

Yukon Geological Survey 2024 overview

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Yukon Geological Survey

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Introduction

The Yukon Geological Survey (YGS) has seen significant change over the last year, with eight new staff joining the team in 2024. This change has brought some new energy to the survey, enabling more visits to exploration projects and building the organization's capacity to deliver geoscience. This report provides a snapshot of YGS' staff and fiscal resources, and summarizes YGS' 2024 activities and project highlights.

Over the course of the year, YGS organized three workshops to assess current gaps in map coverage, seek input from clients about their needs, and consider how current trends such as interest in critical minerals and increasing frequency of landslides might influence YGS' priorities in the future. Following each workshop, a list of project ideas for future work was compiled; these are summarized in this report.

Gold prices in 2024 were high, averaging over C\$3351 per ounce during the production season. This was a major driver for placer activity in the Yukon, which recorded the highest production on record since 1886.

On a more somber note, the failure of the heap leach pad at Eagle Gold Mine in late June had a significantly negative impact on the First Nation of Na-Cho Nyäk Dun and the mineral industry in general. The medium to long-term effects of this incident on the environment and the mining sector are currently unclear.

YGS resources

The YGS' organizational structure has four units (Fig. 1). The survey's geoscience program is delivered by three units, each focused on a specific discipline: Bedrock Geology, Surficial Geology and Minerals Geology. The units report to a Geoscience Research Manager who coordinates studies across the disciplines and liaises with research partners to enhance the YGS' capacity. As of December 15, 2024, the Geoscience Research Manager position was in the process of being staffed. The fourth unit, Technical Services, provides the underpinning support to manage all YGS' data, overseeing publications, social media and outreach. This unit reports to the Manager of Technical Services, who liaises with the Geoscience Research Manager to coordinate the timely release of information and ensure the database infrastructure meets YGS' needs.

Eight new staff were hired by YGS in 2024. Sarah Schultz joined the Bedrock Geology unit in March. Her expertise is in sedimentology and stratigraphy, and she will be tackling some regional stratigraphic questions in Selwyn basin over the next few years. Tiera Naber, Alex Brubacher and Spencer Skerget joined the Minerals Geology unit over the summer; Naber and Brubacher as Economic Geologists, and Skerget as the Core Library Geologist. Although he is not new to YGS, Patrick Sack has taken on a new role at the survey, filling the position of Head of Minerals Geology. Following the appointment of Derek Cronmiller as Head of Surficial Geology in January, Moya Painter was hired to backfill the Permafrost Geologist position, taking over the lead for managing Yukon's permafrost database and monitoring boreholes across the Yukon.

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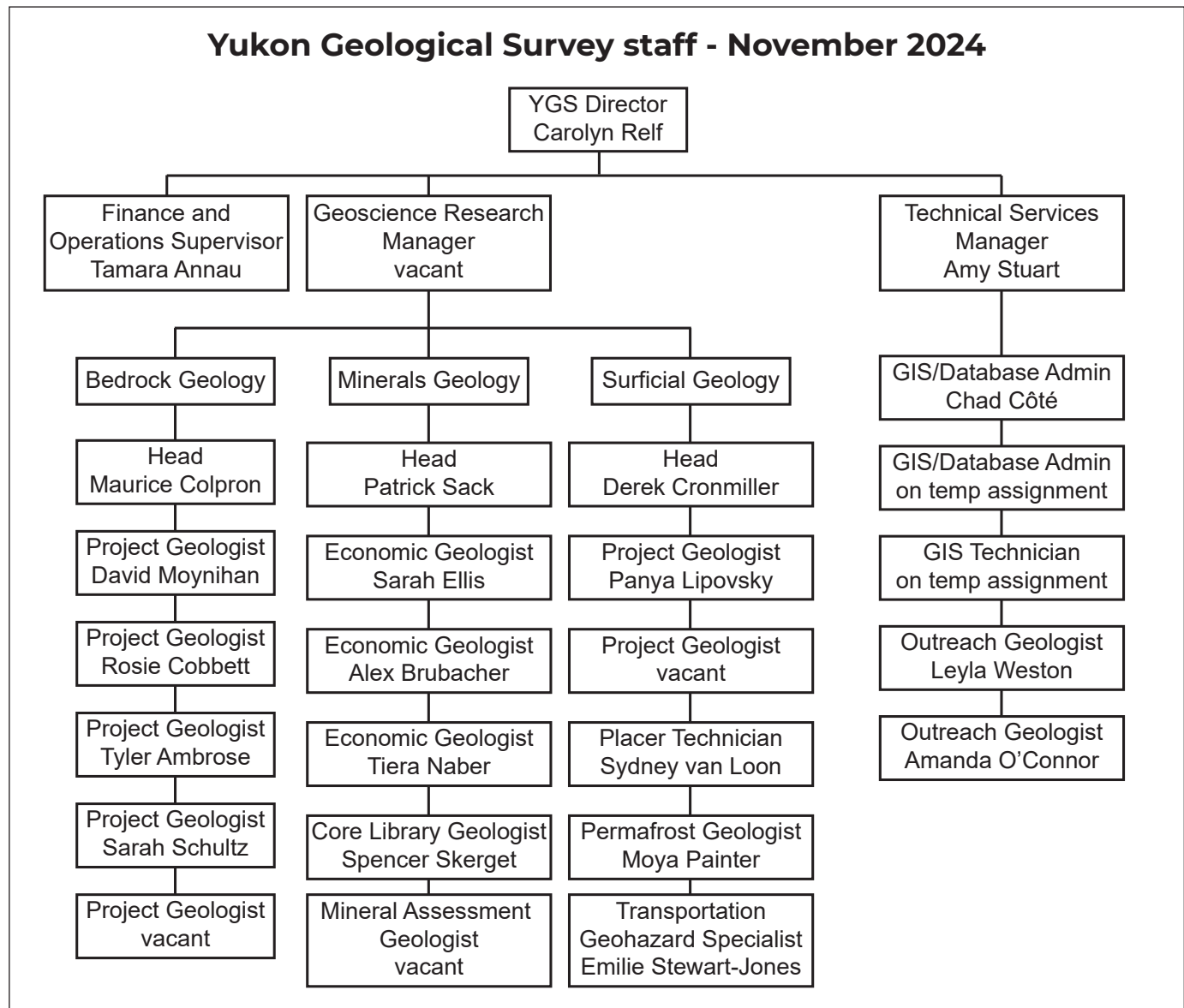


Figure 1. Organization chart for the Yukon Geological Survey.

Emilie Stewart-Jones also joined the Surficial unit; her position is shared with Highways and Public Works and will focus on assessing permafrost-related issues that plague Yukon’s highways. The newly created Manager of Technical Services position was filled by Amy Stuart in August; Amy began her Government of Yukon career in 2002 as a GIS Technician for the YGS and has now come full circle as the unit manager. Finally, Tamara Annau joined YGS as the Finance and Operations Supervisor, managing contracts, finances and administrative duties.

The YGS also lost some staff in 2024. Diane Skipton (Project Geologist) and Justin Emberley (Core Library

Geologist) returned to Newfoundland with their family in the spring. Skipton has joined the Geological Survey of Newfoundland and Labrador, and Emberley is managing core facilities for the Mineral Lands Division. Kristy Kennedy (Project Geologist) took a secondment with Kluane First Nation as their Director of Lands, Resources and Heritage. In addition to these departures, two staff within the Technical Services unit are on six-month temporary assignments with other departments: Brett Elliot (Geological and Spatial Database Administrator) is working for the Department of Tourism and Culture, and Bailey Staffen (GIS Technician) is with the Department of Education.

I would like to welcome the new staff; they bring new energy to the YGS and their enthusiasm is refreshing. I would also like to extend my gratitude to staff who have moved on to new opportunities; their contributions are appreciated and I wish them all the best in their new positions.

The 2024–25 operating budget for YGS totalled \$2 994 060 (Table 1). This represents a reduction of \$908 000 from the previous year as funding for geothermal research ended (2023–24 YGS received \$300 000 from Our Clean Future and \$380 000 from the Geological Survey of Canada [GSC]), and funding from Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) for permafrost and geohazard studies wound down.

