

Essential Innovations in Geoscience

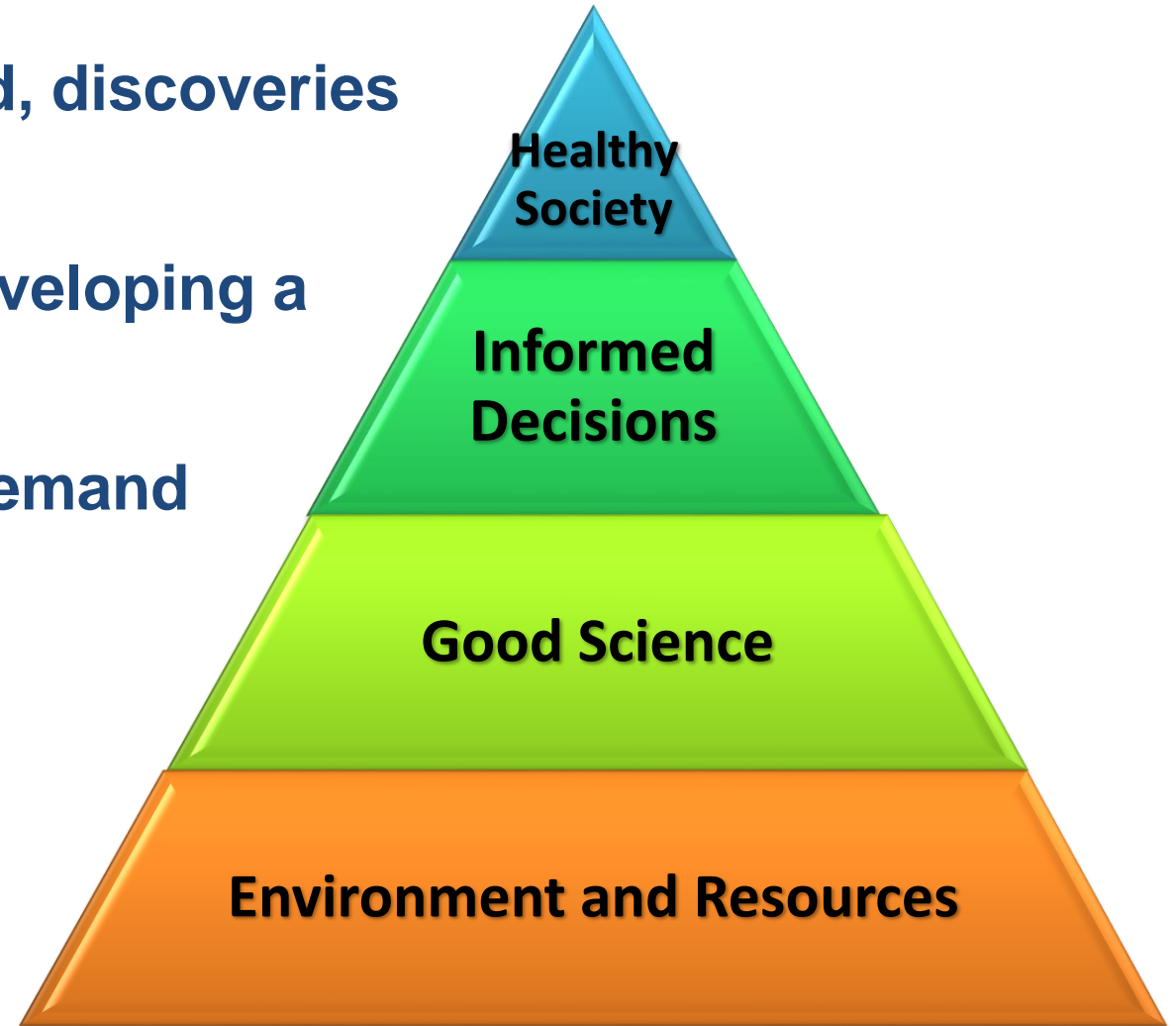
Bruce Madu
VP, Minerals and Mining

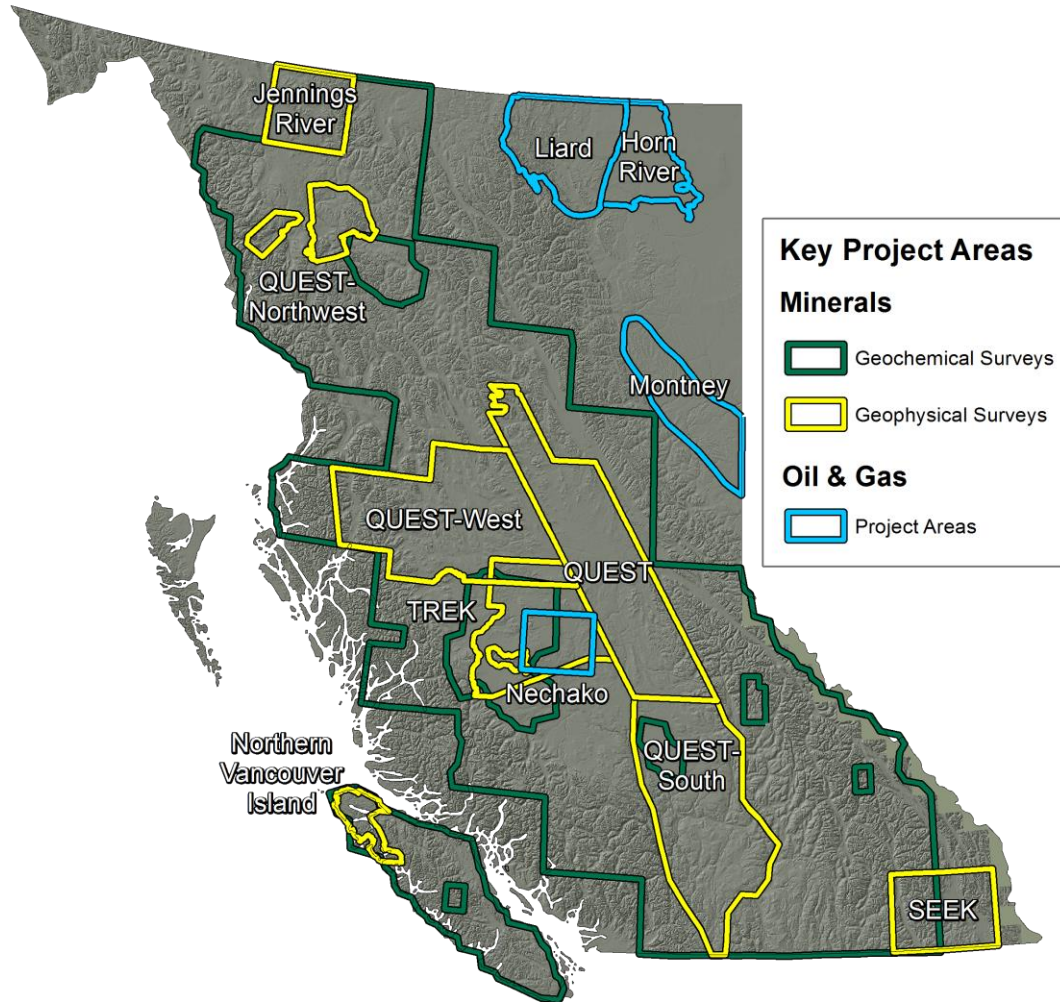
*We gratefully acknowledge the financial support of the
province of British Columbia.*

Minerals North Conference
May, 2016

Innovation is driving geoscience

- Mineral deposits are typically buried, discoveries are being made deeper
- Overall ore grades are declining, developing a mine is expensive
- Resource management decisions demand the best information
- Putting information and data in the hands of all users a common goal
- We compete on an international stage for investment





Geoscience BC is an independent, non-profit organization that generates earth science information in partnership with First Nations, local communities, governments, academia and the resource sector.

