



Online databases at the British Columbia Geological Survey



Ministry of
Mining and
Critical Minerals

Information Circular 2025-04



Data: from the field to your computer

Land-use decisions and co-management of natural resources require high-quality information. Geoscience data delivered by the British Columbia Geological Survey is foundational to understanding the mineral wealth of the province and the economic opportunities it provides, helping the search for critical minerals needed for a low-carbon future, and building relationships with Indigenous Peoples.

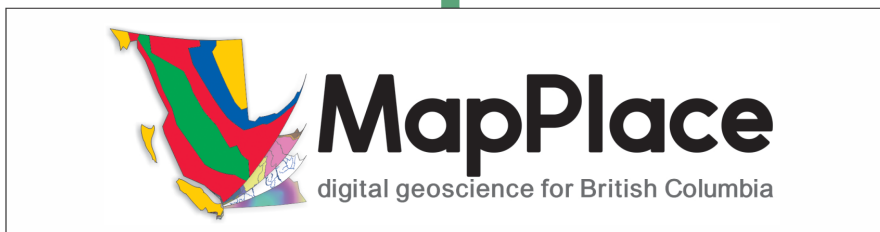
Founded in 1895, the British Columbia Geological Survey integrates research programs with historical data, providing geological and mineral resource information to guide societal decisions centered on the Earth sciences.

Supporting access to critical minerals data and land-use decisions, the Survey is modernizing its information systems to improve the operation of databases, applications, and geospatial web services.

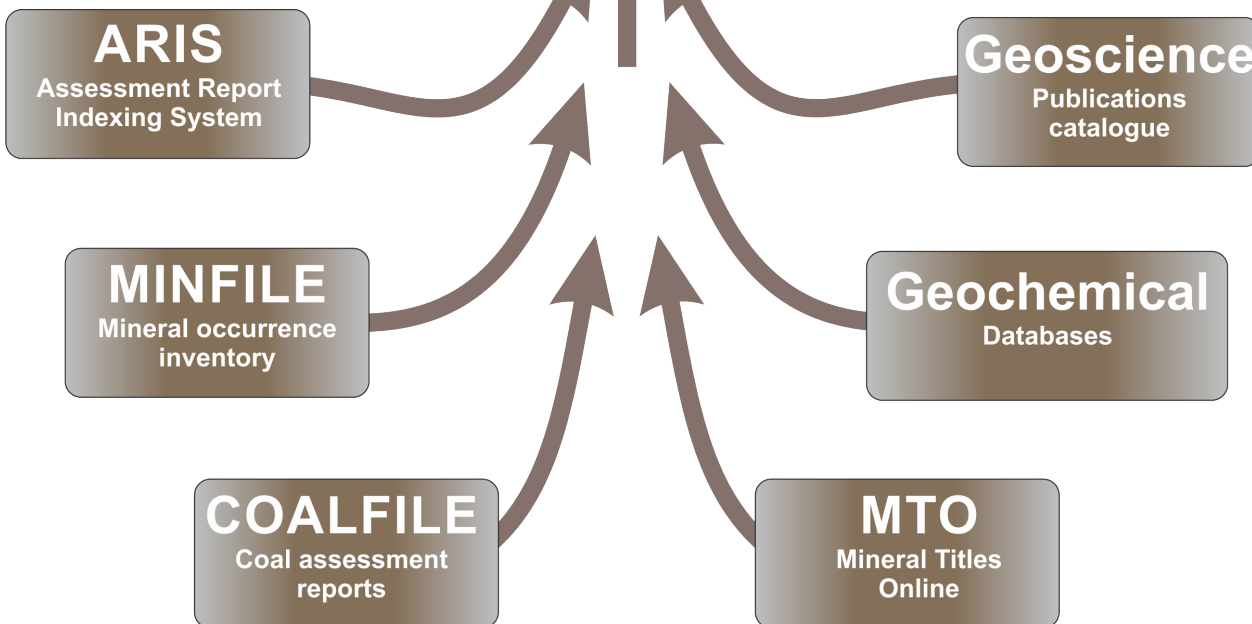
The Geoscience Spatial Data Infrastructure (gSDI) project will modernize and integrate currently disparate geoscience and mineral resource databases into a single unified system ready for applied analytics using machine learning.

