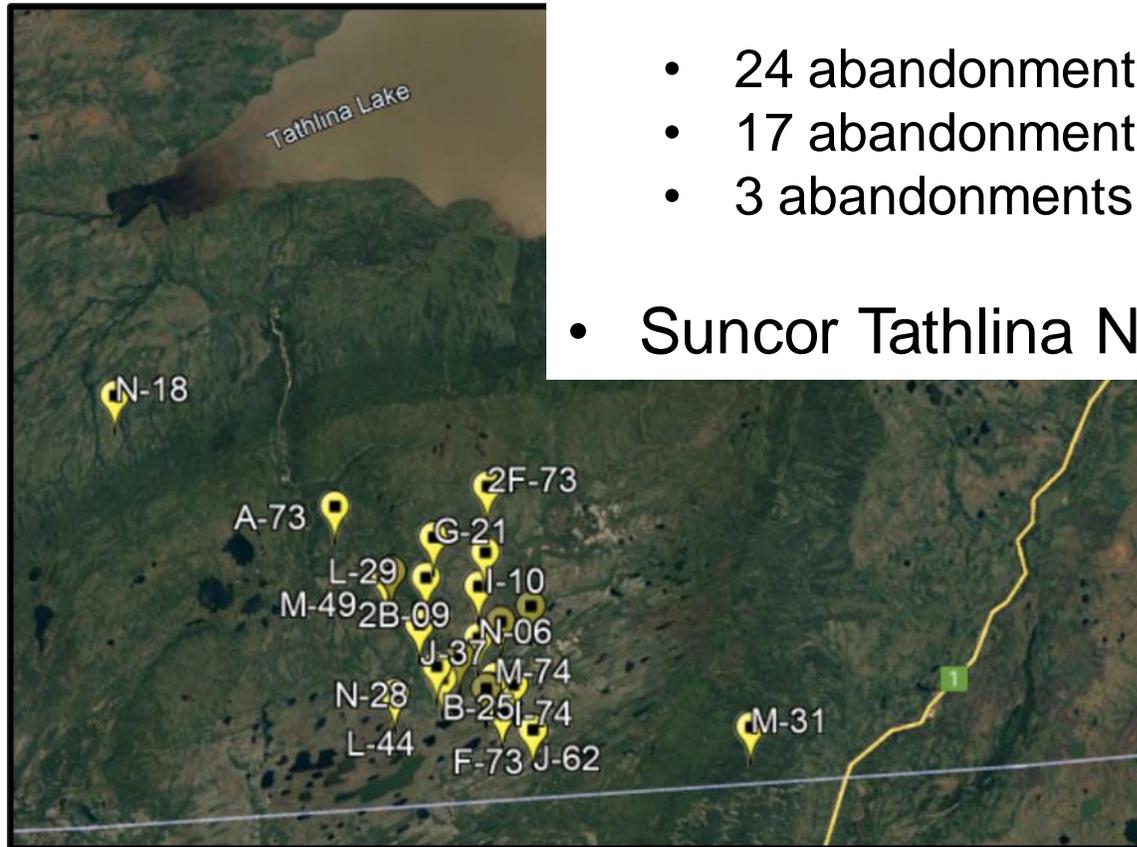
Upcoming Closure Activity: Sahtu



Operator	# of Wells
Suncor	3
MGM Energy	7

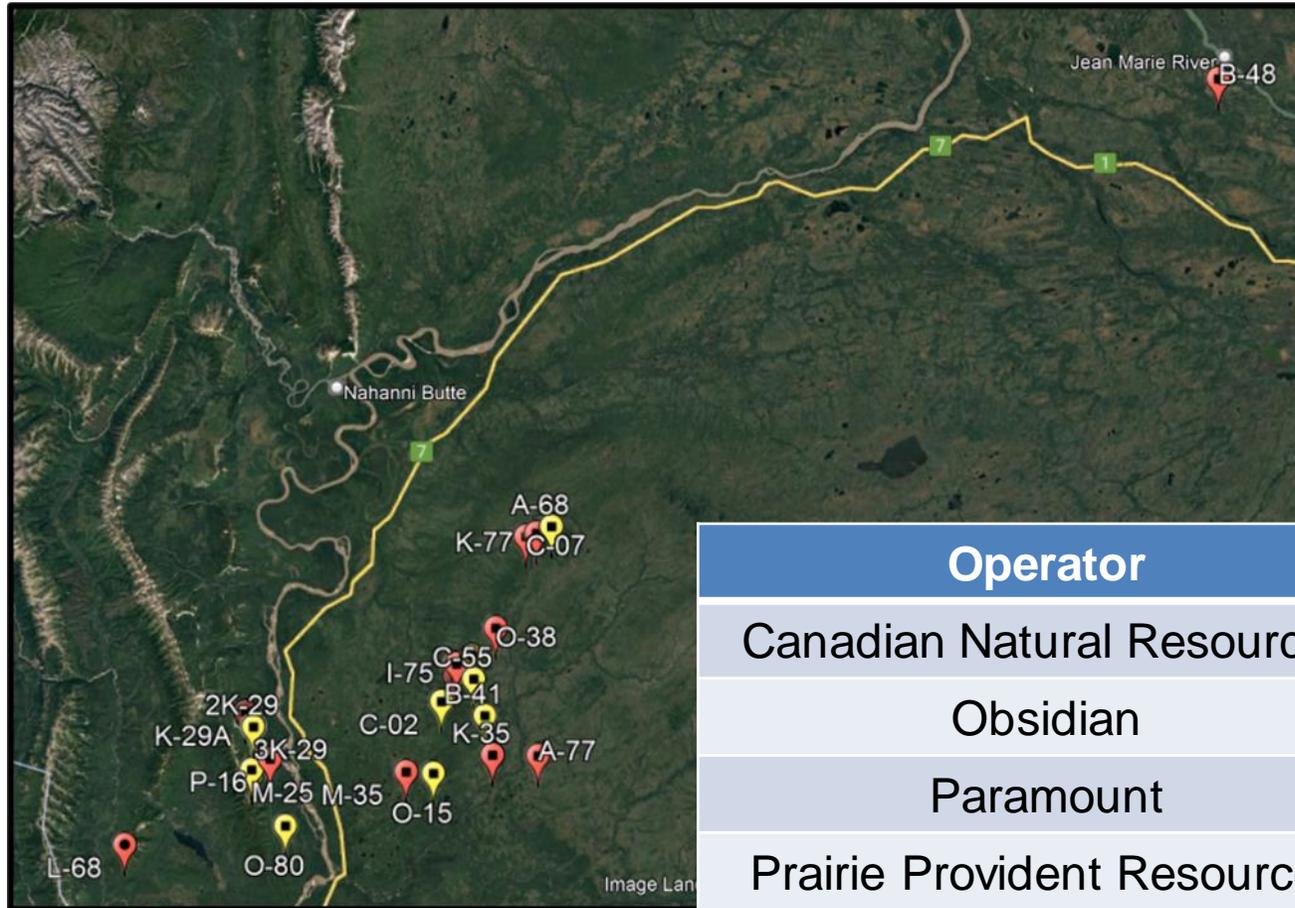
Upcoming Closure Activity: S. Slave

Cameron Hills Field:



- 24 abandonments in 2022-23
- 17 abandonments in 2024-25
- 3 abandonments in 2025-26
- Suncor Tathlina N-18 (2022-23)

Upcoming Closure Activity: Dehcho



Operator	# of Wells
Canadian Natural Resources	12
Obsidian	1
Paramount	11
Prairie Provident Resources	2
Imperial	1



NWT OFFICE OF THE REGULATOR OF OIL AND GAS OPERATIONS

Questions?