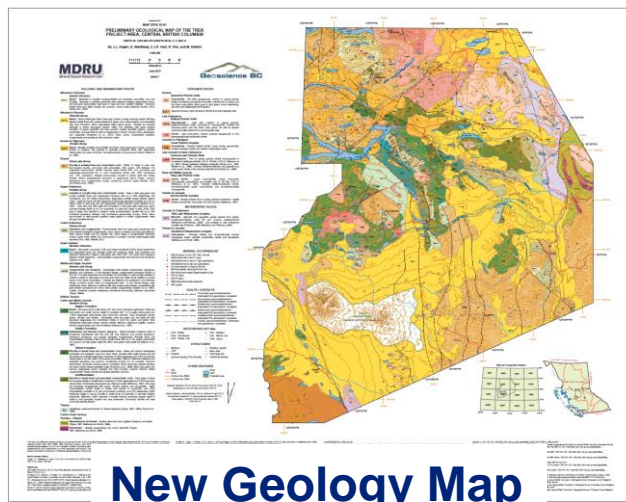
This vital information is made available to the public to encourage investment in sustainable resource projects and support informed resource management decisions for the benefit of all British Columbians.



Tree top Sampling

TREK Project

- One of Canada's largest public geoscience projects (\$4.0 million)
- Surrounds the Blackwater gold discovery south of Vanderhoof