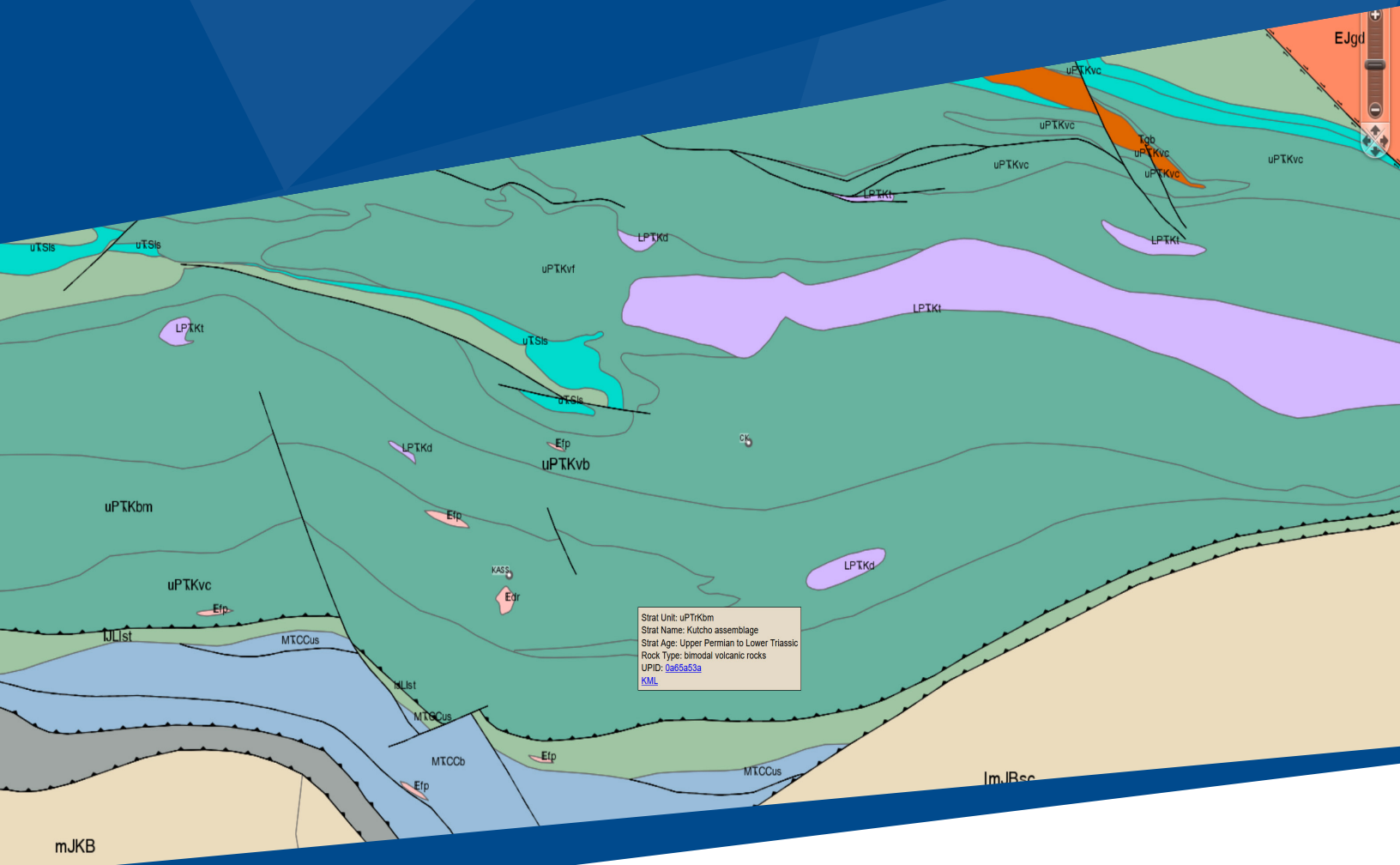
Visit the Digital Geoscience Data download page for current versions of regularly updated datasets.