A key part of YGS' mandate is to provide geoscience information to the public. This information takes a variety of forms and targets a range of audiences. The YGS maintains both Facebook and Instagram accounts, which YGS uses to share information about activities, public events and staffing opportunities. The YGS also distributes geoscience information as raw datasets, maps and technical reports. A list of 2024 publications is included at the end of this volume. These information services are a key part of YGS' mandate.

Geoscience planning

The YGS undertakes geoscience planning on a five-year cycle, and 2024 marked five years since the last planning event. Planning does not follow a prescriptive process; over the years, YGS has held both small staff retreats, and large workshops attended by cross-sections of client groups. Given the growing diversity

of survey activities and the influx of new staff, finding a single date to bring together all staff and their clients was challenging. As a result, in 2024 YGS held separate workshops for each unit: Bedrock Geology, Surficial Geology and Minerals Geology. The workshops involved key clients and/or stakeholders who provided input and helped identify emerging interests. A list of project ideas was generated at each workshop, but the projects were not ranked by priority.

Factors that are likely to impact YGS priority setting over the next five years include the increasing need to identify and monitor geohazards, pressure to complete land use plans, and interest in critical minerals. Support for the work by affected First Nations and opportunities to leverage funds will also influence priority setting. At each workshop, staff identified persistent geoscience questions and discussed the potential roles that evolving technologies (e.g., drone-based lidar and artificial intelligence) and novel applications of tools for unconventional uses (such as using passive seismic data to predict how seismic energy will disperse as permafrost thaws) might play in the future. Mapping of bedrock and surficial geology will continue as core activities for YGS, but new ways of doing the work and new uses of these foundational data layers informed workshop discussions.

The project lists were shared with members of YGS' Technical Liaison Committee in November for their feedback and comments. In the following sections, updates on the status of 2024 activities of each YGS unit are presented, followed by a summary of project ideas raised at each workshop. Readers are encouraged to reach out to provide additional project ideas to the survey; these can be shared via geology@yukon.ca.

Table 1. YGS funding for fiscal year 2024–25.

Source	Funding for	Amount
YGS operational budget ¹	Geoscience program	\$1 305 000
Our Clean Future funds ¹	Permafrost geohazards	\$100 000
Klondike/Dempster highways geohazards ²	Permafrost geohazards	\$106 060
Yukon Mineral Exploration Program ¹	Program grants	\$1 433 000
Total		\$2 944 060

1 – funding source Government of Yukon

2 – funding source Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)

Current mineral projects

With several new staff in the Minerals Geology unit and a new unit head, the next few years will represent a growth phase for this part of the YGS. It is anticipated that mineral explorers will face increased timelines for the assessment and permitting of projects in the wake of Eagle Gold Mine's heap leach failure, which will give space for staff to become familiar with Yukon geology and focus on updating minerals-related databases. The YGS is acutely aware of the need for mineral potential maps to support land use planning, and updates to the datasets that inform mineral assessments are a current priority.

New staff have been encouraged to take on targeted mineral studies to increase their expertise in Yukon geology and broaden YGS' minerals-related knowledge base. In 2024, staff led or contributed to several such studies.

Reduced Intrusion-Related Gold Systems

Sarah Ellis initiated a district-scale study of Reduced Intrusion Related Gold (RIRG) deposits in 2024 (Fig. 2). The study compares host-rock lithologies, geochemistry and vein character of the Brewery Creek, RC, Steiner and Valley deposits across the Selwyn basin. Results from this research are anticipated for release in early 2025.

Coffee property geology

Before joining YGS, Brubacher worked for Newmont Corporation at the Coffee gold project (Fig. 2). Based on his knowledge of the property, he has begun compiling a property-scale geology map and an accompanying report describing the geology and gold mineralization. Work has been underway on this project since the fall, and the intent is to release an updated geology map and accompanying open file report before the 2025 field season. The project is a collaboration with exploration staff at Newmont Corporation.

Student projects

Sack is currently co-supervising two MSc thesis students. Keagan Parry (University of Alberta; co-supervisor Pilar Lecumberri-Sanchez) is completing his second year of a study on Banyan Gold's AurMac property (Fig. 2). Detailed descriptions of the host rocks, stratigraphy and veins at the AurMac deposit are presented in the accompanying YEG volume

(Parry et al., 2025). Parry expects to submit his thesis some time in 2025.

Maria Carter (Simon Fraser University; co-supervisor Dan Gibson) began an MSc thesis project in 2024 at Trifecta Gold's Mount Hinton property (Figs. 2 and 3). She spent four weeks mapping bedrock and logging drill core at the property and is currently completing course work and preparing samples for analyses. Carter will undertake a second season of fieldwork in 2025.

These two studies are part of a suite of four staged thesis projects planned between 2023 and 2030 in the Dublin Gulch-Keno area. A third MSc study of Victoria Gold's Raven deposit was planned to start in 2025, along with a PhD thesis linking results of the three MSc studies and generating a regional-scale model for mineralization in the district; however, Following the heap leach failure at Eagle Gold Mine, access to the Raven deposit is uncertain and Sack is pursuing other deposits to study.

Collaborations with Geological Survey of Canada

Over the summer, Brubacher and Sack collaborated in the field with GSC colleague Nicolas Pinet on a study that is examining the link between plutonism, gold occurrences and silver-lead-zinc veins in the Keno Hill District (Fig. 2). They spent ten days sampling drill core and historic pits, focusing on carbonate gangue in well-mineralized samples. In 2025, samples will be analyzed at GSC-Québec's labs using the clumped isotope technique.

In 2021, Dawn Kellett and Pinet (both with the GSC) started a regional-scale, low-temperature thermochronology study across much of southern Yukon. Brubacher, who has experience working with U-Th-He data in apatite and zircon, has joined the research team and is interpreting a subset of the data from samples in a transect between the Denali and Tintina faults. This transect occurs in the vicinity of the Coffee gold deposit where Brubacher is currently compiling a map and report on the deposit (see above). The goal of the thermochronology transect is to characterize the timing of cooling and uplift across the Intermontane terranes, which may inform mineral deposit preservation potential.

In 2023, as part of a bedrock mapping project in the Sixtymile placer district, Sack and YGS Placer Geologist Sydney van Loon visited a placer pit, which had

