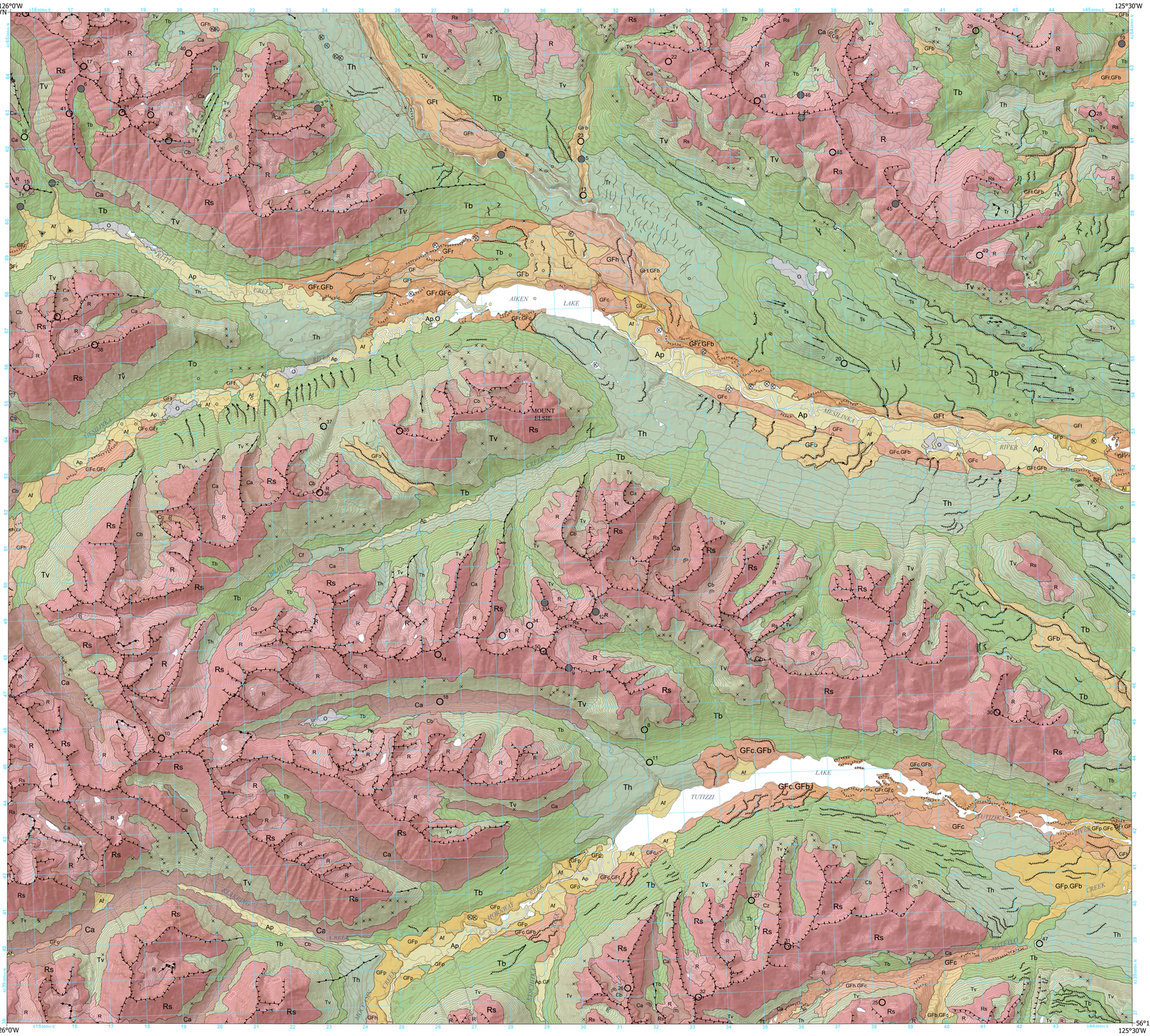


British Columbia Ministry of Mining and Critical Minerals

British Columbia Geological Survey Geoscience Map 2026-02

Surficial geology of the Aiken Lake area, British Columbia (NTS 94C/5)

T. Ferbey and E.A. Elia

0 1 2 3 4 5
Kilometres

Scale 1:50,000

Cartography by K. Szponarski.

