



# **Evolutions and Opportunities in Ecological Restoration**

Presented by: Chris Tenzzen, B.Sc., P.Ag.  
Practice Area Lead, Reclamation and Restoration

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# Outline

Purpose: To share excitement about an emerging market

1. Evolutions
2. Opportunities

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**Part 1 - Evolutions**

# Starting mid-1800s....

## Preserving nature:

- Conservation
- Natural parks
- Protected areas
- Wildlife Preserves



C. Tenszen, 2021

# Starting mid-1900s...

Addressing our impacts:

- 1960s Environmental movement
- Reduce, reuse, recycle
- EPA / EPEA
- Offsetting
- **Land Reclamation**
  - *Land Capability*



S. Dunn, 2019



# Into the 2000s...

Thinking long-term:

- Social licensing
- Sustainability
- Circular economies
- Stakeholder capitalism
- Nature based solutions
- **Ecological Restoration**
  - *Ecosystem functions*
  - *Biodiversity*
  - *Resiliency*
  - *Ecosystem services*



C. Tenszen, 2011

# Conservation is now Synonymous with Restoration

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* Indicates the project has a species-at-risk focus		
Conservation and Restoration Program.....		v



U.S. Department of the Interior  
Bureau of Land Management

## Healthy Public Lands for Our Future

### Restoration Landscapes



Pronghorn antelope roam the native grassland of the Las Cienegas National Conservation Area.

The Bureau of Land Management is infusing \$161 million for ecosystem restoration and resilience on the nation's public lands, as part of the Biden-Harris Administration's Investing in America agenda. The proposed work will focus on 21 "Restoration Landscapes" across 11 western states, restoring public lands, strengthening communities and local economies, advancing climate resilience and furthering our commitment to Tribal collaboration and partnership.

#### Restoration Features

- Create Climate Resilience
- Enhance Recreation Experiences
- Restore Riparian/Wetland
- Restore Streams/Hydrology
- Protect native plants & remove invasive species
- Conduct Fire/Fuels Treatments

This once-in-a-generation funding from the Inflation Reduction Act will be invested in Restoration Landscapes selected for their ecological need, importance to communities, and potential for partnership, and will leverage about \$40 million that the BLM has already deployed in Restoration Landscapes from the Bipartisan Infrastructure Law. Work in Restoration Landscapes will be collaborative and partnership-driven, supporting coordinated investments from across the BLM – to maximize the return on investments, enhance durability, and multiply the impact of restoration efforts.

As the nation's largest public lands manager, the BLM has restored millions of acres of public lands. Focusing on Restoration Landscapes allows the BLM to concentrate the new and historic funding provided by these laws to engage in partnerships more efficiently, clearly articulate the agency's vision for public lands, and multiply the return on restoration investments on behalf of the American people.



Whitebark Pine planting in the Big Hole area in Montana.

For more information, visit: [www.blm.gov/infrastructure](http://www.blm.gov/infrastructure)



## ECOLOGICAL RESTORATION

Learn about how the Nature Conservancy of Canada is restoring natural areas across the country.

October 2021

#### Examples of our work and impact

- NCC uses traditional conservation methods and techniques, such as prescribed burning on grassland habitats across the country, to restore areas and promote the growth and return of native species.
- NCC's restoration work is improving connectivity between wetlands, creating more habitat for native plants and animals, and restoring natural hydrology. These restored wetlands are important to the health of local watersheds. They mitigate floods by absorbing and holding water like a giant sponge and improve drinking water quality by filtering nutrients and removing sediment and even bacteria.
- NCC also restores species populations on our properties through methods such as tree/seed planting and partnering with other organizations on breeding programs for birds and butterflies.

#### Examples of areas where NCC is involved in restoration projects:

- British Columbia: [West Kootenay](#)
- Alberta: [Sage-grouse project](#)
- Saskatchewan: [Nebo](#)
- Ontario: [Pelee Island](#)
- Quebec: [Spiny softshell turtle recovery at Lac Champlain](#)
- Prince Edward Island: [Blooming Point](#)

- NCC has restored many wetlands across Canada, including in Norfolk County. Restoration in this area started in 2010. In 2020, NCC acquired another 138 hectares (335 acres) of wetland, shoreline, fields and forests here.