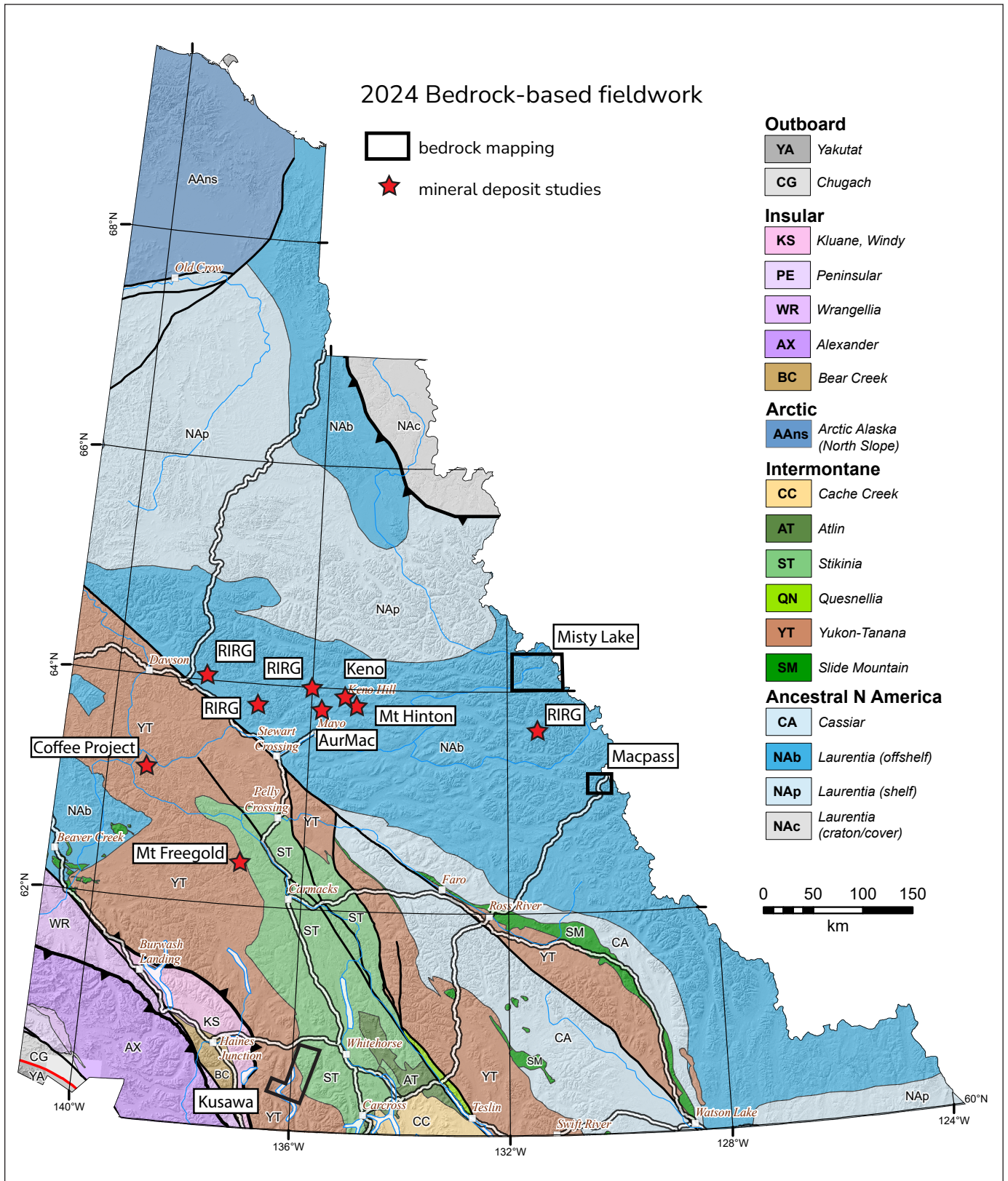


Figure 2. Locations of 2024 YGS Bedrock Geology and Minerals Geology projects. Black outlines indicate bedrock mapping projects; red stars indicate mineral deposit studies. Stars labelled RIRG are reduced intrusion-related gold deposits, from west to east: Brewery Creek, RC, Steiner and Valley.



Figure 3. Head of YGS' Minerals Geology unit, Patrick Sack, visiting the Mount Hinton Project.

exposed the regionally significant Sixtymile-Pika fault. They sampled fault gouge from the pit and sent it to Kellett (GSC) for K-Ar illite dating. Sack, van Loon and Brubacher then spent a further three days visiting placer operations in the Klondike and Sixtymile areas, looking for additional exposures of fault gouge. Four additional samples were collected, including one from upper Dominion Creek that appears to be gouge material from the Australia Creek fault. This fault is interpreted as a mid-Cretaceous (ca. 100–110 Ma) low-angle detachment fault that exposes the Australia Mountain metamorphic core complex. The fault gouge samples are currently awaiting processing. If the samples yield viable K-Ar ages, further sampling may be pursued in 2025.

In October, Minerals Geology staff collaborated with GSC colleague Victoria Tschirhart to collect full tensor magnetic gradient data across the Revenue copper-molybdenum-gold porphyry on Triumph Gold's Mount Freegold property (Fig. 2). The project is a case study to assess the effectiveness of this low-impact exploration tool for porphyry systems. Four Minerals Geology staff (Sack, Naber, Brubacher and Skerget) assisted with field logistics and data collection. The results of this study will be published by the GSC. In 2025, the GSC/YGS team plans to spend several weeks at the Revenue deposit, logging and sampling core along sections through the deposit. Samples will be collected

by the GSC for physical rock property measurements, while YGS geologists will focus on characterizing alteration and mineralization. The latter study will add value to the GSC's magnetic gradiometry survey by calibrating the geophysical signals to lithologies and alteration, enabling its application to exploration for other porphyry deposits.

Database updates

The Minerals Geology unit manages a number of spatial databases that contain minerals-related data, including MINFILE (mineral occurrence data), GARDEd (surficial geochemical data from assessment reports), and Drill Core (drill core data), to name a few. MINFILE data in particular are critical informants for mineral potential mapping, but keeping the data current has been challenging due to the database's text fields, which contain extensive narratives on regional geology

and exploration history. The database structure will be revised so it captures important tombstone data for each occurrence via picklists but excludes the narrative fields that are time-consuming to fill and challenging to search efficiently. Existing narratives will be retained, but they will be date stamped and will not be updated in the future. The structural changes to the database will occur between January and March 2025, then the existing data will be migrated to the new platform in the spring. Going forward, data will be captured as assessment reports are received to ensure the data reflect currently active projects. Exploration results that are not public will be retained behind a firewall until the assessment report is released. Information on work type will be displayed right away.

Another database of interest to clients is a physical rock properties database. Mappers at YGS systematically collect magnetic susceptibility data from outcrops, and staff record magnetic susceptibility and specific gravity measurements from hand samples as they are archived. Hand sample data currently reside in a spreadsheet, whereas field data are stored among individual bedrock mappers' datasets. Skerget has taken the lead on pulling the data and associated metadata (e.g., location, lithology, rock unit) together, and plans to release the data in 2025 as a geodatabase. Access to these data will allow end users to ground truth and model their geophysical survey data.

Updates to the Drill Core database were made following the donation of core from three of Yukon's most significant deposits. Hecla Mining donated core from two holes in the Keno Hill district (one hole each from the Birmingham and the Flame and Moth deposits). Snowline Gold donated core from two holes from their Valley deposit, and Banyan Gold donated core from a long hole that intersects ore from both the Powerline and Airstrip deposits. Descriptions of the Banyan and Snowline core are presented in the accompanying YEG volume (Parry et al., 2025 and Gamonal et al., 2025, respectively).

Finally, in fall 2024, YGS and the British Columbia Geological Survey (BCGS) initiated a project to scan and digitize data from assessment reports containing critical minerals data. This Cordillera-wide project is being funded by the GSC through their Critical Minerals and Geoscience Data Program. The Yukon's share of funding (\$250 000 over three years) will be used to convert scanned geochemical data from assessment reports into a digital format and capture it in the GARDEd database.

Mineral potential maps for the Yukon

In December, YGS tendered a request for proposals to develop a series of commodity-specific mineral potential maps for the Yukon. The maps will be based on mineral systems and deposit models that are most relevant to the different geological domains across the Yukon (e.g., Selwyn basin, Intermontane terranes). A number of Yukon First Nations are asserting pressure to get land use planning underway, and a series of maps covering all of the Yukon will enable YGS to clip mineral potential maps to planning-area boundaries as needed, irrespective of the order in which planning progresses. A pan-Yukon approach will also ensure a consistent approach to mineral potential assessments, in contrast to previous planning exercises where maps were generated on an area-by-area basis and different methodologies were used in each planning area.

As of December 15, 2024, the contractor had not been identified. The intent of this project is to have the maps and supporting documentation complete by March 2026.

Planning for future minerals projects

Staff of the Minerals Geology unit met with a few industry colleagues early in the fall of 2024 to discuss ideas for future minerals-related research. Project ideas

were broken into three categories: mineral deposit studies, desktop studies and regional geophysics.

Mineral deposit studies

Project ideas identified at the workshop included characterizing VMS occurrences in the Insular terranes (deposits equivalent to Windy Craggy), examining Oligocene to Miocene porphyry systems in southwestern Yukon and targeted sampling for geochronology to document ages of mineralization. The latter study would support the capture of age data in MINFILE as well as allowing broad correlations of mineralization events at a regional scale.

Deposit-specific research was also discussed; such studies would integrate disciplines relevant to the deposit type (geochemistry, petrology, mineral paragenesis, structural analysis, stratigraphy, etc.). Research projects could include porphyry (e.g., Casino, Cash), VMS (e.g., Marg, Ice), SEDEX (e.g., Clear Lake) and carbonate-associated deposits (e.g., Mel), as well as ultramafic nickel-cobalt-copper systems (e.g., Nickel Shāw). Depending on the scope of the project, there is potential to support graduate student studies.

As part of a longer-term goal, the integration of the studies described above, combined with regional bedrock and isotopic data, would support the delineation of metallogenic domains.

Desktop studies

In addition to field-based studies, several ideas for desktop studies were developed. These include case studies to characterize the soil expression of key deposit types in different surficial environments, ongoing mining of data from assessment reports (e.g., to add to the GARDEd database), and generating a spatial database of lidar data from assessment reports. It was also noted that efforts need to continue to grow the drill core collection and database, to capture deposit types that are not represented in the current collection.