Geospatial Databases





MapPlace

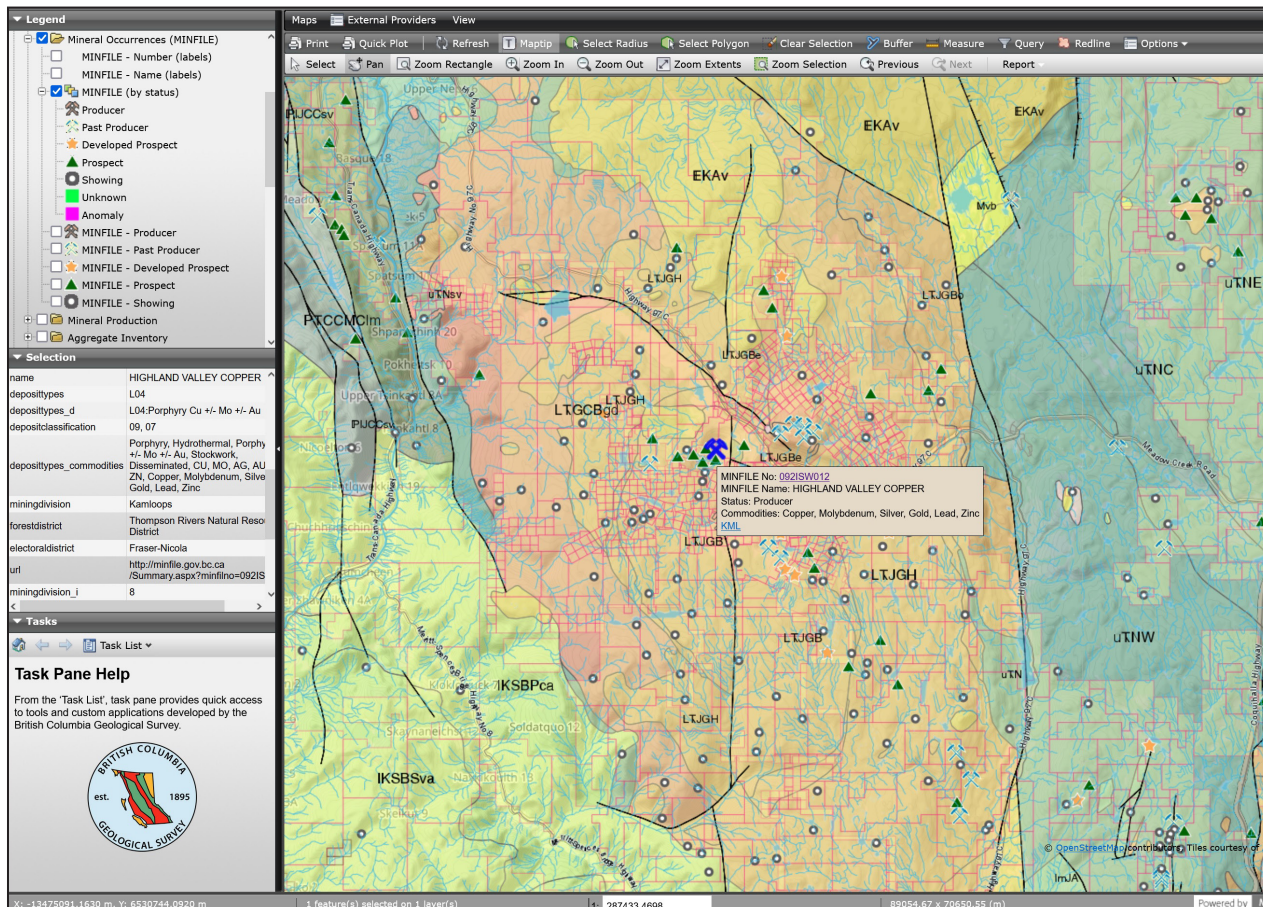
MapPlace, the Survey database-driven geospatial web service, provides public geoscience data and custom map-making tools to help decision makers from diverse sectors reduce the costs of accessing and analyzing information about the geology and mineral resources of the province.

MapPlace allows anyone with an internet connection to mine multiple geoscience databases that are updated regularly. With a simple interface, MapPlace is easy to use, fast, handles large datasets, and provides access to third-party base maps.

Through MapPlace, multiple databases can be queried simultaneously

MapPlace goes beyond simply displaying information. Geological maps, ARIS, MINFILE, COALFILE, Property File, geochemical surveys, mineral titles, topographic maps, and the British Columbia Geological Survey publication catalogue can be queried simultaneously.

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British Columbia digital geology

The British Columbia Geological Survey delivers province-wide digital geology coverage. In contrast to traditional compilations, the digital coverage is neither static nor at a single scale.