New Geology Map

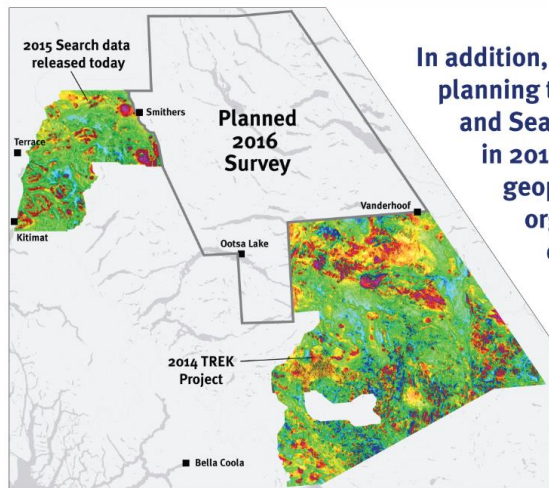


Glacial Till Sampling

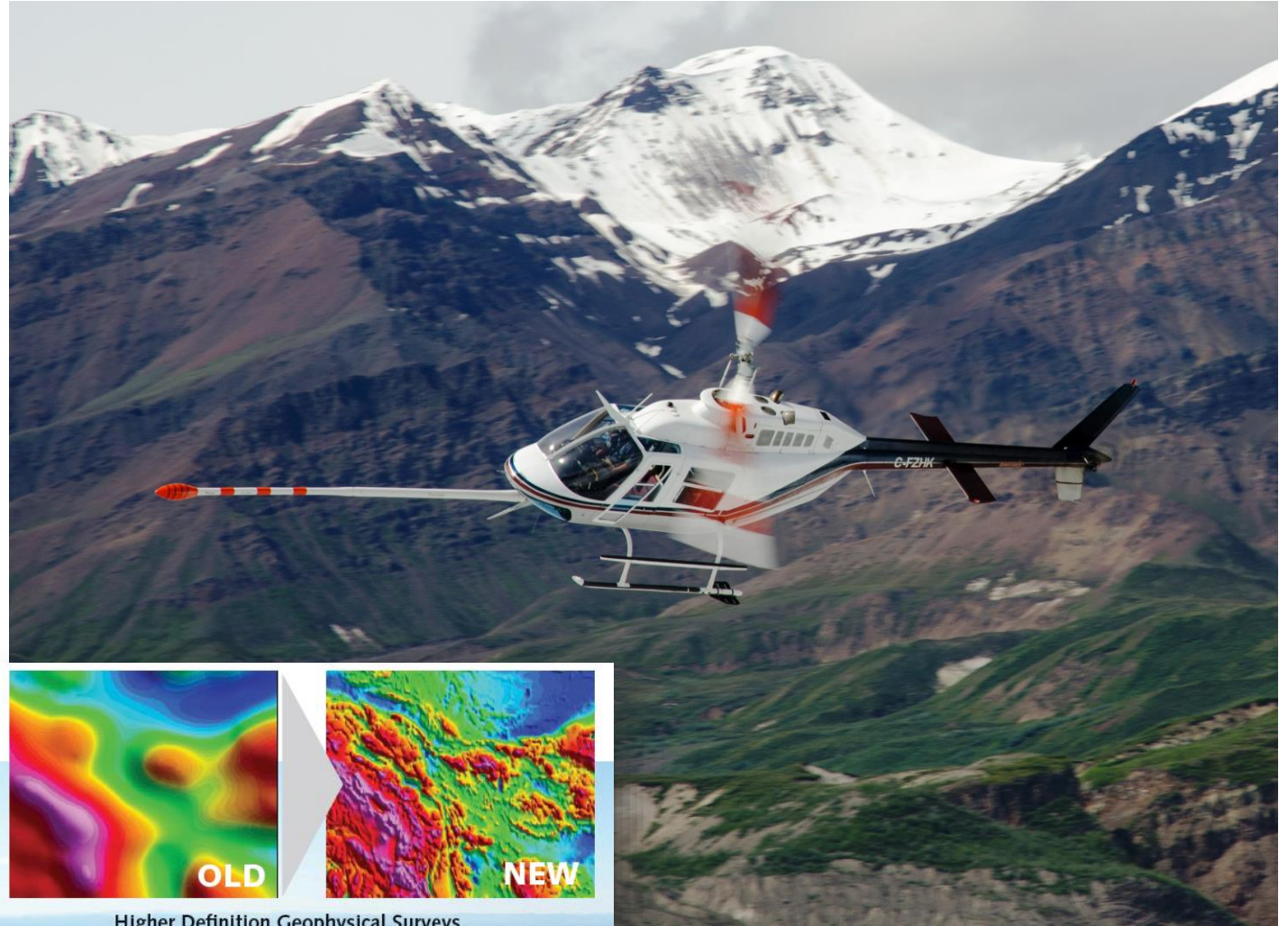
Search Project

- Providing modern high definition airborne magnetic data and more
- Announced 2016 survey yesterday