Contact us at:

OROGO

4th floor, Northwest Tower

867-767-9097

orogo@gov.nt.ca

Our website: www.orogo.gov.nt.ca

Follow us on Twitter: @OROGO_NWT



BUREAU DE L'ORGANISME DE RÉGLEMENTATION DES OPÉRATIONS PÉTROLIÈRES ET GAZIÈRES DESTN-O



RioTinto

Progressive Reclamation Opportunities and Challenges for Mine Closure

Diavik Diamond Mine

June 9 2022 - MVRMA Workshop

RioTinto

Progressive Reclamation

- Diavik defines this as closure activities undertaken concurrent with mine operations as opposed to after mine operations are complete.
- Presentation will provide overview of opportunities and challenges.
- Include a case example from Diavik:
 - North Country Rock Pile (NCRP)



Opportunities

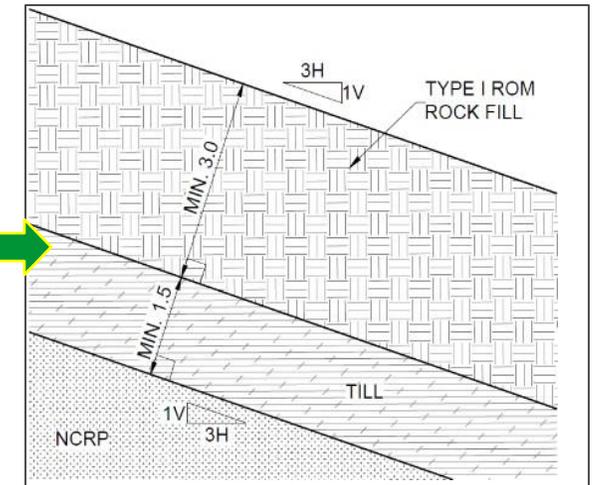
- Schedule – shortens the time required to complete closure activities.
- Efficiency – utilizing materials already loaded in haul trucks, eliminates double handling.
- Backhaul – taking advantage of empty trucks leaving mine site.
- Cost – taking advantages of mine operations equipment and operators.
- Employment – extend duration of operating positions.
- Monitoring – early start to collection of closure performance data.
- Commitment – demonstration of closure intention.

Challenges

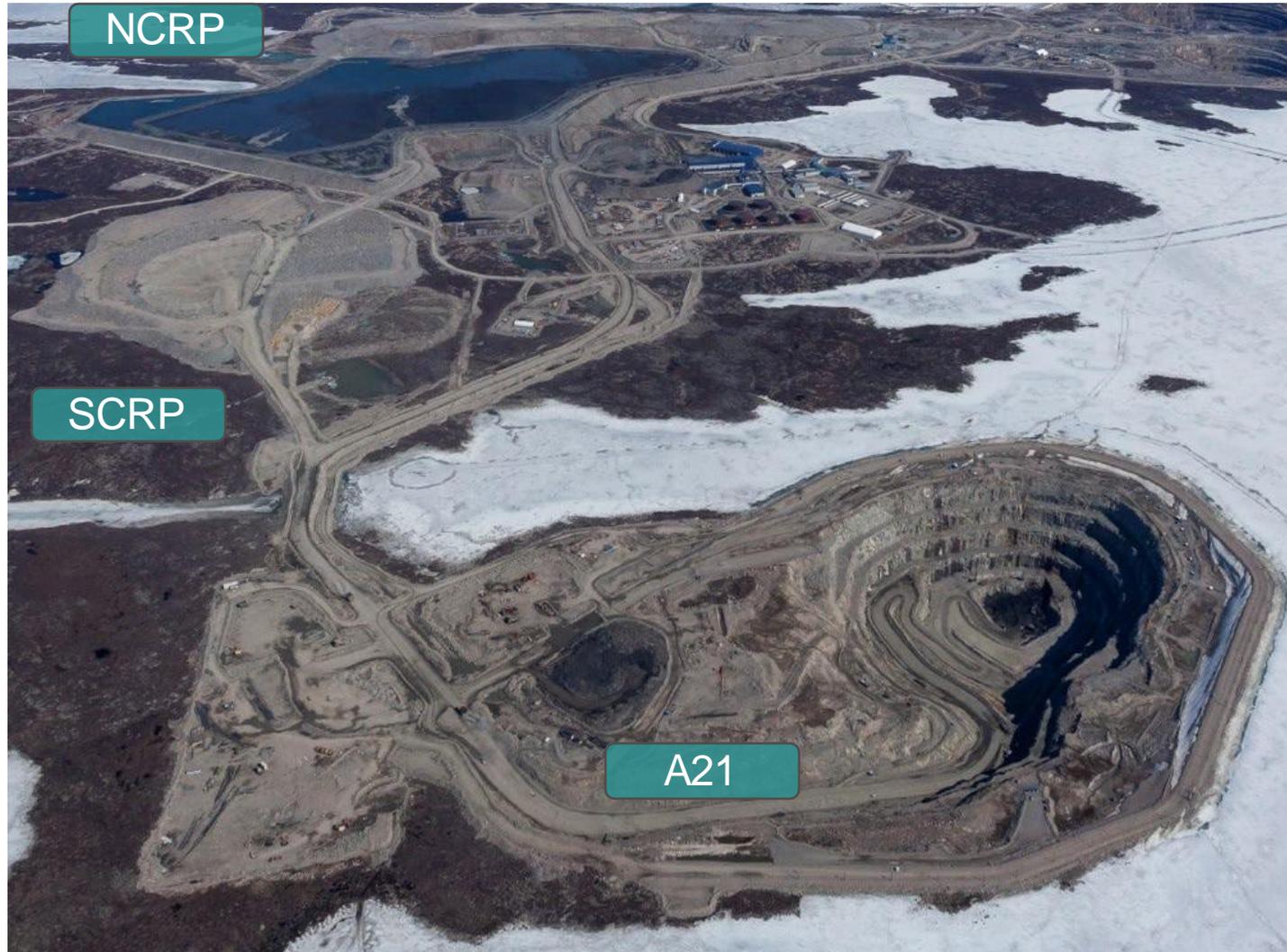
- Production mind set – operations are appropriately focused on production.
- Cost deferral – typical preference to delay closure expenditures.
- Limits mine optionality – commits to doing closure vs sale or other.
- Demotivating – challenging to retain employees as operations ramp down, emphasis on progressive closure makes this even harder.
- Reluctance – general reluctance by governments and operators to accept closure as a reality.
- Regulatory – key regulatory instruments are not designed for progressive reclamation, assume closure activities occur post-operations.
- Risk – current regulatory system burdens operators to accept varying degrees of risk when advancing progressive reclamation due to regulatory uncertainty.
- Security – slow and uncertain return of security process limiting benefits to conducting progressive reclamation.