Digital data can be visualized and queried on MapPlace, or downloaded in GeoPackage or shapefile format.

As Survey geologists carry out new field mapping, their new data are integrated into the BC Digital Geology database.

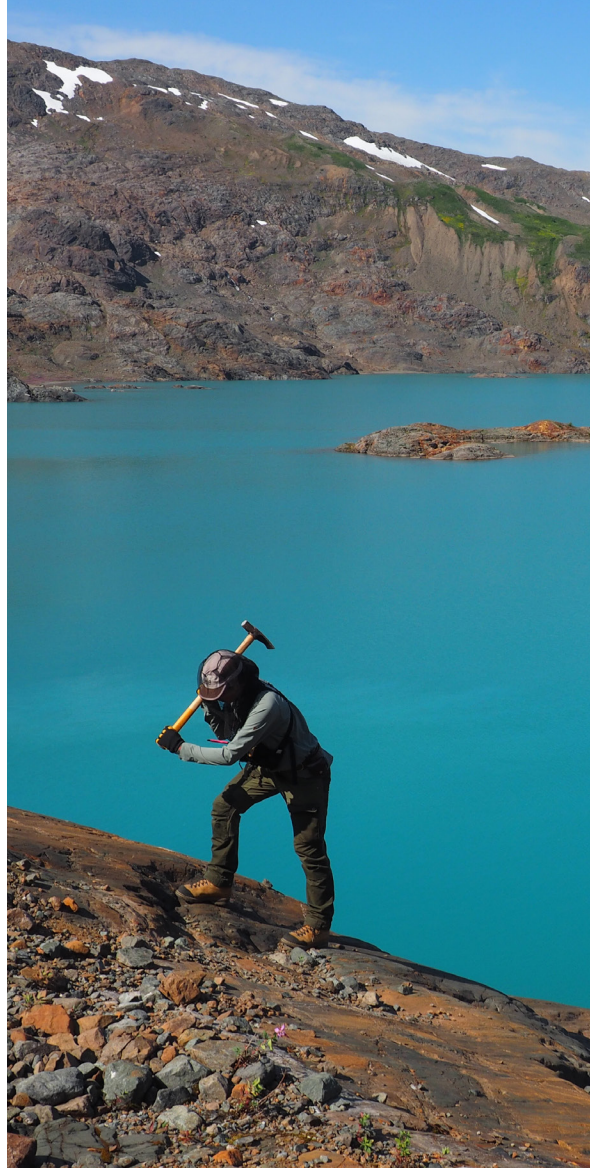
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Geochemistry

Geochemical analysis is a basic tool for classifying and understanding the geological settings important for mineralization and for establishing the tectonic evolution of the province. The Survey maintains a geochemical dataset that contains multi-element analyses from rock, till, moss mat, stream- and lake-sediment, water, and coal ash samples. This dataset includes about 5 million determinations from more than 86,000 samples and is an essential part of modelling mineral potential and conducting mineral assessments.

Archived samples are now undergoing whole-rock geochemical re-analysis, coupled with both micro-X-ray fluorescence and mineral liberation analysis, to test for critical minerals. In addition, archived samples of igneous rocks are being analyzed for radiogenic isotopes and trace-element concentrations. Stream sediments are being analyzed for indicator minerals of carbonatite-related niobium, tantalum, rare earth element (REE), and other critical minerals.

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Geochronology

Establishing the radiometric ages of rocks is essential to understanding the geological evolution of the province, including the origin and context of mineral deposits. The Survey has archived almost 8,300 age determinations published between 1960 and 2020. Because magmatic deposits are restricted in time and space, the Survey has embarked on a project to develop a modernized framework for critical mineral-bearing intrusive systems across the province.

This project is yielding new high-precision U-Pb radiogenic ages using single zircon chemical abrasion isotope dilution thermal ionization mass-spectrometry (CA-TIMS) and isotopic tracer data to establish the age, emplacement setting, and geographic distribution of both fertile and barren intrusions.

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MINFILE

MINFILE is an inventory documenting more than 16,000 metallic mineral, industrial mineral, and coal occurrences in British Columbia.