Geoscience BC has surveyed 31,500 sq km of west-central British Columbia

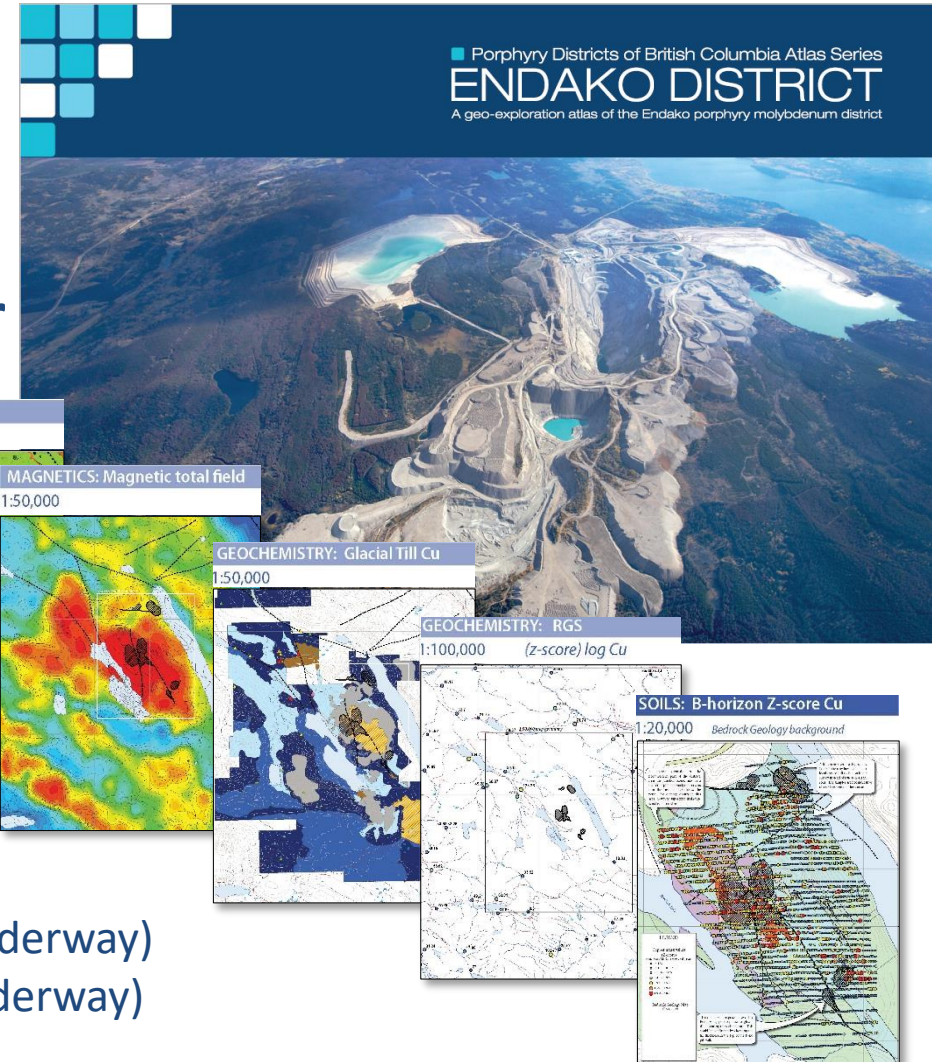
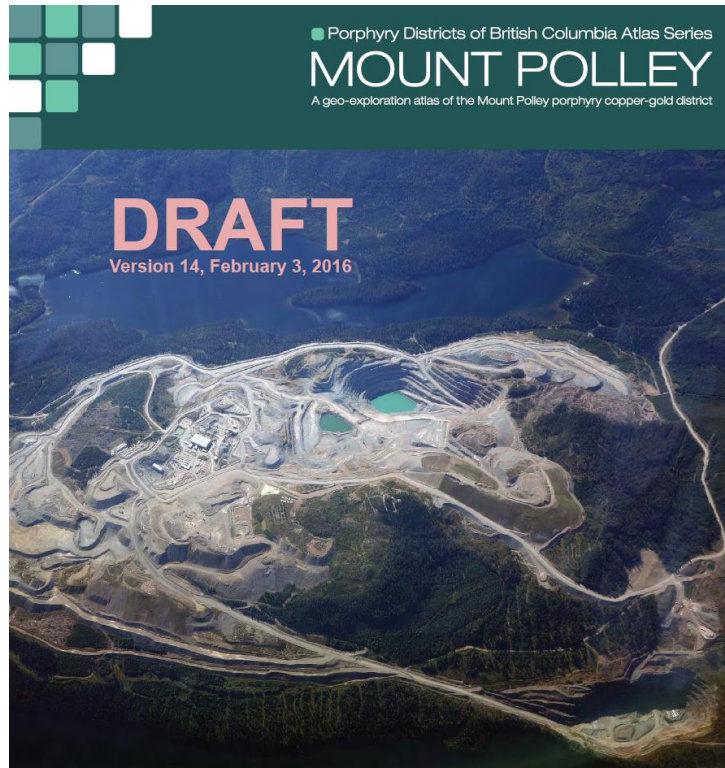


In addition, Geoscience BC is planning to join the TREK and Search areas together in 2016 with the biggest geophysical survey the organization has commissioned.



Porphyry Integration Project

“...district-scale porphyry footprints and vectoring tools for exploration...”



Future Atlases:

- Mount Milligan (underway)
- Duckling Creek (underway)



Figure 4. Photo showing a typical set-up for photometer analysis. Reagents are in silver packaging aligned atop. Coloured sample solutions ready for analyses are shown in the 10 ml tubes in rack. The Photometer is in the lower right of the photo.