- By using conservation methods like invasive species removal and prescribed burning, we have helped restore grassland and prairie landscapes, such as at the Old Man on His Back Prairie and Heritage Conservation Area in Saskatchewan.
- Once an industrial mud pit, the Campbell River Estuary in BC has made a dramatic transformation back into an area of rich diversity and beauty. Thanks to key partnerships and a caring community, NCC was able to rehabilitate a lifeless shoreline into a thriving hub for a host of coastal wildlife. Visitors can experience first-hand the beautiful lands that are now one of Campbell River's favourite parks.

For more information on how NCC is achieving ecological restoration across Canada, visit [natureconservancy.ca/ecore restoration](http://natureconservancy.ca/ecore restoration).

Parks Canada Agency. 2018. A natural priority – A report on Parks Canada's Conservation and Restoration Program. Parks Canada Agency, Ottawa. 47 pp.

[https://www.blm.gov/sites/default/files/docs/2023-05/BLM-National-Landscape-Restoration-Factsheet\\_05-30-2023v2.pdf](https://www.blm.gov/sites/default/files/docs/2023-05/BLM-National-Landscape-Restoration-Factsheet_05-30-2023v2.pdf)

[https://www.natureconservancy.ca/assets/documents/nat/NC\\_EcoRestoration\\_ENG.pdf](https://www.natureconservancy.ca/assets/documents/nat/NC_EcoRestoration_ENG.pdf)



Environmental Science and Engineering Advisory

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## **Part 2 - Opportunities**



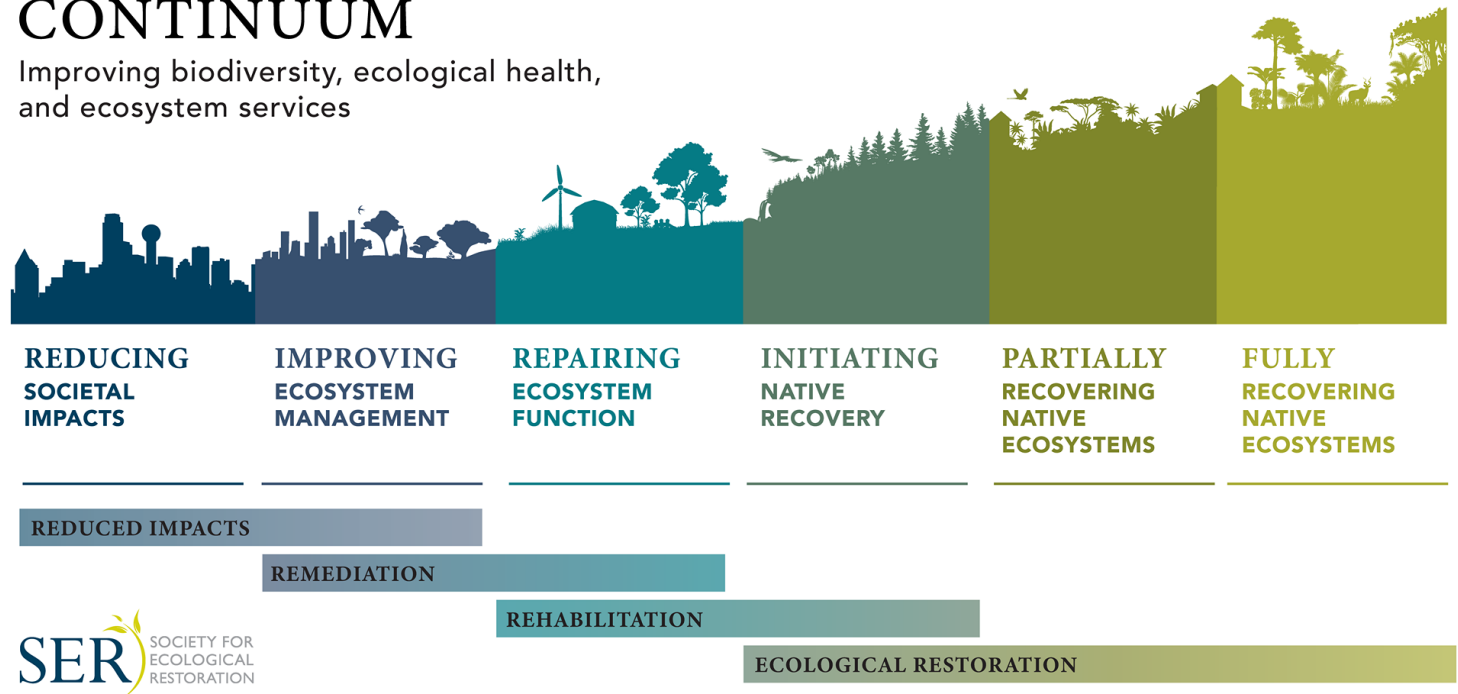
# Now there's a lot of R words...