Geophysical surveys

Eleven years ago, YGS released a ZTEM survey covering part of the Selwyn basin (Condor Geophysics, 2013). The maps clearly highlight buried plutons and linear features, making it an excellent tool for identifying RIRG targets. The Technical Liaison Committee recommended expanding ZTEM coverage across this region to support exploration.

Mineral industry liaison

In 2024, YGS staff visited 23 individual hard rock exploration properties, a number of them more than once, to track exploration progress over the field season (Fig. 4). Highlights of the 2024 exploration season are presented in this volume (Naber and Sack, 2025).

In addition to property visits, Sack organized two field trips for his staff during the summer: one to Coeur's Silvertip Project in northern BC and one multi-day trip to Banyan Gold's AurMac project, Sitka Gold's RC Gold project, Hecla Mining's Keno Hill Mine and Strategic Metal's Mount Hinton property. The purpose of the trips was threefold: to familiarize new staff with Yukon geology and mineral deposits, to demonstrate to staff what data should be collected on property visits, and to introduce staff to some of YGS' exploration industry clients. The Silvertip tour involved a colleague from the NWT Geological Survey and some industry geologists; the visit enabled discussions about the settings

and origin of carbonate replacement deposits in the northern Cordillera. The Keno-area trip involved YGS' two MSc students, giving them an opportunity to share their evolving ideas with staff, and for all participants to familiarize themselves with the geology in this part of the Yukon.

van Loon visited 95 placer operations in 2024 (Fig. 5). As of December 15, 2024, placer miners had produced about 85 799 crude ounces of gold worth C\$230M. This is the highest production since before the Klondike Gold Rush and it reflects the strong gold price. (Gold prices averaged C\$3351 per ounce between April 1 and November 1, 2024.) Details and highlights from the 2024 placer season are presented in this volume (van Loon, 2025). In November, van Loon organized the 2024 Placer Forum, which drew more than 120 attendees. The forum covered a variety of topics, including new developments in placer mining, regulatory updates, and information on wetlands mapping.



Figure 4. Yukon Geological Survey geologists on a property visit at Macmillan Pass.

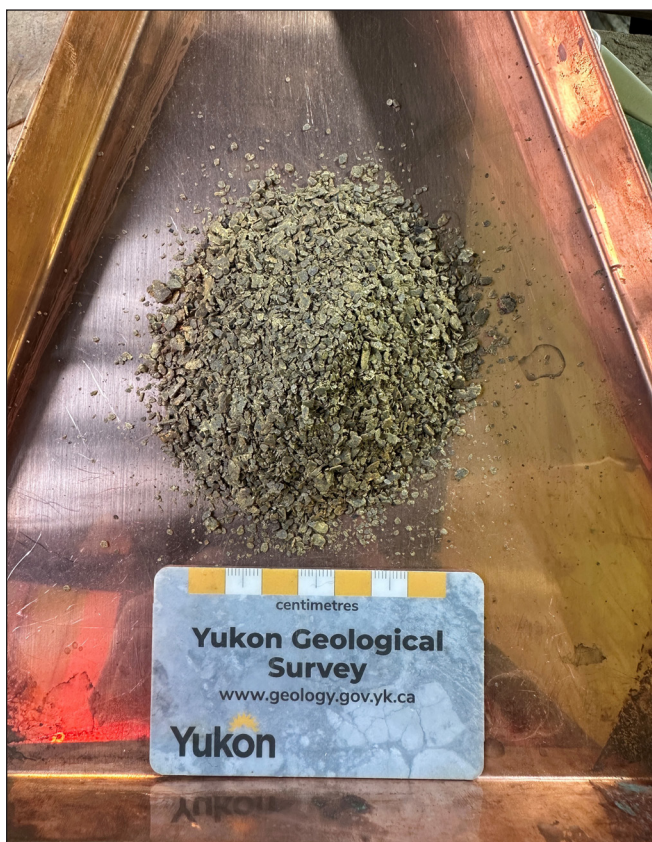


Figure 5. Photo of gold recovered from Green Gulch, a tributary of Sulphur Creek in the Klondike.

Yukon Mineral Exploration Program highlights

The Yukon Mineral Exploration Program (YMEP) allocated \$1.4M to support 43 early-stage exploration projects in 2024, including 14 placer projects and 29 hardrock projects. As of December 15, 2024, the program was on track to leverage an additional \$2.5M in private-sector spending. These statistics are preliminary and may change by the end of the fiscal year as some proponents have not yet completed their exploration programs.

Following input from YGS' Technical Liaison Committee in 2023, YGS made two modifications to the program for the 2024–25 fiscal year. First, the maximum grant for the hardrock Grassroots Module was increased from \$15 000 to \$25 000 to better reflect current costs associated with exploration work. Unlike the other modules, grassroots grants do not require matching or leveraged funds, although proponents are required to commit their time to their projects (i.e., they cannot draw a salary from the grant). Second, YGS eliminated the Focused Regional Module. This module has had

limited uptake in recent years, as many applicants favour the larger grants (up to \$50 000) available under the Target Evaluation Module. These changes led to a significant increase in the number of Grassroots applications; twelve Grassroots projects were funded in 2024, compared to an average of two per year over the previous decade.

More detailed summaries of YMEP highlights are presented in the hardrock and placer exploration overview papers in this volume (Naber and Sack, 2025 and van Loon, 2025, respectively).

Bedrock mapping

Staff in YGS' Bedrock Geology unit had a relatively modest field season in 2024. Three of the four geologists (Tyler Ambrose, Rosie Cobbett and David Moynihan) recently completed multi-year mapping projects and are working to release final reports and maps on these studies. Ambrose and Cobbett initiated new mapping projects that are relatively narrow in scope (1–2 years), while Moynihan did some targeted sampling to resolve some outstanding tectonic questions in his recently completed map area. Schultz, who is new to YGS, started a new, multi-year sequence stratigraphic study in Selwyn basin.

Kusawa project

Ambrose mapped rocks in the Kusawa Lake–Ibex Valley area in 2024 (Fig. 2). Bedrock geology here is dominated by the Paleocene Annie Ned batholith, which contains large rafts of amphibolite, metafelsic rocks, marble and older (Cretaceous) intrusive rocks. Although much of southwestern Yukon was mapped relatively recently by Israel and others (see metadata in Yukon Geological Survey, 2024), the Kusawa area itself has not been mapped since the 1950s (Wheeler, 1961). The supracrustal rocks preserved as rafts in the batholith are attributed to either parts of the Yukon-Tanana terrane (Snowcap assemblage) or the Takhini assemblage (Paleozoic of Stikinia; Hart, 1997) on the existing Yukon geology map (Gordey and Makepeace, 1999; Yukon Geological Survey, 2024), although these correlations have not been proven.

Fieldwork in 2024 revealed that a number of these rafts contain younger (Cretaceous) igneous and sedimentary units, and that rocks of the Takhini assemblage appear to be restricted to the Ibex Valley area. The upper Paleozoic Takhini assemblage rocks are variably deformed and metamorphosed and, in places, are

hard to distinguish from Upper Triassic Lewes River Group volcanic rocks of similar composition. Samples were collected for geochemical and geochronological analyses and the data will be used to determine the affinity of rocks in the study area.

Misty Lake project

In 2024, Cobbett mapped in the Misty Lake area, at the eastern end of the Rackla belt (Fig. 2). Sedimentary rocks in the area represent two depositional settings: deep-water siltstone and mudstone of upper Proterozoic to lower Cambrian age (Narchilla Formation of the Hyland Group) occur in the southwestern part of the map area, and a shallow water package of limestone and siliciclastic rocks of lower Cambrian to late Devonian age (from oldest to youngest: Vampire, Sekwi and Rabbitkettle formations, and Earn Group) occur to the northeast. Previous mapping by Cecile (2000) interpreted a northeast-vergent thrust fault separating the deep water and shallow water rocks. Mapping at a more detailed scale found no evidence for the fault. Cobbett has re-interpreted the contact between the Narchilla Formation (uppermost part of the deep-water section) and the Vampire and Sekwi formations (lower part of the shallow water section) to be a facies transition (Fig. 6).