Rapid Hydrogeochemistry

- Direct measurement of water for metals in the field

Halogens in Soil Gas Detection

- Evaluating the utility of gases emitted from buried mineralization

“Big Data” Statistical Projects

- Crunching massive data sets to remove biases and find new patterns

Re-analysis of previously collected materials

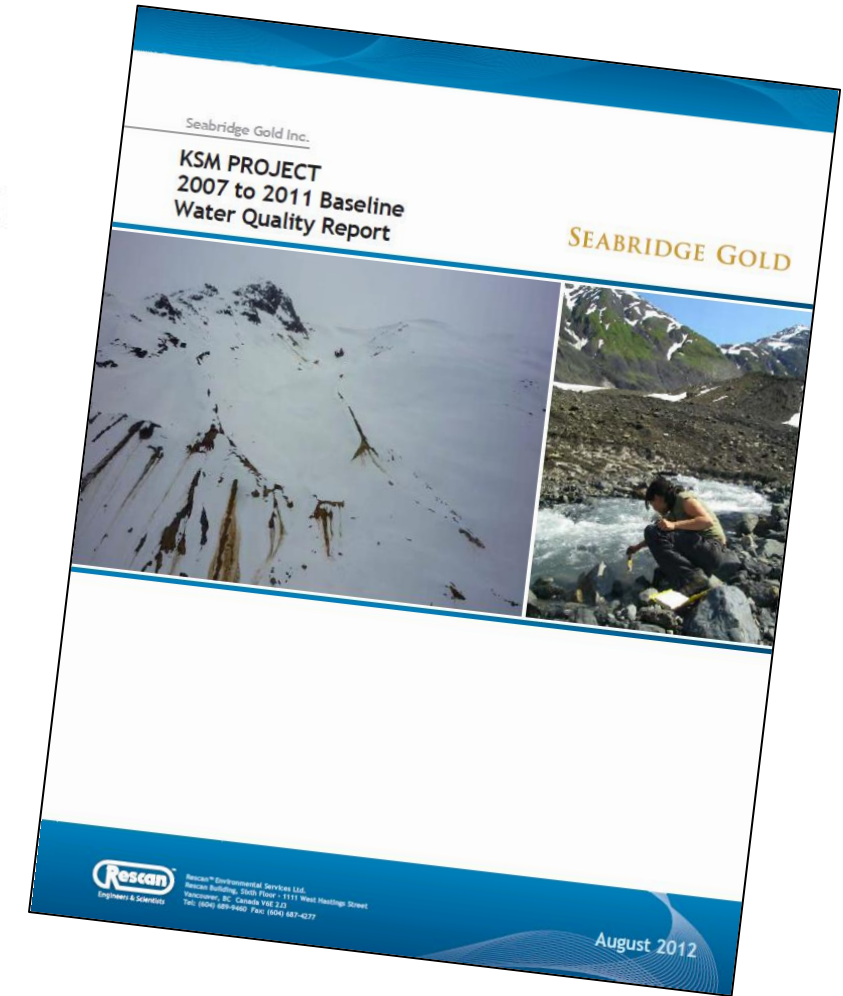
- Several thousand to be done in 2016
- Both modern ICPMS and clay-fraction work

Pilot Project with Canada Mining Innovation Council (CMIC)



“Mining Industry Knowledge Hub”

- A pilot for a Canada-wide CMIC initiative
- Compile water quality data from companies operating and developing mines in British Columbia.
- Data storage in a centralized hub.
- Providing an interface for accessing the data