Cleaning up the past,  
Optimizing the future:

- Restoration
- Reclamation
- Rewilding
- Rehabilitation
- Remediation
- Revegetation
- Regenerative
- Naturalization

## THE RESTORATIVE CONTINUUM

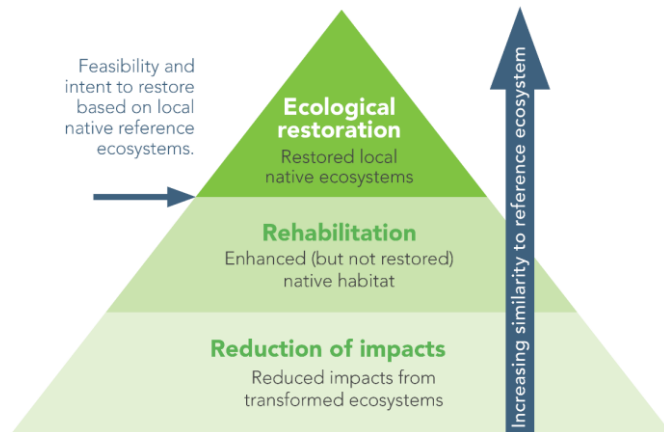
Improving biodiversity, ecological health,  
and ecosystem services



Gann GD, McDonald T, Walder B, Aronson J, Nelson CR, Jonson J, Hallett JG, Eisenberg C, Guariguata MR, Liu J, Hua F, Echeverría C, Gonzales E, Shaw N, Declerck K, Dixon KW (2019) International principles and standards for the practice of ecological restoration. Second edition. Restoration Ecology 27(S1): S1–S46.

# Project Types

- Revegetation
- Habitat enhancement
- Remediation
- Mitigation



<https://www.seraustralasia.com/standards/appendix1.html>

- Connectivity / corridors
- Urban ecology
- Tree planting
- Native grassland restoration
- Pollinator projects
- Invasive species control
- Population control
- Treatment wetlands
- Rain gardens
- Green infrastructure
- Artificial reefs
- Soft engineering
- Bioengineering
- Beaver damn analogues
- Zeedyk structures
- Erosion control
- Afforestation
- Wetland replacement
- Environmental farm plans
- Grazing consult
- Cover cropping
- Prescribed fire
- Fire Smarting
- Species reintroductions
- Bison rematriation
- Waste removal
- Riparian revegetation
- Linear disturbance deactivation

# Grassland Restoration



C. Tenszen, 2022



# Grassland Restoration



A. Snively, 2023



A. Snively, 2023



# Pollinator Enhancement



C. Frizzley, 2023



T. Knapik, 2023



# Weed Control





A. Snively, 2023

# Re-purposing Skills

Skills I Have	Skills I lack
Project management	Deep ecology
Communications	Farming / ranching
Logistics	Wildlife and fisheries biology
Earthworks	Hydraulic engineering
Soil science	Public relations
Revegetation	
Monitoring and maintenance	
Reporting	

# Opportunities – Gov't

Calgary  search calgary.ca 

Programs and services ▾ Get involved ▾ City Council ▾ Our organization ▾

< Wildlife

## Habitat restoration

Habitat restoration is the active process of improving the health and resilience of our parks and green spaces. It involves the purposeful introduction of plants that reflect our natural landscape. This practice supports the biodiversity of Calgary and the wellbeing of Calgarians.