MINFILE can be queried by

- location
- identification number
- mineralogy
- commodity
- host rock
- deposit type
- geological setting
- age
- production
- references

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COALFILE

COALFILE is a collection of assessment reports, maps, and data from boreholes, trenching, and sampling of coal occurrences. These data are available for download and viewing through MapPlace.

- more than 1000 reports
- 5490 maps
- 17,400 boreholes
- 3668 trenches
- 568 bulk samples
- 480 coal ash analyses

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Assessment Report Indexing System (ARIS)

To comply with Mineral Tenure Act regulations, results of mineral exploration are submitted to the government as assessment reports. Survey staff review and approve these reports as a statutory requirement for mineral and placer tenures to remain in good standing. After a one-year confidentiality period, the reports become freely available to the public.

ARIS is the database of more than 40,500 assessment reports submitted to the Ministry since 1947. This archive of previous exploration results enables government, Indigenous groups, and industry make informed land-use decisions. It also helps industry to consider opportunities and advance projects without duplicating previous work.

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ARIS-sourced digital data

The Survey is extracting and digitizing data locked in past assessment reports into machine-readable databases that provide easier access to information using geospatial and analytical software.

Using past results to guide future exploration, these geospatial databases will help document critical mineral occurrences that were not of interest when the original reports were submitted, thus increasing the provincial critical mineral knowledge base.

- The Assessment Report-sourced Surface Sediment Geochemical Database (ARSSG) contains analytical results from soil, silt, stream-sediment, and till samples.
- The Assessment Report-sourced Drillhole Database (ARDH) includes collar information (e.g., location, dip, azimuth, total depth), descriptions and intervals of major rock types, sampling intervals, and assays.

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Digital data submission of assessment reports

Access to raw data is essential for successful exploration. However, raw data in assessment reports have historically been trapped in paper or non-digital formats such as .PDF files. With digital submission, raw data are immediately available for machine learning and can be easily retrieved, integrated, processed, recalculated, and recast for specific needs.

Example digital data types and file formats

Airborne geophysics	Magnetic, electromagnetic, versatile time domain, radiometric.	.dat .grd .gi .map .gdb .kml .kmz .xyz .jpg .pdf .png .dxf .msh .sus .ers .bdx .bin
Ground geophysics	Induced polarization, magnetic, very low frequency electromagnetic.	.txt .gdb .csv .arw .srf .xyz .tif .tfw .vtx .pvs .con .res .chg .pre .out .inp .inv .egh .ehf .gdd .gi .png .xml .shapefiles
Geochemistry	Assay certificates, geochemical compilations, metallurgical results.	.xls .xlsx .csv .accdb
Drilling	Core logs, geotechnical and RQD logs, analytical results, collar locations, drill hole parameters, downhole surveys.	.xls .xlsx .accdb
Imagery	Orthophotos, lidar, digital elevation models, ASTER	.tif .tfw .jpg .ecw .dwg .dbf .pdf .shapefiles
Maps	Map units, contacts, structures, sample or drill locations; in GIS	.xls .xlsx MapInfo Files (.dat .id .map .tab .ind), shapefiles (.shp .shx .prj .sbn .sbx .dbf)
GIS	Map files, sample and drillhole locations and parameters	MapInfo files (.dat .id .map .tab .ind), shapefiles (.shp .shx .prj .sbn .sbx .dbf)

Data can be submitted by CD, DVD, or USB when a report is filed, e-mailed to aris.digital@gov.bc.ca, or uploaded through the ARIS data submission page at ardata.bcgeologicalsurvey.ca






Property File

Property File is a collection of more than 100,000 reports, maps, photos, and technical notes donated to the British Columbia Geological Survey since the late 1880s by government, university, industry, and individuals.

Previously available only in hard copy, these documents now can be searched for, and downloaded from, the Property File database.

The British Columbia Geological Survey accepts donations to Property File.