Note: Where surficial geology map units consist of multiple materials, a compound map unit designator is used. These compound designators note areally more extensive and less extensive surficial materials joined with a '.' (e.g., Cv.R where Cv is more extensive than R). We used the surficial geology data model of Deblonde et al. (2024) and definitions for surficial materials and surface expressions in Howes and Kenk (1997).

QUATERNARY SURFICIAL DEPOSITS
NONGLACIAL ENVIRONMENT

O — ***Organic deposits:*** peat and other plant material in various stages of decomposition; generally in flat and wet terrain over poorly drained substrates; may include minor fluvial and lacustrine sediments; most common in valley bottoms in transition zones between tree stands and water bodies; rare at high elevations.

Colluvial and Mass Wasting Deposits: Rubble and diamicton, poorly sorted, massive to stratified. Composition is dependent on source material. Deposited directly by gravity-induced movement.

Cf — ***Colluvial fan:*** poorly sorted sand and gravel and diamicton; typically 1 to 10 m thick, but may be >10 thick near the base of tall slopes; slope gradients between 10° and 15°; occur where a steep gully enters a valley.

Ca — ***Colluvial apron and talus slope:*** diamicton and rubble sourced from steep upslope bedrock exposures; 1 to 10 m thick but locally >10 m near the base of tall slopes; typically a series of colluvial cones (slope gradient >15°) that have merged into a relatively homogeneous slope.

Cz — ***Landslide deposits:*** diamicton, rubble, and blocks; hummocky and ridged topography; can be >10 m thick; typically forms hummocky topography; includes inactive and active landslides.

Cg — ***Rock glacier:*** rubble and blocks with interstitial ice; hummocky and ridged topography; lobed surface expression due to flow; common in high elevation, north-facing cirques.

Cb — ***Colluvial blanket:*** sand, rubble, and diamicton; >2 m thick; topography is predominantly controlled by the underlying material and masks minor irregularities; typically overlies till or bedrock; occurs on moderate to steep slopes.

Alluvial Deposits: Gravel, sand, minor silt, and organic material, commonly stratified. Deposited by modern streams.

Ap — ***Alluvial floodplain:*** sorted sand and gravel with minor silt; >2 m thick; local and discontinuous organic veneers; forms low-relief planar surfaces near modern rivers; prone to flooding.

Af — ***Alluvial fan:*** poorly sorted gravel, sand, and diamicton; >2 m thick; stratified; slope gradient <15°; occur where a stream issues from a narrow valley onto a plain or valley floor; a potential aggregate source.

At — ***Alluvial terrace:*** sorted gravel, sand, and minor silt; >2 m thick; inactive terraces perched above modern floodplain; a potential aggregate source.

PROGLACIAL AND GLACIAL ENVIRONMENTS

Glaciofluvial Deposits: Sand and gravel with minor diamicton, well to poorly stratified. Deposited by glacial meltwater. All deposit types are potential aggregate sources.

GFp — ***Glaciofluvial outwash plain:*** sand and gravel; 1 to >10 m thick; massive to bedded; generally forms flat surfaces sloping away from direction of glacier retreat.

GFt — ***Glaciofluvial terrace:*** sand and gravel; 1 to 10 m thick; forming gentle to sloping flat surfaces perched above meltwater channels or modern streams and alluvial deposits.

GFh — ***Hummocky glaciofluvial:*** poorly sorted sand and gravel with minor diamicton; bedded to massive; 1 to >20 m thick; deposited in contact with a retreating glacier; forms hummocky topography related to melting of buried ice.

GFc — ***Glaciofluvial ice-contact:*** poorly sorted sand and gravel; >2 m thick; hummocky ridged and kettled surface expressions; locally with discontinuous glaciolacustrine sediments in areas that were ponded; a product of ice stagnation, typically in low-relief valley bottoms.

GFr — ***Esker:*** sand and gravel; massive to bedded; 3 to >5 m thick; deposited by meltwater flowing in tunnels in interior of glacier or in channels at base; forms sinuous ridges.

GFb — ***Glaciofluvial blanket:*** sand and gravel; >2 m thick; occurs near the margins and at the mouth of meltwater channels; forms gently undulating to flat surfaces.

GF — ***Glaciofluvial undifferentiated:*** sand and gravel units too small to be represented at the scale of mapping.