Native vegetation such as vetch, blue flax and a variety of grasses grow in Calgary.

### Why is habitat restoration important?

Habitat restoration offers many benefits to our city, and tremendous value to you as a citizen. Habitat restoration:

- creates sustainable landscapes that help support plant, animal and insect life;
- makes our parks and green spaces more resilient to climate change and extreme weather events;
- increases the beauty and diversity of Calgary's landscapes;
- promotes mental health and relaxation by increasing access to nature;
- provides more diverse recreational opportunities; and,
- reduces long-term maintenance costs including mowing, fertilizing, applying pesticides, and irrigating.

As a key biodiversity target, we aim to restore 20% of Calgary's open space by 2025.

<https://www.calgary.ca/parks/wildlife/habitat-restoration.html>

## Watershed Resiliency and Restoration Program

Improving Alberta's natural watershed resiliency to flood and drought

### Program Overview

The Watershed Resiliency and Restoration Program (WRRP) aims to reduce the intensity, magnitude, duration, and effects of flood and drought through natural watershed mitigation measures. Funded projects achieve these program outcomes:

- Advancing flood and drought resiliency in priority watersheds in Alberta.
- Restoring and enhancing ecological connectivity and function in critical areas.
- Increasing knowledge, awareness and tools that enhance watershed resiliency.

Municipalities, non-profit organizations, Indigenous communities, and other organizations can apply for funding for projects that will enhance communities' ability to withstand future flood or drought, and promote the ongoing stewardship and preservation of Alberta's watersheds.

### Program Highlights

Since the program was established in 2014, \$40 million of funding has been allocated to projects in areas designated as priority watersheds for investment into flood and drought resiliency throughout Alberta.

Priority watersheds were identified based on indicators of watershed resiliency such as their high risk and consequence for flood and drought across the province.

Alberta's government is committed to supporting watershed resiliency through funding \$7 million worth of eligible projects delivered by external partners in 2023 and 2024.

### How to get involved

For more information about the program and how to apply for funding, visit: [Alberta.ca/WRRP](https://Alberta.ca/WRRP)

### Program Focus Area and Achievements



Conservation of critical wetlands, riparian areas, and floodplain features.

Over **3400 hectares** of critical watershed lands placed into conservation by private landowners, with more areas on the way.

Wetland restoration work will continue with partners through the Government of Alberta's Wetland Replacement Program.

### Example projects:



#### Wetland Restoration, Ducks Unlimited Canada

Watershed Benefit: Restoration and conservation of 713 hectares (1763 acres) of wetland basins in the South Saskatchewan River Basin. This is an estimated 1.9 million cubic metres of restored water storage capacity on the landscape.



#### Raingardens for resilience, Alberta Low Impact Development Partnership

Watershed benefit: stormwater runoff storage capacity in urban areas to manage flood and drought, and increased biodiversity.

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<https://open.alberta.ca/publications/9781460141311>



# Opportunities - Industry



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[Integrity Helpline](#)

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## Nature's traffic control: How habitat restoration is helping at-risk caribou populations



A caribou captured on our remote cameras at site.

December 2022 – Thanks to nature's traffic control – tree planting, mounding and other habitat restoration efforts – predators and prey are slowing down in forest corridors along our operations, according to a new Cenovus Energy-led study.

### We're significantly expanding our Caribou Habitat Restoration Project

Our [Caribou Habitat Restoration Project](#) is helping to reduce fragmentation in the Cold Lake caribou herd's habitat, where our Foster Creek and Christina Lake oil sands projects are located.

### Michael Cody: Leading change in forest management

[Learn how](#) our employee Michael Cody is leveraging his commitment to biodiversity and passion for sustainability to help support the well-being of future generations.