Macmillan Pass stratigraphy

Schultz initiated a multi-year project studying shale in Selwyn basin in 2024. The aim of the project is to document the evolution of deep-water depositional systems in the basin and develop a sequence

stratigraphic framework using sedimentological, stratigraphic and geochemical data. Syndepositional and diagenetic textures are common features of sediment-hosted Pb-Zn occurrences in Selwyn basin, highlighting the link between deposition and mineralization and underlining the need to understand the depositional setting.

Fieldwork in 2024 focused on Devonian Portrait Lake Formation strata in drill core and outcrop on Fireweed Metal’s claims at their Macpass project (Fig. 2). Schultz collected samples for XRF, total organic carbon and $\delta^{13}C$ isotope studies to distinguish the geochemical signatures of systems tracts, sequences and stratigraphic surfaces.

Other mapping projects

Ambrose completed mapping in the north Rackla area in 2023 and has been working on a final map and report for the project. Mapping in this area has led to some changes that will be incorporated into the next iteration of the Yukon bedrock geology compilation map. Ambrose also spent some time in the Ogilvie Mountains with Stanford University researcher Erik Sperling and his PhD student. They are studying the stratigraphy of the Proterozoic Pinguicula Group, and the collaboration enabled Ambrose to compare these rocks with their stratigraphic equivalents in the north Rackla area.

Moynihan made progress on a bulletin for the Upper Hyland area over the last year. He also carried out some follow-up fieldwork in the Teslin-Quiet Lake area where he completed mapping in 2023. Moynihan’s

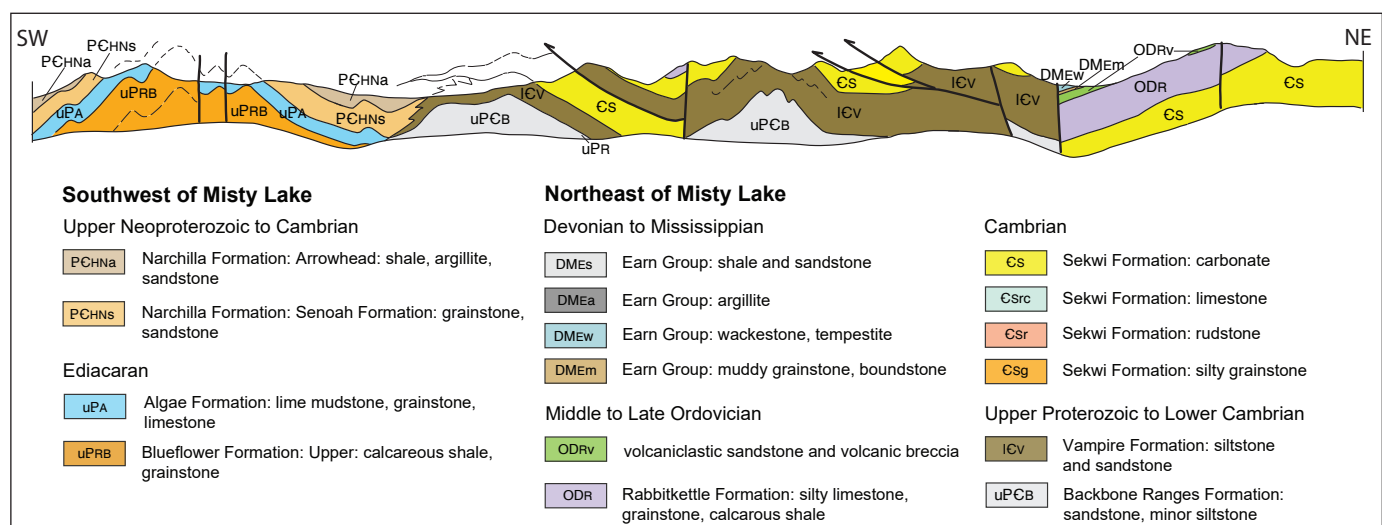


Figure 6. Cross section of the Misty Lake area, based on 2024 mapping by Rosie Cobbett. Deep-water sedimentary rocks in the southwestern part of the map area are interpreted as transitional to shallow-water rocks to the northwest.

work in the latter area has highlighted evidence for Permian-aged tectonism. For example, a narrow belt of garnet amphibolites and eclogites is interpreted as a subduction-related unit separating the Yukon-Tanana and Slide Mountain terranes. Several of these rocks were sampled in 2024 to confirm their correlation with the Permian-aged amphibolite-eclogite belt, and therefore with the terrane boundary.

Planning for future bedrock projects

Bedrock Geology staff held a workshop in spring, 2024 to identify gaps in modern map coverage and compile unresolved geological questions. Based on these discussions they developed a list of ideas for future projects. The projects include a mix of systematic regional mapping and targeted thematic studies. Thirteen project ideas were identified in Selwyn basin (eight mapping projects and five thematic studies), eight projects in the Intermontane region (five mapping and three thematic), eight in southwestern Yukon (four mapping and four thematic), and five in North Yukon (three mapping and two thematic).

Broad descriptions of the project ideas are outlined below by region (Selwyn basin, Intermontane region, etc.) and some of the key questions that need to be addressed are briefly described. Figure 7 indicates the footprints of the map areas and most of the thematic study areas, except those that are regional in extent.

Selwyn basin projects

The mapping projects identified in Selwyn basin (numbered SB1 to SB8 on Fig. 7) are, for the most part, centred on continental margin sequences northeast of the Tintina fault and south of the Dawson fault. They represent areas where stratigraphic correlations can be improved and questions around the timing and kinematics of faults can be resolved.

Areas SB1 and SB2 (Fortin Lake–Canol Road and Conglomerate Creek, respectively) are located adjacent to the Cassiar–McEvoy platform where the nature of the platform-to-basin transition and the origin of the platform are poorly understood. In SB4 (Tasin Range–Plata), where rocks of the Rackla and Hyland groups interfinger, new mapping could answer questions about the relationship between these units. Volcanic rocks of unknown age and origin have been documented in SB5 (Southern Mayo–Lansing) and SB6 (Rae Creek); these rocks present opportunities to pin ages to stratigraphy

and provide insights into the geodynamic setting of the crust at the time(s) of volcanism. The enigmatic mid-Paleozoic Nogold succession is exposed in SB5; mapping here could determine where these clastic rocks fit into the regional stratigraphy. Sedimentary rocks in SB8 (northeast McQuesten; Bostock, 1964) have all been assigned to the Hyland Group, whereas more recent mapping in adjacent areas (e.g., Murphy et al., 1993; Murphy and Heon, 1994, 1995; Hunt et al., 1996) suggests other units may be present.

Several of the Selwyn basin map areas straddle the Dawson, Tombstone and/or Robert Service thrust faults in regions where they are not well documented. For example, the southeastern extent of the Robert Service is unknown: does it die out, or wrap around the Russell Range? New mapping in SB5 could help resolve this. Farther west in the basin, SB6 represents a gap between the McQuesten Lake (Skipton, 2024) and Hart River areas (Abbott, 1997), and SB7 is a gap between Hart River and the Ogilvie Mountains (Thompson, 1995). The three faults have been traced through these two gaps but have not been mapped in detail in these areas. To the southeast, ZTEM data (Condor Geophysics, 2013) highlight some major resistivity contrasts in SB3 (Itsi Lake–Prevost River), including a linear feature that may be an extension of the dextral Logan fault. New mapping here could test this possibility.

Beyond systematic mapping, several thematic studies have been identified for Selwyn basin. Two such studies were identified northeast of Keno Hill (Fig. 7). Project T1 (Roop Lakes) would examine a metamorphic culmination in the area and determine whether it represents local hornfels conditions (related to a buried pluton) or is a regional thermal high. Project T2 (Marg to Keno) would focus on volcanic rocks across the area to determine whether they are Devonian Earn Group rocks or part of the recently identified Permian volcanic sequence at Keno Hill (Scanlan et al., 2024).

Two key questions are associated with T3 (Tyers klippe in the Hyland area; Fig. 7). The first question relates to a unit of retrograded serpentinite that is interpreted as a klippe of uncertain affinity (oceanic crust?). The second question is whether the fault bounding the klippe is the Inconnu fault, and if so, whether the fault is folded, or has wedge-shaped geometry.

Two thematic studies proposed for the Selwyn basin are more regional in extent and thus not depicted on Figure 7. The first is a study of the contact metamorphic aureoles around Cretaceous plutons (T10) to constrain emplacement depths, and the second is a regional thermometry study of rocks across the basin (T11).