Till Deposits: Diamicton consisting of clasts of all sizes and diverse rock types in a sandy to silty sand matrix. Deposited directly by glaciers and may be modified by modern periglacial processes. On steep slopes, primary features may be modified by slope creep. Mostly deposited by the Cordilleran Ice Sheet during the Late Wisconsinan Fraser Glaciation. Holocene tills deposited by cirque glaciers are included in this unit.

Th — ***Hummocky till:*** sand- and gravel-rich diamicton; >2 m thick; hummocky to rolling surface with moderate to steep slopes and local relief of 1 to 10 m; locally may contain glaciolacustrine and glaciofluvial sediments between hummocks; a product of ice stagnation.

Tr — ***Ridged till:*** diamicton; >2 m thick; includes discontinuous elongate ridges interpreted as moraines, roughly oriented perpendicular to ice-flow direction; local relief of 1 to 2 m.

Ts — ***Streamlined till:*** diamicton; can be <2 m thick near the head of a crag-and-tail ridge and >2 m thick in drumlins; landforms oriented parallel to ice flow direction; local relief is 1 to 10 m; individual landforms vary from 300 to 1100 m long; occurs in valley bottoms.

Tv — ***Till veneer:*** diamicton; <2 m thick; surface expression mimics underlying topography; on moderately steep slopes and at high elevations; may be modified by creep processes; can be discontinuous and include abundant bedrock outcrops.

Tb — ***Till blanket:*** diamicton; >2 m thick; continuous till cover forming undulating topography that locally obscures underlying units; rare bedrock outcrops.

PRE-QUATERNARY

Bedrock: Mainly igneous intrusive rocks of northern Hogem batholith (Jurassic to Cretaceous). Also metamorphosed volcanic and sedimentary rocks and less common intrusive rocks of Quesnel and Stikine terranes and metamorphic and ultramafic rocks of Cache Creek terrane (Ootes et al., 2020a).

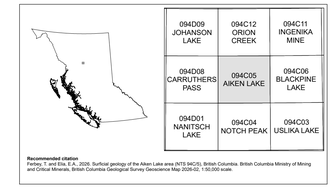
R — ***Bedrock:*** bedrock outcrop; locally includes areas of colluvium and till generally <2 m thick; extensively frost shattered at higher elevations; commonly exposed on steep slopes and in alpine environments.

Rs — ***Steep bedrock slopes:*** bedrock outcrop with loose blocks of local bedrock on steeply sloping terrain (>30°); patchy cover of till and colluvium (<2 m thick) increases downslope.

Rock glacier
Alluvial Fan
Kettle
Meltwater Channel:
- *Minor (flow direction unknown)*
- *Minor (flow direction known)*

Moraine Ridge:
- *Minor*
- *Lateral*
- *Medial*
- *End*

Esker ridge
Drumlinoid ridge
Crag and tail ridge; paleo ice-flow direction indicated.
Glacial striations: Paleo ice-flow direction unknown
Cirque headwall
Arête
Small bedrock outcrop in thick drift
Station (ground observation)
Geological contact (defined)
Road
Mineral occurrence (see Table 1; numbers indicate Map ID)
- *Prospect* 16
- *Showing* 28



Recommended citation
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North American Datum 1983 (CSRS).
Universal Transverse Mercator Zone 10 North.
Shaded relief image derived from the digital elevation model supplied by Natural Resources Canada.
Illumination: azimuth 315°, altitude 45°, vertical factor 1x.
Base map at the scale of 1:50 000 from GeoBC, with modifications.
Contour interval 20 metres. Elevations in metres above mean sea level.

Table 1. Mineral occurrences from MINFILE database (MINFILE, 2026). Abbreviated deposit type designations (e.g., L03) follow deposit descriptions detailed in Lefebure and Jones (2020).