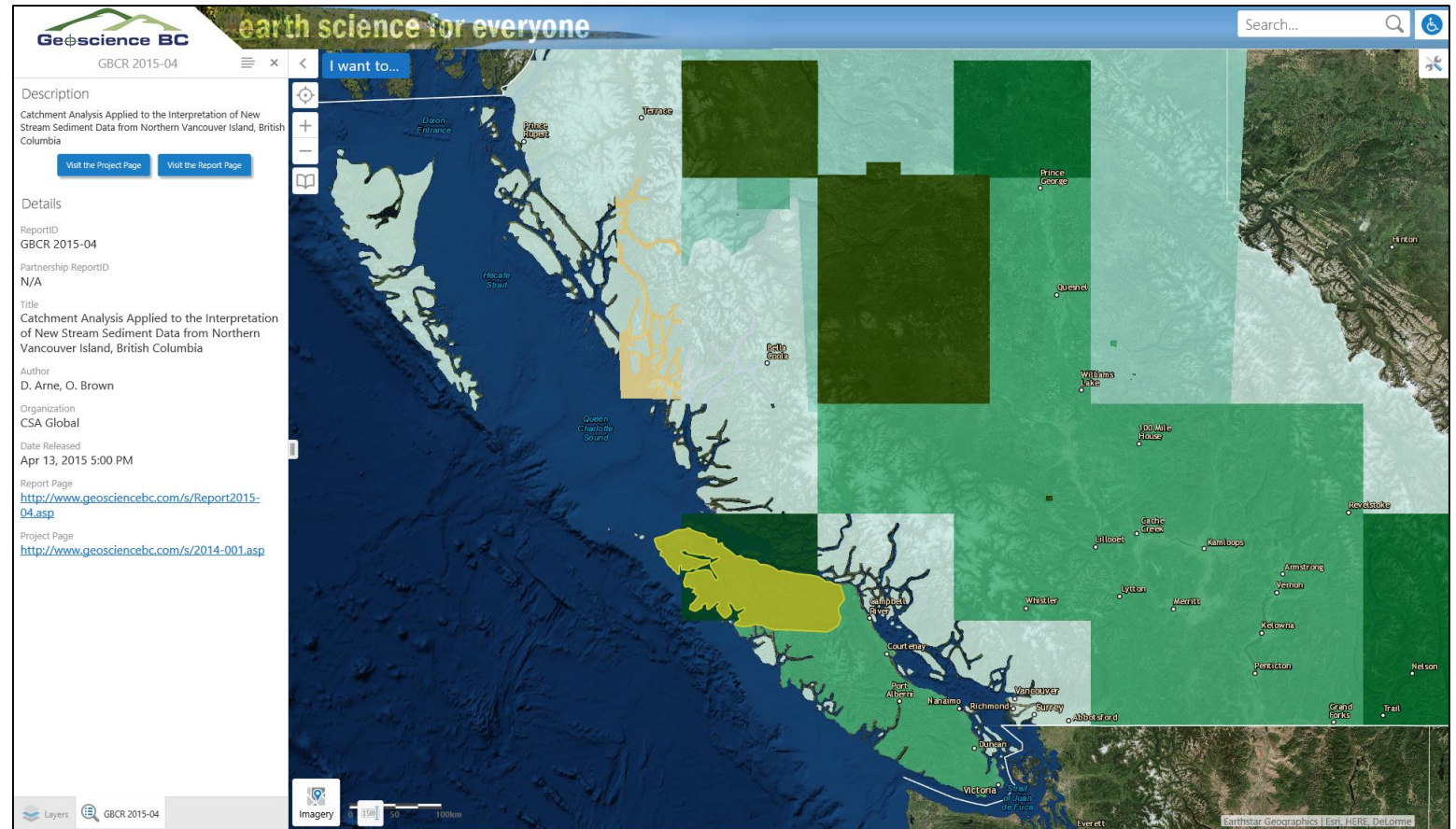



Document posted on the BC EAO public site

Democratize: to make (something) available to all people : to make it possible for all people to understand (something)

Earth Science Viewer

Web-based mapping application to distribute Geoscience BC project information and data in an quasi-GIS mapping environment




earth science for everyone

Home

Data

Layout

Identify

Query

Filter

Layer List

Upload Data

Find Data

Layers

Upload Data

Layers

Minerals Layers

Land Usage

Projects and Reports

Minerals Data

Base Layers

I want to...