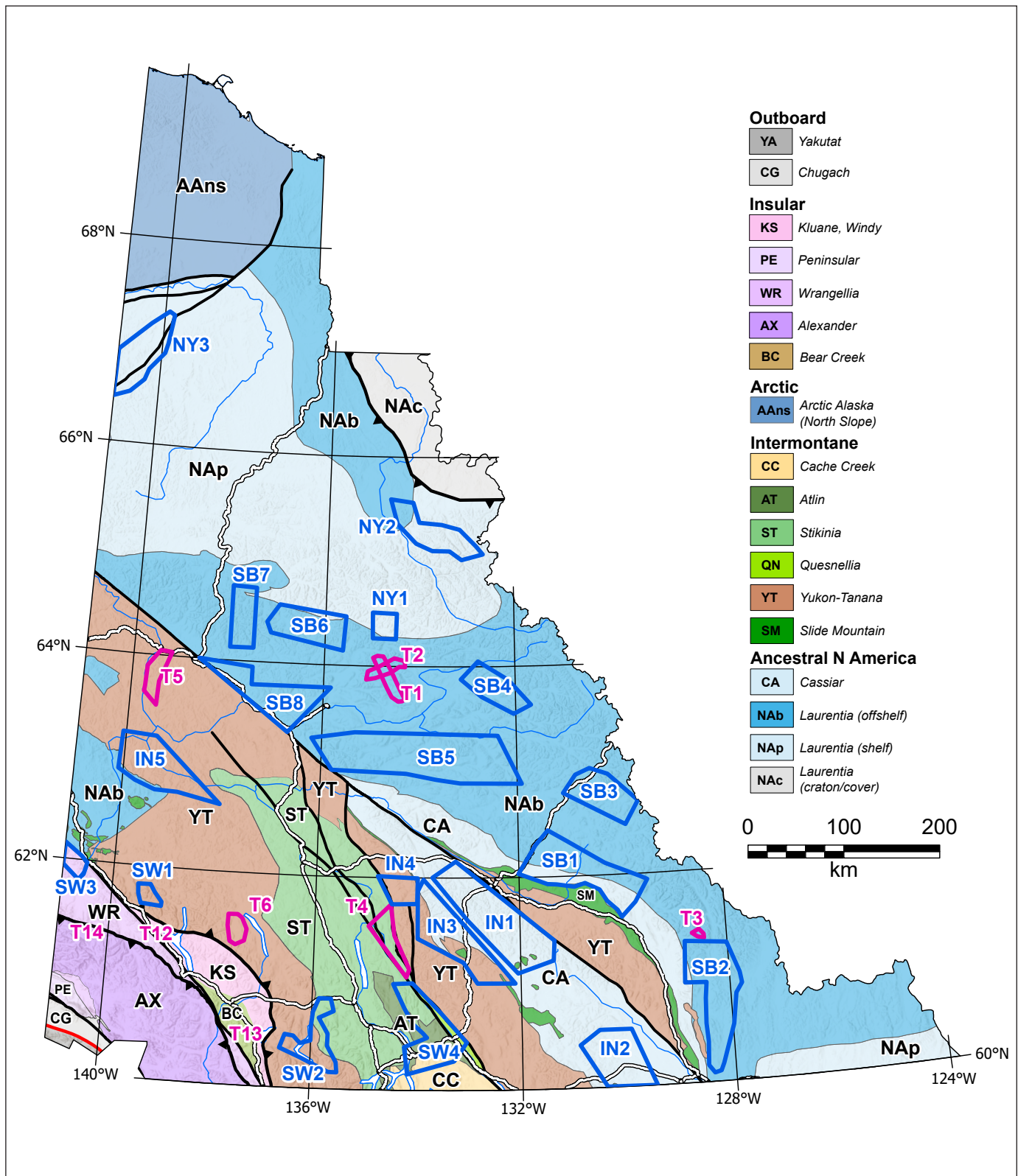


Figure 7. Map outlining footprints of proposed mapping projects and thematic studies from the 2024 Bedrock Geology unit’s planning workshop. Areas outlined in blue are proposed for new mapping; areas outlined in red are locations of thematic studies. IN: Intermontane region, SB: Selwyn basin, SW: Southwestern Yukon, NY: North Yukon, T: thematic studies. The footprints for five thematic studies (T7 to T11) are not shown on the map as they are regional in scale.

Intermontane region projects

Future mapping projects identified in the intermontane region focus primarily on the Yukon-Tanana and Cassiar terranes, and one project is defined in the Dawson Range (Fig. 7).

Two map areas (IN1 and IN2) are situated within the Cassiar terrane. Mapping area IN1 (St. Cyr Range–Pelly Mountains) would focus on understanding the nature and significance of the St. Cyr unit, delineating the McNeil klippe, and comparing Earm-equivalent rocks here to those in Selwyn basin. In IN2 (Rancheria River), the reason for the anomalous thickness of the Rosella Formation carbonate section is unclear: is this a relic of regional-scale mapping, or did depositional conditions vary along the length of the platform? Mapping area IN3 (southwest Quiet Lake) straddles the southwestern margin of the Cassiar platform and the boundaries between Cassiar, Yukon-Tanana and Slide Mountain terranes. New mapping could help to establish the affinity of rocks below the St. Cyr klippe (Cassiar terrane?), characterize igneous rocks in the area (which are more widespread than depicted on existing maps), and determine the relationship between eclogites in the St. Cyr klippe and Tower Peak ultramafic rocks. Mapping area IN4 (northeast Laberge-Lokken) represents a gap in mapping between the Livingstone–Teraktu Creek and Glenlyon areas and straddles the boundaries between the Cassiar, Yukon-Tanana and Slide Mountain terranes.

The fifth map area in the Intermontane region is IN5 (Dawson Range–White Gold). The Mineral Deposit Research Unit (MDRU) at the University of British Columbia recently led a multi-year metallogenic study in the region that combined mapping, property-scale mineral deposit studies, petrologic research and new geochronology. The study advanced knowledge significantly (e.g., Allan et al., 2013; Colpron et al., 2022); however, a number of questions persist. For example, the Yukon River and Moose Creek faults are still not well understood, and Permian rocks in the area are incorrectly mapped.

Three thematic studies were defined for the Intermontane region at the bedrock planning workshop. In the Semenof Hills area (T4) relationships between Yukon-Tanana, Stikinia and Slide Mountain terranes are unclear. New age data and petrological studies would help resolve these questions. In the Klondike (T5), the timing of metamorphism and deformation has been a long-standing question, and, as a more regional study, the geodynamic setting of Late Cretaceous to Cenozoic volcanism and sedimentation bears examination (T9).

The latter study is regional in extent and is not indicated in Figure 7.

Southwestern Yukon projects

Southwestern Yukon refers to the area bound by the Dawson Range and Teslin fault to the north and northeast, respectively, and the British Columbia and Alaska borders to the south and west (Fig. 7). It includes rocks of Cache Creek, Atlin, Stikinia and Yukon-Tanana terranes, as well as the Insular terranes (Kluane Schist, Bear Creek, Alexander and Wrangellia).

Four mapping projects have been identified in southwestern Yukon, one of which, SW2 (Kusawa area), was initiated in 2024 (see above). East of Kusawa, SW4 (Delayee–Squanga lakes to Teslin River) straddles the north end of Cache Creek and Atlin terranes and parts of Whitehorse trough. Mapping here could resolve the relationship between clastic rocks in the Whitehorse trough (Laberge Group) and those in Cache Creek. The study could also answer questions about the nature of the ultramafic complexes east of Tagish and Marsh lakes.

In SW1 (Tincup Lake), a thick section of carbonate rocks and associated greenstones has been tentatively attributed to the Yukon-Tanana terrane, but the unit's affinity has not been tested by dating or geochemical analysis. Although mapping carried out here in 2008 has been incorporated into the Yukon bedrock geology compilation (Yukon Geological Survey, 2024), a standalone map has not been released. New mapping would resolve outstanding questions and catalyze the release of the map. Moving across the Denali fault, SW3 (Mint area) represents a gap in mapping in this part of Wrangellia. New mapping here would provide an opportunity to document intrusion-related mineral occurrences, which include both Miocene porphyries and mid-Cretaceous skarns.