<https://www.cenovus.com/News-and-Stories/Our-stories/We-are-significantly-expanding-our-Caribou-Habitat-Restoration-Project>



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Teck's new conservation initiatives announced today protect 14,000 hectares and include:

- \$2 million donation to the Nature Conservancy of Canada (NCC) for the purchase and ongoing management of the nearly 8,000-hectare Next Creek Watershed in the West Kootenays of British Columbia. Next Creek was the last remaining unprotected land within the [Darkwoods Conservation Area](#) and this purchase protects the ecological integrity of a conservation network that has national and international significance.
- Donation to NCC of approximately 162 hectares of Teck-owned land in the Wycliffe Wildlife Corridor, also known as the Luke Creek Conservation Corridor, near Kimberley, B.C., and further donation of \$600,000 for the ongoing management of the land.
- 5,800 hectares of a unique and high-value wetland ecosystem near Teck's Quebrada Blanca Operations in Chile will be protected in partnership with the Ollagüe Quechua community. Known as the Salar de Alconcha, or Alconcha Salt Flat, the lands are located northwest of the village of Ollagüe near the Bolivian border at 4,123 meters above sea level. The initiative is the first of its kind in Chile.
- \$10 million to create an Indigenous Stewardship Fund that will support Indigenous communities and partners in the development of Indigenous-focused environmental stewardship initiatives as well as engagement, education, capacity-building and participation in support of conservation objectives in regions where Teck operates.
- \$12 million in new funding to the Nature Conservancy of Canada to support future high priority conservation projects in B.C., in addition to those announced today.

The conservation investments announced today build on Teck's purchase of over 7,000 hectares of private lands in the Elk and Flathead River Valleys of British Columbia, set aside for conservation. Teck's purchase of these lands in 2013 was one of the single biggest private sector investments in land conservation in B.C. history. In 2021, [Teck and the Ktunaxa Nation announced](#) the signing of a Joint Management Agreement to ensure the protection of the area's social, cultural and ecological value.

<https://www.teck.com/news/news-releases/2022/teck-sets-nature-positive-goal>



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# Opportunities - ENGO

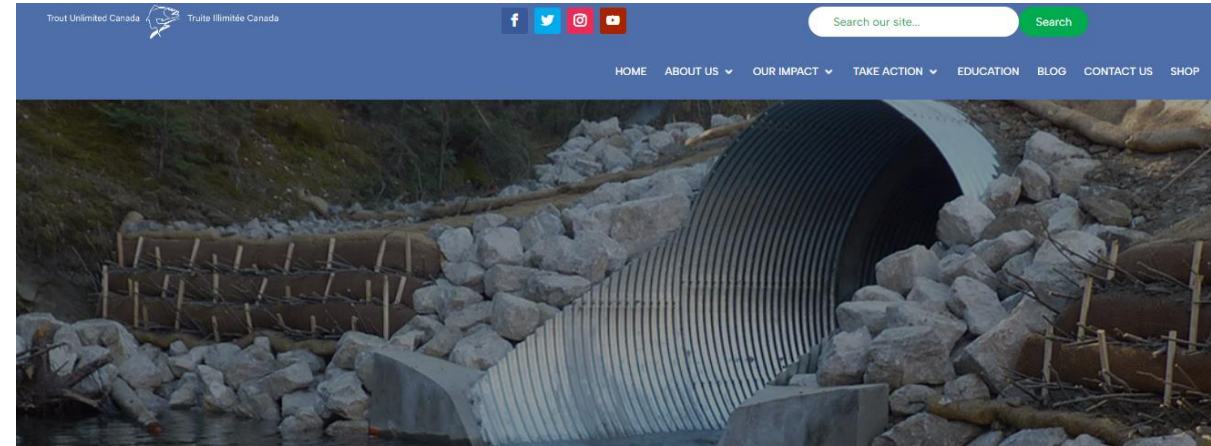


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## Examples of restoration activities

- Planting native trees/wildflowers/grasses
  - [Restoring our wild spaces in Alberta](#)
  - [Restoring Atlantic Canada's forests](#)
- Conducting prescribed burns
  - [Burning for change at Old Man on His Back Prairie Heritage and Conservation Area](#)
- Restoring agricultural lands into uplands/wetlands or forest to open grassland
  - [Restoring Ontario's deep south on Pelee Island](#)
  - [A customized pond for turtles and fish in Quebec](#)
  - [Restoring an open landscape on Kootenay River Ranch, BC](#)
- Reintroducing species
  - [Nature Conservancy of Canada Returns Bison to the Wild](#)
- Removing invasive species
  - [Multi-year project on Blooming Point Beach's salt marsh, PEI](#)
- Removing dams for river connectivity
  - [Setting a river free in Creemore, ON](#)
- Cleaning up trash along river or coast
  - [Tackling a mountain of waste in Lac du Bois](#)
- Rehabilitating degraded shoreline
  - [The dramatic transformation of Campbell River Estuary, BC](#)