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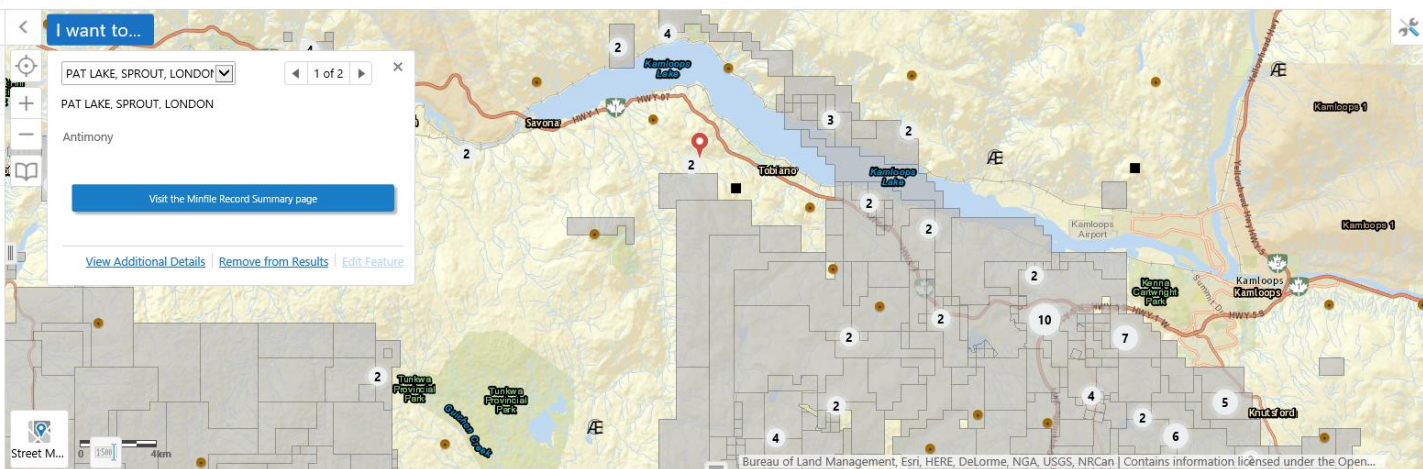
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Antimony

Visit the Minfile Record Summary page

View Additional Details Remove from Results Edit Feature



Identify Results (5)

Minfile

Geological Reports

Geochemical Reports

Geophysical Reports

Mineral, Placer, Coal Tenure

| ReportID | Partnership ReportID | Title | Author | Organization |
|--------------|----------------------|---|---|---|
| GBCR 2011-15 | | Regional 3D inversion modelling of airborne gravity, magnetic, and electromagnetic data: Central BC, Canada | Mira Geoscience Ltd. (Advanced Geophysical Interpretation Centre) | Mira Geoscience Ltd. (Advanced Geophysical Interpretation Centre) |
| GBCR 2010-06 | | Airborne Gravity Survey QUEST-South, British Columbia - 2009 | Sander Geophysics Limited | Sander Geophysics Limited |
| GBCR 2011-14 | | Regional 3D inversion modelling of airborne gravity and magnetic data: QUEST-South, BC, Canada | Mira Geoscience Ltd. (Advanced Geophysical Interpretation Centre) | Mira Geoscience Ltd. (Advanced Geophysical Interpretation Centre) |
| GBCR 2008-09 | | Development and Application of a Relational Rock Property Database System for BC | Tom Lane | Mira Geoscience Ltd. (Advanced Geophysical Interpretation Centre) |
| GBCR 2006-03 | MEMPR Geofile 2006-8 | Examining ASTER Imagery with the MapPlace Image Analysis Toolbox - A Tutorial Manual | Ward E. Kilby and C.E. Kilby | |

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Strategic Direction

- **Water Research**
 - Identifying where gaps exist
 - Considering work outside minerals or energy
- **Mine Development/Innovation**
 - Identifying opportunities to enable mine development and sustainability
 - Recent partnership with CMIC announced
 - Partnerships will be the norm
- **Energy and Geothermal**
 - Very actively pursuing opportunities

More Information

- Summary of Activities volume
 - Technical reports from GBC initiatives (minerals and energy)
- Annual Report (Explorer Magazine)