North Country Rock Pile

- Closure construction started in 2017.
- Sloped till (1.5m thick) + non-acid generating rock (3m thick) cover to keep potentially acid generating rock (T3) frozen within pile.
- Cover being built using direct haul of waste rock from A21 pit.
- Aim is to make pile fit in with landscape, like a natural esker.
- Expected to be complete in 2023.



Progressive Reclamation enabled direct haul of reclamation materials.



North Country Rock Pile

- NCRP is roughly 80 metres high in some areas and 2,000 metres long.
- Cover has been designed in collaboration with members of TK Panel.
- Slope of NCRP cover allows for safe passage of caribou.
- Area is part of caribou migration and feeding corridor.

“The mine is right on the caribou migration route. The caribou will eventually go back to this landscape if the mine does a good job with closure. So the caribou will go back onto the same migration route. So we have to make a recommendation on caribou to make sure the closure is good so the caribou comes back.”
– Phillip Liske , YKDFN Elder (TKP#2, June 2012)



Members of TK Panel walk up test pile that matches the NCRP, evaluating slope and cover with respect to possible caribou movement at closure (TKP#10, 2017)

North Country Rock Pile – Progressive Reclamation



Progressive Reclamation Effort (2018-2022)

Completed Work

Total Material Placed: 12,860,000 t

Over 160,000 truck dumps of material placed.



Total Equivalent Tonnes Reslope: 2,812,000 t

Total Till Placed: 4,450,000 t

Total Type I Granite Placed: 5,600,000 t



Total Project Dozer Hours: 57,443 OT

Equivalent to 5,092 days worked!