<https://www.natureconservancy.ca/en/what-we-do/ecosystem-restoration/>



## Reconnecting Prairie Creek

Increasing the habitat available to the creek's fish community

### Location

Prairie Creek is located in west-central Alberta. The creek has been beloved by anglers and recreationists for decades but is also in the heart of an industrial area. In the 1960's, a culvert was installed along Prairie Creek when a road was constructed to Husky Energy's Ram River Gas Plant. Over time, high flow events in Prairie Creek led to erosion at the culvert outlet eventually resulting in the culvert becoming perched, limiting some fishes' ability to migrate upstream into and through the culvert.

### Details

Husky began looking for options to improve fish passage and asked Trout Unlimited Canada to partner with them to find a solution. TUC was successful in receiving funding for the project through the federal Department of Fisheries and Oceans through the Recreational Fisheries Conservation Partnership Program.



<https://tucanada.org/project/reconnecting-prairie-creek/>



# Opportunities - Indigenous



Kainai linnii Rematriation Project

**B** Blood Tribe Communications  
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<https://www.natureconservancy.ca/en/what-we-do/ecosystem-restoration/>

## ESTABLISHING A MÉTIS INDIGENOUS PROTECTED & CONSERVED AREA (IPCA)

What is an **IPCA?**

An area majority managed by Indigenous communities that contributes to the conservation of Canada's lands and waters via land stewardship activities.



PHASE  
**01**

### PLANNING (2019-2020)

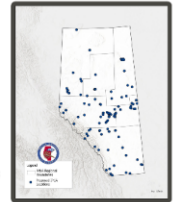
- Background research to establish the project scope, plan, and structure
- Engagements with Métis Citizens
- 6 online engagement sessions (information video + Citizen survey)
- Identified:
  - i. Ecological and cultural priorities
  - ii. Land use intentions, potential activities, and programming areas
  - iii. Location suggestions/preferences



PHASE  
**02**

### EVALUATION (2020-2022)

- Research policy and legislation to support the project
- Use engagement data to develop management goals for future IPCA site(s)
  - ∞ Ecological Protection
  - ∞ Harvesting Opportunity
  - ∞ Education and Outreach
  - ∞ Relationship Building Activities
  - ∞ Healing the Land
  - ∞ Citizen Involvement and Accessibility
- Investigate potential partnerships with other organizations
- Site exploration by MNA staff and discussions on co-management with partner organizations



PHASE  
**03**

### IMPLEMENTATION (2022-2023)

- Secure property to establish a pilot IPCA site
- Develop management plan and governance system
- Undertake potential site improvements and/or restoration activities
- Declare site as an IPCA



If you are interested in learning more about projects from the Environment Team, please reach out at [environment@metis.org](mailto:environment@metis.org)

<https://albertametis.com/app/uploads/2022/08/IPCA-Infograph-Final.png>

# Opportunities – What about?

- Farmers
- Ranchers
- Cottage owners
- Homeowners
- Ski hills
- Golf courses
- Highways
- More?



# Challenges

- Unique projects
- Consistency
- Supply chain
- Varying scales
- The “Purist Spectrum”
- What is “Baseline”
- Community support
- Demonstrating success
- Defining the end



C. Tenszen, 2023

# Questions

- Is this market here to stay, or is it temporary?
- Where does the money come from?
- Can it sustain a whole team?
- What team members do I need?





# Acknowledgements

Alia Snively and Katelyn Ceh  
at the Nature Conservancy of  
Canada



C. Tenszen, 2022

Tom Knapik et al.  
at Plains Midstream



C. Tenszen, 2022

# Questions? We're here to help.

Chris Tenszen, B.Sc., P.Ag.  
Practice Area Lead, Reclamation and Restoration  
ctenszen@traceassociates.ca  
780.914.2730





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