Map ID	MINFILE No.	Name	Status	Commodity	Deposit Type
1	094C 007	PORPHYRY CREEK	Prospect	Cu, Au, Mo, Pb, Zn	L03: Alkalic porphyry Cu-Au
2	094C 008	CROYDON	Prospect	Cu, Au, Mo	L04: Porphyry Cu +/- Mo +/- Au
3	094C 009	GRANITE BASIN	Prospect	Cu, Au, Ag	L04: Porphyry Cu +/- Mo +/- Au
4	094C 012	JUPITER	Prospect	Au, Ag, Cu, Pb, Zn	I05: Polymetallic veins Ag-Pb-Zn+/-Au
5	094C 013	POLARIS	Prospect	Cu, Mo, Au	I05: Polymetallic veins Ag-Pb-Zn+/-Au
6	094C 039	BLOOM CIRQUE	Prospect	Cu, Au, Co	L03: Alkalic porphyry Cu-Au
7	094C 040	MES (LINK)	Showing	Cu, Mo, Au	L04: Porphyry Cu +/- Mo +/- Au
8	094C 052	TUTIZZI COPPER	Showing	Pb, Cu	I05: Polymetallic veins Ag-Pb-Zn+/-Au
9	094C 053	TUTIZZI LAKE	Prospect	Pb, Cu, Ag, Au	I05: Polymetallic veins Ag-Pb-Zn+/-Au
10	094C 054	ABRAHAM CREEK	Showing	Pb, Cu	I05: Polymetallic veins Ag-Pb-Zn+/-Au
11	094C 055	TUTIZZI LEAD	Showing	Pb, Cu	I05: Polymetallic veins Ag-Pb-Zn+/-Au
12	094C 056	IZZI	Prospect	Au, Cu	L03: Alkalic porphyry Cu-Au
13	094C 059	POLARIS ZINC	Showing	Cu, Zn	I05: Polymetallic veins Ag-Pb-Zn+/-Au
14	094C 064	GROUSE NORTH	Showing	Mo	L04: Porphyry Cu +/- Mo +/- Au
15	094C 065	PORPHYRY CREEK MOLYBDENUM	Showing	Mo	L04: Porphyry Cu +/- Mo +/- Au
16	094C 066	CROYDON NORTH	Showing	Au	L04: Porphyry Cu +/- Mo +/- Au
17	094C 075	SARAH	Showing	Cu, Au, Ag	L03: Alkalic porphyry Cu-Au
18	094C 078	GROUSE	Showing	Mo	L04: Porphyry Cu +/- Mo +/- Au
19	094C 079	NEL	Prospect	Pb, Ag, Zn, Cu, Au	I05: Polymetallic veins Ag-Pb-Zn+/-Au
20	094C 081	MES	Showing	Cu	L03: Alkalic porphyry Cu-Au
21	094C 084	BLOOM CIRQUE SKARNS	Showing	Cu, Fe	K03: Fe skarn
22	094C 090	AIKEN LAKE	Showing	Cr, Ch, Ab	M03: Podiform chromite
23	094C 091	POLARIS CU-MO	Showing	Cu, Mo	L04: Porphyry Cu +/- Mo +/- Au
24	094C 128	SOUTH SARAH	Showing	Cu, Au, Ag, Hg	L03: Alkalic porphyry Cu-Au
25	094C 135	MAT 3	Showing	Ag, Pb, Zn, Cu	I05: Polymetallic veins Ag-Pb-Zn+/-Au
26	094C 136	TUT 6	Showing	Cu, Au, Ag	L03: Alkalic porphyry Cu-Au
27	094C 137	TUT 3	Showing	Cu, Au, Ag, Mo	L03: Alkalic porphyry Cu-Au
28	094C 141	KNOLL	Showing	Pb, Zn, Ag	E12: Mississippi Valley-type Pb-Zn
29	094C 144	RITZ	Showing	Cu	I05: Polymetallic veins Ag-Pb-Zn+/-Au
30	094C 145	RAN	Showing	Cu, Ag	L03: Alkalic porphyry Cu-Au
31	094C 146	CHOICE	Showing	Cu	L03: Alkalic porphyry Cu-Au
32	094C 147	ACHE	Showing	Cu	L03: Alkalic porphyry Cu-Au
33	094C 148	ANT	Prospect	Cu, Au, Ni, Pd	L03: Alkalic porphyry Cu-Au
34	094C 149	WELT	Showing	Cu, Au, Ag, Pb	L03: Alkalic porphyry Cu-Au
35	094C 150	BELL	Showing	Cu	L03: Alkalic porphyry Cu-Au
36	094C 151	MISTY	Showing	Cu, Ag	L03: Alkalic porphyry Cu-Au
37	094C 152	SHOT	Showing	Cu, Au	L03: Alkalic porphyry Cu-Au
38	094C 153	ANORAK	Showing	Cu, Au	L04: Porphyry Cu +/- Mo +/- Au
39	094C 154	JUMP	Showing	Cu	L04: Porphyry Cu +/- Mo +/- Au
40	094C 155	RAVE	Showing	Cu	L04: Porphyry Cu +/- Mo +/- Au
41	094C 156	LONELY	Showing	Cu, Au, Ag	L03: Alkalic porphyry Cu-Au
42	094C 157	HOWL	Showing	Cu, Au, Ag	I05: Polymetallic veins Ag-Pb-Zn+/-Au
43	094C 162	JEWEL BOX	Showing	Cu, Pt, Pd	M05: Alaskan-type Pt+/-Os+/-Rh+/-Ir
44	094C 163	QUEEN	Prospect	Cu, Au, Pt, Pd, Ni, Co	M05: Alaskan-type Pt+/-Os+/-Rh+/-Ir
45	094C 164	RIDGE	Prospect	Cu, Pt, Pd	M05: Alaskan-type Pt+/-Os+/-Rh+/-Ir
46	094C 165	GL	Prospect	Cu, Ni, Co, Pt, Pd, Au	M05: Alaskan-type Pt+/-Os+/-Rh+/-Ir
47	094C 173	PAL	Showing	Cu, Mo	L04: Porphyry Cu +/- Mo +/- Au
48	094C 212	GRID	Showing	Cu, Pt, Pd	M05: Alaskan-type Pt+/-Os+/-Rh+/-Ir
49	094C 213	ORION	Showing	Cu, Pt, Pd	M05: Alaskan-type Pt+/-Os+/-Rh+/-Ir
50	094C 215	ABE 4	Showing	Cu, Pb, Ag, Au, Zn	I05: Polymetallic veins Ag-Pb-Zn+/-Au
51	094C 216	WELT WEST	Showing	Cu, Ag, Au	L03: Alkalic porphyry Cu-Au