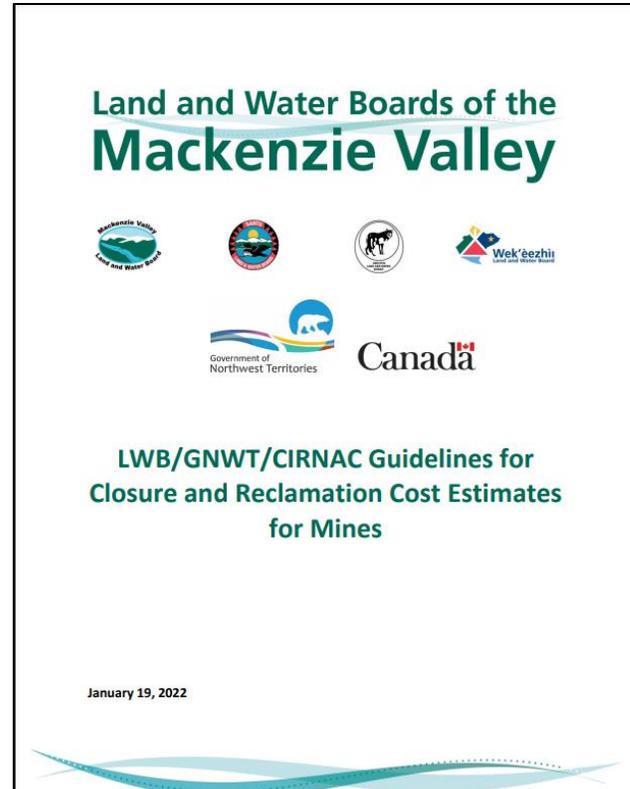
Questions?