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Geological Fieldwork 2024

A Summary of Field Activities and Current Research

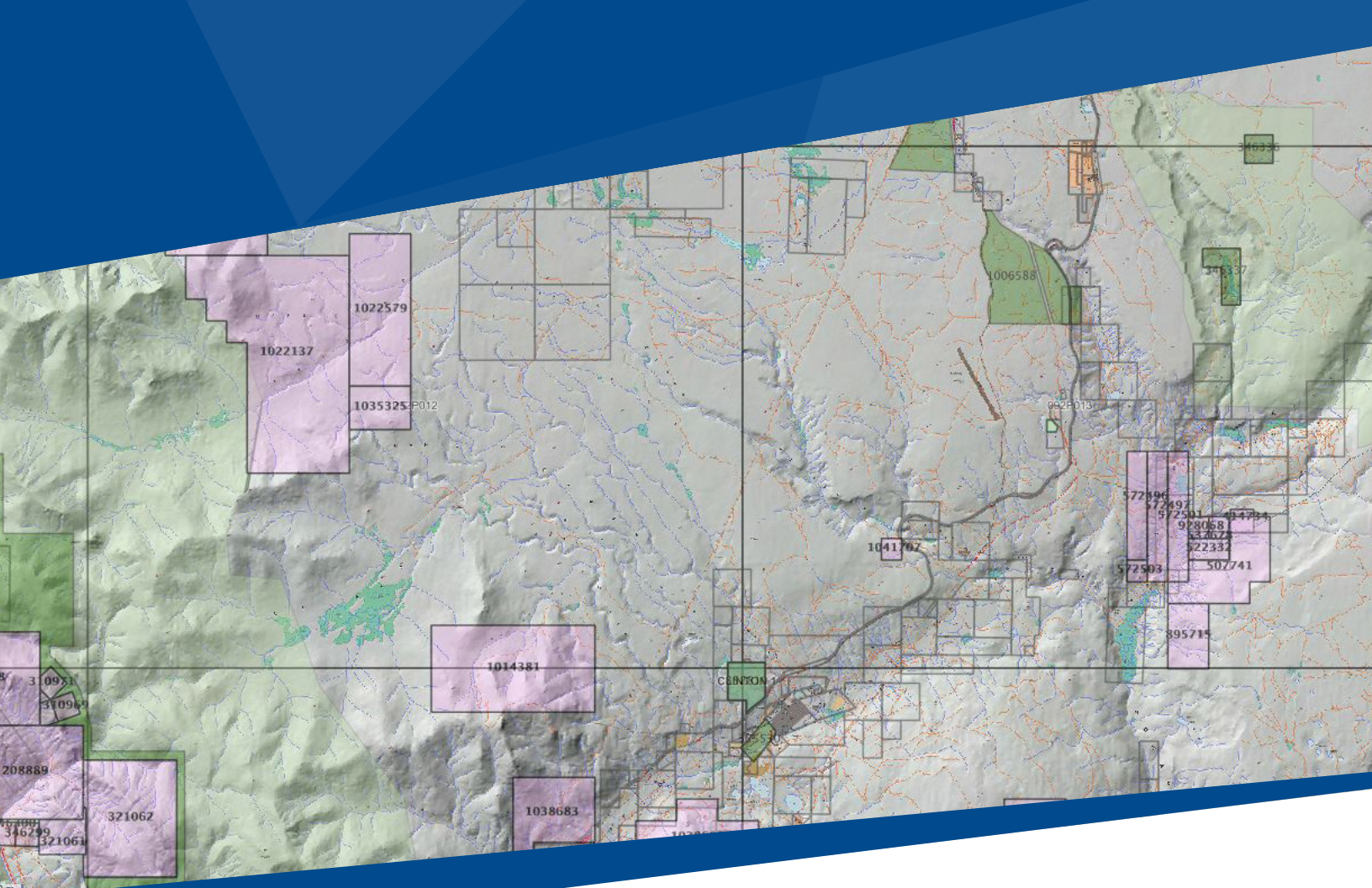
50th annual edition



Publications catalogue

Reports, maps, and databases produced by the British Columbia Geological Survey since 1895 can be searched for, and downloaded from, our [publications catalogue](#) at no cost. The Survey publishes Papers, Geoscience Maps, Open Files, GeoFiles, Information Circulars, and Digital Geoscience Data.

Published each January, the Geologic Fieldwork volume includes papers highlighting current field activities and research. The 2025 volume is the 50th edition. The Provincial Overview of Exploration and Mining in British Columbia, also published each January, summarizes industry activities of the previous year.



Mineral Titles Online

Mineral Titles Online (MTO) is a geospatial web-based system that enables the exploration industry to electronically acquire and maintain mineral, placer, and coal rights.

Mineral titles data are managed at Mineral Titles Office and can be viewed and queried on MapPlace.



www.mtonline.gov.bc.ca





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