Four thematic studies have been identified in southwestern Yukon. The first project, T6 (Sekelmun–Aishihik) identifies questions about the origin of a thick carbonate succession and its relationship to Yukon-Tanana terrane. The area was the focus of an MSc thesis supported as part of a joint YGS-GSC mapping project in 2010. A review of field notes and some targeted field sampling could address the question. Projects T12, T13 and T14 define questions about the timing and kinematics of Denali and Duke River faults in the Quill Creek, Bear Creek and Duke River areas, respectively (Fig. 7). The proposed studies include work to better resolve map units in these structurally complex areas.

North Yukon projects

New field projects in North Yukon are located on platform rocks of ancestral North America (Fig. 7).

In the Blende area (NY1), new mapping would focus on Bouvette Formation stratigraphy, examining the distribution of facies and better defining ages. There are also questions about the age and origin of mafic rocks in this region: specifically, whether they are Ordovician volcanic rocks, or older (Mesoproterozoic) Hart River sills. Project NY2 (Knorr Range) exposes Neoproterozoic siliciclastic and carbonate rocks of the Mackenzie Mountains and Windermere supergroups. Recent mapping in the Northwest Territories led to revisions to stratigraphy and demonstrated that rocks of the Coates Lake Group occur over a much larger area than previously documented (Fallas, 2020). New mapping in NY2 would extend Fallas' revisions westward into the Yukon. The seismically active Richardson fault array occurs in this area and mapping may help resolve the nature of deformation in this region and how these structures relate to folds and thrusts to the south in Selwyn basin.

The northernmost project, NY3 (Keele Range) was last mapped in the 1960s as part of GSC's Operation Porcupine (Norris, 1979). The stratigraphic assignment of Proterozoic sedimentary rocks in this area is largely unknown, and the mapped geology does not match with units shown on the Alaska map to the west.

At a more regional scale, two thematic studies were proposed. The first, T7, is primarily a desktop exercise compiling and revising Bouvette Formation stratigraphy. The second, T8, would characterize Permian units across the Yukon stable block and their relationships to Permian rocks along the Dawson fault and into Selwyn basin.

The above projects will require a decade or more to complete, and to date they have not been prioritized. Decisions about which projects should proceed first will depend on a number of factors, including opportunities to collaborate and leverage resources, industry needs, support from First Nations and internal capacity.

Geothermal energy research

A compilation of geothermal-related data generated by Sarah Sternbergh was updated and revised by Maurice Colpron. The compilation includes a variety of publicly available data and previously unreleased geothermal studies that were commissioned by the Yukon Energy

Corporation. These include water chemistry of warm springs, temperature gradients measured from petroleum and mineral exploration wells, observations from winter open-water surveys, and data generated as part of the YGS geothermal research program (community-focused geophysical surveys, boreholes and radiogenic heat calculations). The data have been released as a series of layers online (Yukon Geothermal dataset: <https://data.geology.gov.yk.ca/Compilation/42#InfoTab>), and a report providing more background on each dataset is currently undergoing final edits and is expected to be released early in 2025.

In early 2024, YGS was approached by Government of Yukon's Department of Highways and Public Works (HPW) to collaborate on a study to assess geothermal potential in the City of Whitehorse. The Department of Highways and Public Works is exploring opportunities to reduce carbon emissions from heating public buildings in the city and one possible heat source they are considering is geothermal energy. Bedrock geology in the Porter Creek–Crestview area has striking similarities to that of the Takhini Hot Springs, including a Cenozoic granitoid heat source and permeable Triassic carbonate rocks. Colpron has been leading this project, which includes new gravity and seismic data that will enable modelling of depth to bedrock and construction of a 3D geological model for the northern part of the City of Whitehorse. A final report will be released in spring 2025.

Geohazards and surficial geology studies

Similar to the Minerals Geology unit, YGS' Surficial Geology unit experienced significant staff changes in 2024. Staffing to backfill all positions is not yet complete.

The Surficial Geology unit wrapped up work on several community-scale geohazards studies in 2024 and expects to release surficial geology and geohazards publications for four communities in 2025: Haines Junction, Whitehorse, Beaver Creek and Teslin. At the Yukon Chamber of Mines' Geoscience Forum in November, Lipovsky presented draft geohazards maps for the Haines Junction area that were derived from her previously published surficial geology map (Lipovsky, 2024). She is currently finalizing these maps and accompanying report and is working on geohazards maps for the greater Whitehorse area. Cronmiller is working on a report for Beaver Creek to accompany the surficial geology and geohazards maps released

in 2024 (Cronmiller, 2024) and is finalizing maps and an accompanying report for Teslin.

Before leaving YGS, Kennedy completed edits on a surficial geology report for the Burwash Uplands area. The draft report will undergo editing and is targeted for release in spring 2025.

In June, Whitehorse hosted the International Conference on Permafrost. The event was an excellent opportunity to show the international research community some of the work being done by YGS. Staff participated in the technical program and co-led field trips to the Robert Service Way landslide (Lipovsky) and Klondike and Dempster Highways area (Cronmiller).

Fieldwork

Surficial Geology staff had a very busy field season in 2024. Painter visited borehole sites in communities and upgraded instrumentation in many of them (Fig. 8). Stewart-Jones and Painter examined known problem areas along the Dempster, Alaska, North Klondike and Robert Campbell highways to assess geohazards and to support efforts by HPW to develop a Yukon Highway Geohazard Management Program. The program is being designed to monitor, assess and incorporate geohazard information into transportation planning. Cronmiller continued work monitoring and studying landslides along the North Klondike Highway. In 2024, he started a novel study, examining evidence for ground deformation preserved in trees on slow moving landslides. The results may yield a means to pin ages on slope failure events. In August, Lipovsky and Painter supported work by Government of Yukon's Water Resource Branch (WRB) at the Eagle Gold Mine site. The WRB installed a number of wells below the failed heap leach pad to enable groundwater monitoring and capture, and YGS logged the wells and documented permafrost.

Beyond hazard-related work, Cronmiller and Lipovsky initiated a new study to determine the extent and timing of glacial lakes in southern Yukon. The work began with some sampling of Glacial Lake Champagne and Neoglacial Lake Asek shorelines near Haines Junction; the samples were collected for optically stimulated luminescence (OSL) dating. If analyses are successful, the study will expand eastward to involve OSL sampling in the Southern Lakes area. The product currently envisioned is a map, or series of maps, documenting the formation and drainage histories of lakes in the region following the last ice retreat.



Figure 8. Moya Painter and Emilie Stewart-Jones drilling a borehole to monitor permafrost in Ross River.

Collaborations with universities

Surficial Geology staff are providing support to and collaborating with several university researchers. In the Klune region, Lipovsky assisted Catalina Pino-Rivas (Simon Fraser University) in a study of earthquake-induced landslides in the area. She shared data to assist with project planning and accompanied Pino-Rivas on reconnaissance fieldwork in the summer. Lipovsky also collaborated with John Stix (McGill University), whose research team is using drones to document and assess hazards in the region between Beaver Creek and the White River (see Roman et al. [2025] in the accompanying volume). Cronmiller is collaborating with Stephan Gruber (Carleton University) to characterize landslides in the Klondike region. Gruber is modelling permafrost behaviour to enable better predictions of how deep-seated and shallow (active layer detachment) slides may behave over time as the ground warms. Cronmiller and Lipovsky are also working with University of Calgary researcher Jan Dettmer. Dettmer is a seismologist, and he and his research team are using passive seismic surveys to identify areas where seismic risk may increase in the future as frozen ground thaws (unconsolidated sediments are susceptible to more intense shaking than rock or frozen sediments).

Data management

The locations of 68 boreholes installed by Yukon University were captured by Painter in the Yukon Permafrost Database in 2024 (<https://service.yukon.ca/permafrost/>). She also acquired data from Newmont Corporation on their Coffee property and put out a wide appeal to exploration companies for other property-scale borehole datasets to capture in the Yukon database.

To support the Geohazard Management Program, Stewart-Jones built a highways geohazard database, which she and Painter have begun populating. Priority sections of interest include parts of the North Klondike Highway near Dawson, between Pelly Crossing and Stewart Crossing, as well as areas along the Dempster and Alaska highways. This database is being developed primarily for use by HPW personnel, but once it is complete, YGS will examine ways to make portions of the data publicly accessible.