Descriptive notes

In 2018, the British Columbia Geological Survey initiated a multi-year program integrating 1:50,000-scale bedrock and surficial geological mapping for northern Hogem batholith. New bedrock mapping refined the origin and timing of batholith emplacement and base- and precious-metal mineralization (Ootes et al., 2019a, b, 2020a, b; Jones et al., 2021), and new surficial geology mapping detailed the ice-flow history (Ferbey and Elia , 2021). The present series of 1:50,000-scale surficial geology maps is for the Notch Peak (NTS 94C/4), Aiken Lake (NTS 94C/5), Nanitsch Lake (NTS 94D/1), and Carruthers Pass (NTS 94D/8) map areas.

The Cordilleran Ice Sheet covered the Hogem batholith area during the Late Wisconsinan glacial maximum when ice flowed east and southeast across the region from an ice divide above the Skeena Mountains. During this stage, ice flow was independent of valley floor topography and glaciers were able to move over low-elevation topographic divides, transporting glacial debris into adjacent drainages (Ryder and Maynard, 1991; Clague and Ward, 2011). Glacially streamlined or eroded landform- and outcrop-scale indicators are commonly aligned parallel with valleys, indicating that ice flow direction was still controlled by steep, high-elevation valley walls for most of the Late Wisconsinan.

Overconsolidated subglacial tills were deposited in the area during full-glacial conditions as till blankets, streamlined tills, and till veneers. During deglaciation, less consolidated melt-out tills were deposited as hummocky tills. Significant volumes of glacial meltwater flowed through the area during deglaciation, transporting coarse-grained sands and gravels. Much of this transport and deposition was subaerial (forming extensive outwash plains and terraces) but a component was subglacial (forming eskers) or in contact with stagnant ice blocks (producing hummocky sands and gravels). Colluvial deposits are common along the base of steep slopes and are now vegetated and stable, but talus aprons and cones are still actively being constructed. Solifluction lobes and rock glaciers are currently active, predominantly on north-facing slopes. Organic deposits occur throughout the study area, mostly as narrow transition zones between tree stands and water bodies. These deposits can be extensive along the floors of retreat-phase glaciofluvial meltwater channels.

Subglacial till, the ideal sample medium for till geochemistry and mineralogy surveys in mineral exploration (Levson, 2001), is common in valley bottoms and covering lower hillslopes. Although bedrock is well-exposed at high elevation, small, isolated outcrops, which may be overlooked, are common along valley bottoms and on forested hill flanks.

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