Land and Water Boards of the Mackenzie Valley

Ongoing and Upcoming Initiatives



Ongoing Initiatives



Water License



Land Use Permit



Land and Water Boards of the
Mackenzie Valley

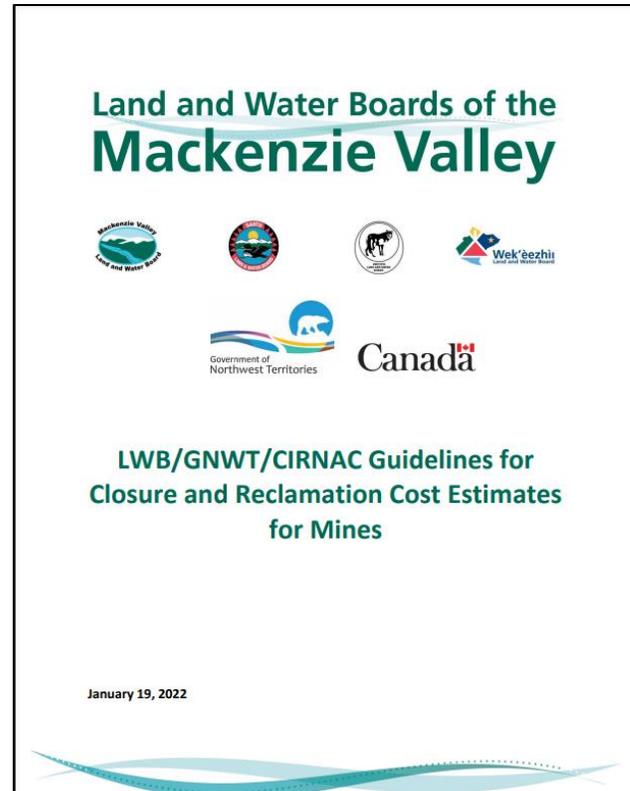


Closure Cost Estimator for Land Use Permits
Support Manual

February 2021



Ongoing Initiatives



Water License



Land Use Permit

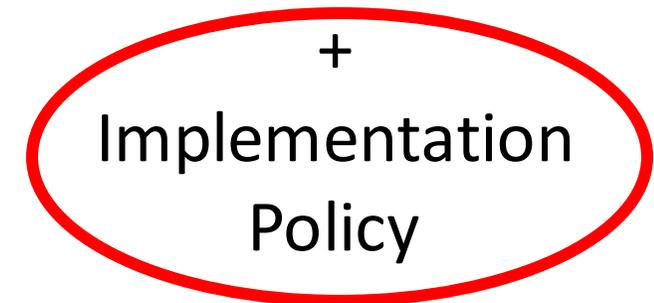