The Yukon surficial geology compilation map was updated in 2024 with the incorporation of new mapping in the Macmillan Pass area by consultant Derek Turner. Turner's map was originally produced for Fireweed Metals, but the company offered to share the map with YGS for public release. This generous offer is gratefully acknowledged here.

Planning for future geohazards projects

In April, Surficial Geology staff held a half-day workshop to identify future needs for geohazard studies. The discussion focused primarily on areas with known hazards and ongoing commitments (such as updates to community hazard maps funded under Yukon government's Our Clean Future initiative).

Although the Surficial Geology group is also responsible for surficial mapping, the discussion did not include ideas for future mapping projects, since staff are heavily committed to geohazards research for the foreseeable future. Once a new Project Geologist is on board, the group will look at gaps in surficial coverage and scope new project ideas for consideration.

Updates to community geohazards maps

Under phase two of Our Clean Future funding, YGS has committed to examine existing community geohazards maps and assess their currency. In some cases,

previously identified hazards require a reassessment, as permafrost thawing has advanced and changed ground conditions. In the near term, Old Crow and Mayo have been identified as priorities for updating. This work may involve installation of monitoring equipment to track ground subsidence and/or permafrost temperatures. In the next five years or so, the intent is to revisit all communities to assess the status of known hazards and document new ones.

Since 2022, WRB has been developing flood maps for communities. Beyond identifying areas that are susceptible to flooding, the maps offer insights into areas where bank erosion may accelerate in response to high water. There are likely opportunities for YGS to collaborate with WRB to develop more general hazard maps that capture a variety of natural hazard information, including fluvial hazards.

Site specific hazards studies

Yukon Parks recently reached out to YGS to request assistance assessing landslide risks along some of its park trails. They plan to upgrade existing trails in Tombstone Territorial Park in the near future and want to avoid areas that pose a risk to hikers. The YGS has agreed to support Yukon Parks and has proposed generating a surficial geology map of Tombstone Territorial Park that documents not just hazards, but the distribution of surficial materials and glacial limits within the park. The park is a popular destination for both Yukoners and tourists, many of whom seek information about the landscape features they see.

Another area of concern is a landslide above the South Klondike Highway near Conrad Campground. The steep slopes on the west side of the lake pose a significant hazard along both Tutshi Lake and the west arm of Tagish Lake; in July, a slide at the south end of Tutshi Lake closed the highway for several days (Fig. 9).

Site-specific landslide hazards are widespread in the Yukon, and during the next year or two YGS needs to develop a system for assessing risk and assigning appropriate mitigation measures, such as collecting lidar data at appropriate intervals to support change detection analysis or—in cases where risk exceeds acceptable thresholds—installing instruments to monitor slopes in real time. The YGS has met with Government of Yukon's Emergency Measures Organization and had initial discussions about risk management.



Figure 9. Photo (view to north) of landslide on the South Klondike Highway by Tutshi Lake.

Yukon wide geohazards projects

As YGS collects more site-specific data on landslides, the need for a Yukon-wide landslide susceptibility map is becoming evident. Stewart-Jones' work over the next year will identify key areas of concern along highway corridors. Updating of community geohazards maps will identify sites that require regular, or even continuous monitoring in and around communities. It is expected that within a few years, YGS will be able to develop a landslide susceptibility map that can be shared online and updated on a regular basis.

Another Yukon-wide database that has been identified as a priority is the highways geohazards database, which has been initiated by Stewart-Jones. Work to populate it will occupy a significant amount of her time in the coming year, and it will need to be maintained once initial data have been captured. This database includes landslides, as well as other geohazards such as areas underlain by ice-rich permafrost and sites prone to erosion.

Outreach and engagement

As in previous years, YGS was actively involved in geoscience education activities during the year. Amanda O'Connor and Leyla Weston organized field trips and classroom visits for 25 classes in the City of Whitehorse and visited schools in Ross River, Faro and

Teslin. They also organized educational activities for students from Kluane Lake School at the Kluane Lake Research Centre. They participated in events organized and hosted by communities, including a 'Confluence' in Carcross (a science research expo organized by Carcross Tagish First Nation), walking tours of Miles Canyon (run by the Yukon Conservation Society), Family Day at the Yukon Chamber of Mines' Yukon Geoscience Forum (Fig. 10), and Yukon's Science, Technology, Engineering and Mathematics (STEM) Expo science fair, to name a few.

The YGS partners with Yukon Parks and Parks Canada each summer to run interpretive geology hikes in Tombstone Territorial Park and Kluane National Park, respectively. The annual Weekend on the Rocks has become a major event for Tombstone Territorial Park, attracting more than 50 tourists each year.

New in 2024 was a partnership with Casino Mining Corporation and Alkan Air to host a 'Yukon Youth Career Engagement Day'. High school students from grades 10 to 12 from Whitehorse and the surrounding communities were invited to participate in a day-long event to learn about career opportunities in geology, aviation and the mining industry. Highlights of the day included a short flight over deposits of the Whitehorse copper belt, followed by a field trip to the copper belt led by YGS.



Figure 10. Left to right: Amanda O'Connor, Moya Painter and Leyla Weston with YGS' Augmented Reality Sandbox at Yukon Chamber of Mines' Family Day event in November.

Highlights from some of YGS' outreach events are posted on social media. These posts commonly attract requests from teachers and recreational organizations for YGS-organized tours and events. The 2024 Weekend on the Rocks video shows some of the activities that were offered at Tombstone Territorial Park in August (<https://www.facebook.com/reel/1183575862926556>). Another video posted in August was put together by a YGS field assistant who spent time in the field with GSC geologist Nathan Clevin. Clevin was mapping an area within Teslin Tlingit Council's (TTC) Traditional Territory, and the field assistant, a TTC citizen, created a Tlingit language video documenting her experiences mapping and exploring in a remote part of her territory (<https://www.facebook.com/YukonGeologicalSurvey/videos/1955205288251467>).

In addition to activities designed to showcase Yukon geology, YGS spent time engaging with Yukon First Nation governments regarding survey activities: discussing plans for future projects, seeking input from First Nation government staff on the impacts and timing of proposed fieldwork, and sharing results of current and recently completed work. In 2023, YGS initiated a pilot project with the GSC to coordinate engagement with First Nations governments. The intent is to reduce engagement fatigue by jointly communicating both surveys' proposed activities in each Yukon First Nation Traditional Territory. The pilot project was started because the two surveys do similar types of work, which created confusion in some communities about the difference between the two survey organizations. The YGS and GSC held joint meetings in 2024 with Kwanlin Dün, Carcross Tagish, Tr'ondëk Hwëch'in and Vuntut Gwitchin First Nations and Teslin Tlingit Council. Highlights of YGS' outreach activities for 2024 are presented in this volume (O'Connor and Weston, 2025).

Summary

The YGS carried out its 2024 program against a backdrop of staff turnover and the as-yet unclear environmental and economic impacts of the heap leach failure at Eagle Gold Mine. Near-term challenges for YGS include orienting new staff to Yukon geology and Yukon government culture and managing a budget that is likely to be affected by the costs of remediation at Eagle Gold Mine. In spite of these uncertainties, there is room for optimism about YGS' future. The new staff who joined the survey in 2024 are excellent fits; they are filling capacity gaps and establishing their own research niches.

On a personal note, this will be my last YGS Overview, as I will be retiring in March 2025. Compiling an annual summary of YGS activities has helped keep me in touch with the breadth and depth of work that goes on at YGS and allowed me to track how the survey has evolved and grown over the past 17 years. The foundational work of mapping geology and resolving basic questions related to tectonics, stratigraphy, metallogeny and glacial history (to name a few) will, I hope, continue into the future. The knowledge generated from this work is what underpins the survey's reputation for excellence. The growth areas—geohazards work, geoscience education, and engagement with Yukon First Nations—are all responses to changing societal needs. Climate change is driving the geohazards research, and as countries push to reduce emissions, public awareness of critical minerals and geothermal energy is becoming increasingly important. In a society that relies heavily on social media to inform itself, YGS has a valuable role to play in improving scientific literacy. Finally, as more clarity emerges around how natural scientists can advance reconciliation (Wong et al., 2020; Signal Fire: Natural Science and Reconciliation in Canada: <https://www.signalfirefilm.ca>), YGS' path to establishing trust-based relationships with Yukon First Nations is becoming clearer. I see a bright future for YGS, and I'll miss being part of it.

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