Land and Water Boards of the Mackenzie Valley

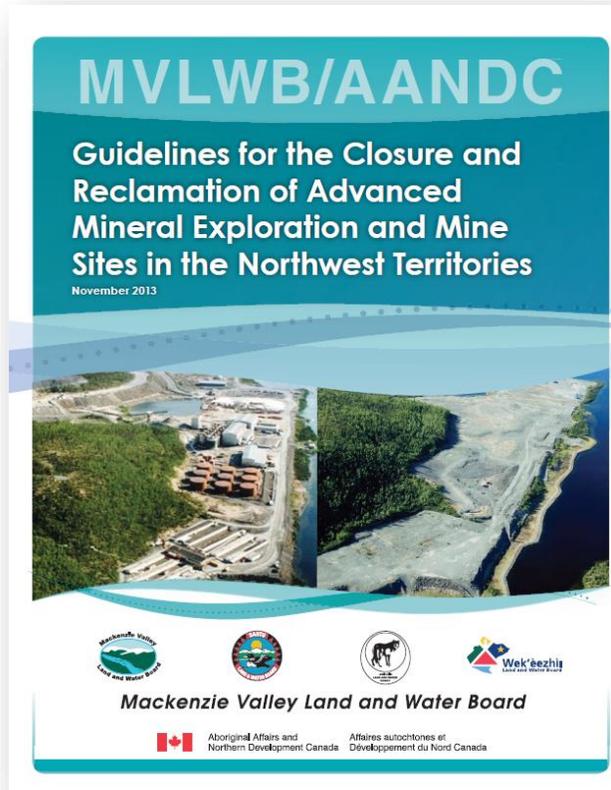


Closure Cost Estimator for Land Use Permits
Support Manual

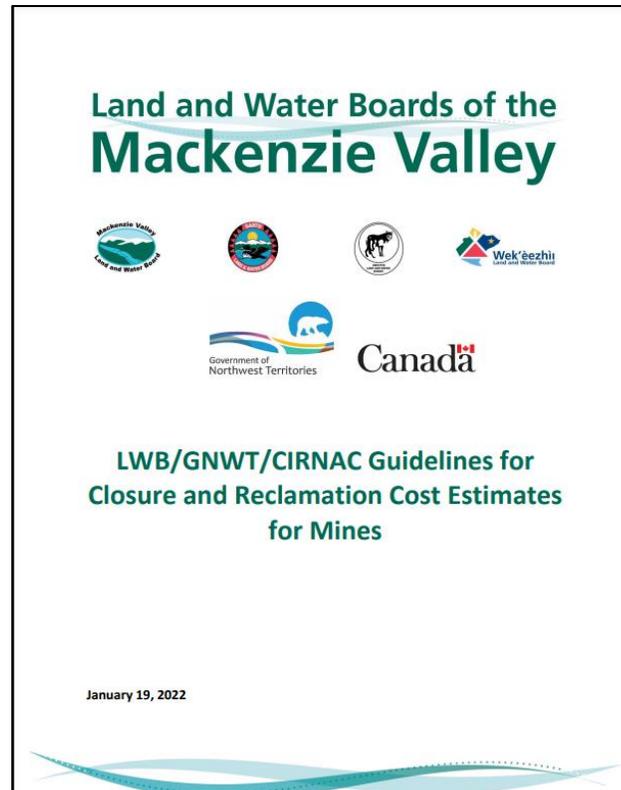
February 2021



Upcoming Initiative



+



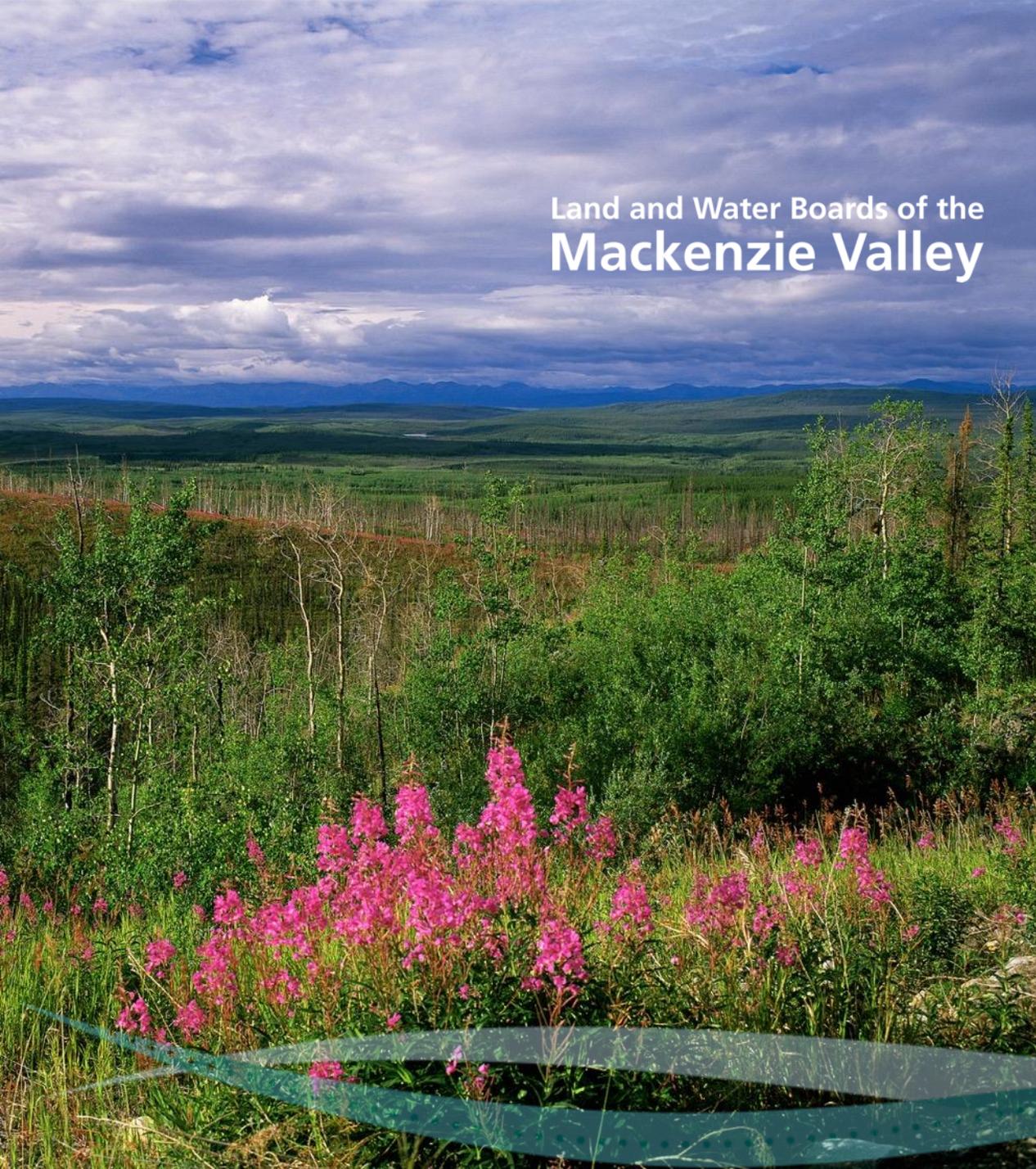
+

Lessons Learned
from last 10 years

Upcoming Initiative - Relinquishment



LET IT GO???



Land and Water Boards of the
Mackenzie Valley

Masi cho!

Always plan ahead. It
wasn't raining when
Noah built the Ark

Richard Cushing

Wrap up and Closing Reflections



Next Steps

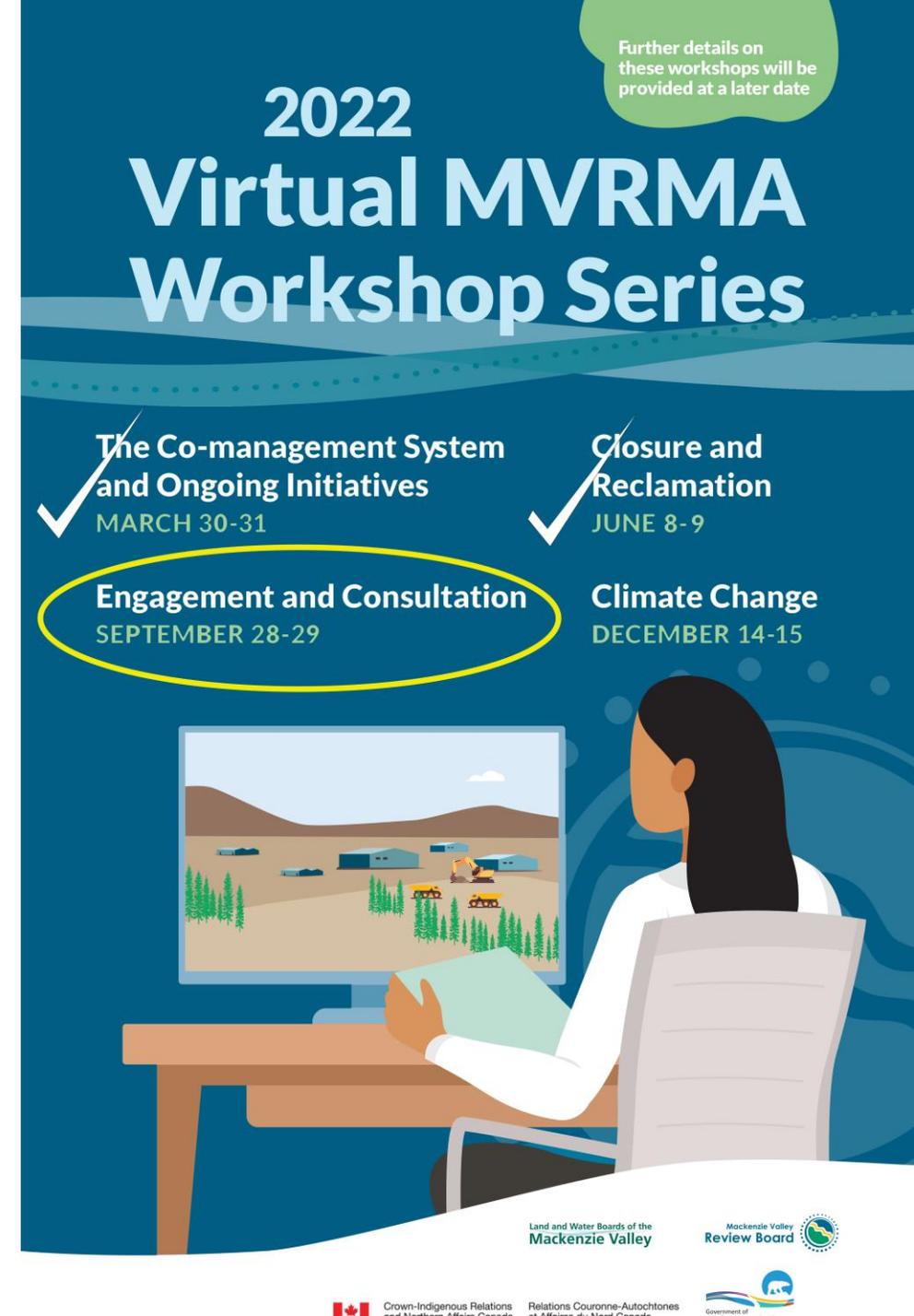
Final Report:

- Once complete, will be emailed to all participants and available on the Outreach page of the Land and Water Boards' websites

Future 2022 virtual workshops:

Given the ongoing Covid-19 circumstances, the MVRMA Workshop Planning Committee had decided to host a series of four virtual half-day workshops in 2022 rather than the typical several-day long in-person workshop once per year. The topics of the virtual workshop were based on a survey conducted in Fall of 2021.

- Sept. 28 & 29 topic is engagement and consultation
- Dec. 14 & 15 is climate change
- Registration details for the Sept. workshop will come closer to the date



Further details on these workshops will be provided at a later date

2022 Virtual MVRMA Workshop Series

- ✓ The Co-management System and Ongoing Initiatives
MARCH 30-31
- ✓ Closure and Reclamation
JUNE 8-9
- Engagement and Consultation
SEPTEMBER 28-29
- Climate Change
DECEMBER 14-15

The poster features a woman sitting at a desk with a computer monitor displaying a landscape with buildings and trees. The 'Engagement and Consultation' workshop is highlighted with a yellow oval.

Thank you!

