

Heffley Lake
883937

TGS → Heffley
LK.

Analytical results have been received for all of the whole rock data and for most of the assays. Thin sections and polished sections have been completed by Vancouver Petrographics but no microscope or microprobe work has been started. The silt samples are being sieved and processed in Vancouver. The conodont samples have been forwarded to U. Vic. Arrangements have been made with the UBC microprobe lab to start analyses once the fieldwork articles are written.

Heffley Lake

The bulk of the summer (17 days fieldwork; 21st of July to 7th of August) were spent at Heffley Lake, northeast of Kamloops. Mapping was conducted at two scales:

- (a) reconnaissance mapping a 38 sq. km area at 1:15 000, and,
 - (b) mapping a 2.5 sq. km area over the Heffley Fe-Cu-Au property at a 1:5 000 scale using the 100m spaced grid cut by Echo Bay Mines.
- Nearly 70 rock samples were collected.

Rock exposure is probably < 1% in the area. The geology consists of generally steeply dipping, well cleaved tuffaceous siltstones, black argillites, ash tuffs, some substantial units of limestone, and a variety of intrusive rocks. Preliminary interpretation suggests that the rocks in the northern part of the area are Nicola Group whilst those to the south belong to the pre-Nicola basement, the Harpers Ranch. The presumed original stratigraphic contact between these northern and southern packages is now marked by a SE trending structural zone which passes through Heffley Lake and along Armour Creek.

There are some small bodies of megacrystic syenite (feldspars up to 15 cm long), and older swarms of irregular dikes and sills that cut the limestone cliffs immediately north of Heffley Lake. The latter are altered with silica, pyrite and albite. Previously these have been mapped as "dacites" or "rhyolites" but immobile element analyses from our work indicates they were originally dioritic to gabbroic in composition.

The largest and most economically important intrusion in the area is the "Armour Creek Pluton" which is believed to be an Alaskan-type body (hence it may have PGE potential). This intrudes both the presumed Nicola and Harpers Ranch rocks and it covers an area of at least 10 sq. km (it's E, S and N margins have not been delineated). It is a massive, equigranular to moderately porphyritic body that mainly comprises mafic hornblende gabbro and amphibole-pyroxene ultramafic rocks. One to 2% disseminated pyrite is ubiquitous and the ultramafic rocks contain up to 5% magnetite. The latter is responsible for a 6.5 km long airborne magnetic anomaly that trends SE from Heffley Lake. Several previous unreported Cu-bearing occurrences were discovered in the pluton, one of which assayed 0.8 % Cu but low Au. This Alaskan-type body is probably related to both the highly altered (silicified and pyritic) dioritic dike swarm north of Heffley Lake and the Mesabi Fe-Cu-Au-REE skarn. Field evidence shows that the dike swarm, the skarn and by implication the Armour Creek Pluton all predate the major deformation and folding that overprinted the metasediments.

The Mesabi (Heffley Lake Fe-Cu-Au-REE occurrences lie in poorly exposed ground immediately north of the Lake and SW of the limestone cliffs. It comprises pyroxene and garnet-pyroxene skarns with variable amounts of magnetite, pyrite, pyrrhotite and minor

chalcopyrite. These skarns appear to be related to the swarm of hydrothermally altered dikes and sill that cut the limestones in the nearby cliffs. It is likely that these swarms originate from the magnetite-rich Armour Creek Pluton, which aeromagnetic data suggests underlies the lake adjacent to the Mesabi occurrences. Soil sampling by Echo Bay outlined Au anomalies > 1000 ppb Au on the property.

Other properties.

Details on the other properties visited and sampled, including the Howser and Tea Creek area of the Bugaboo Mountains area (Fig. 2) will be presented in Fieldwork.

Gerry Ray and Ian Webster.

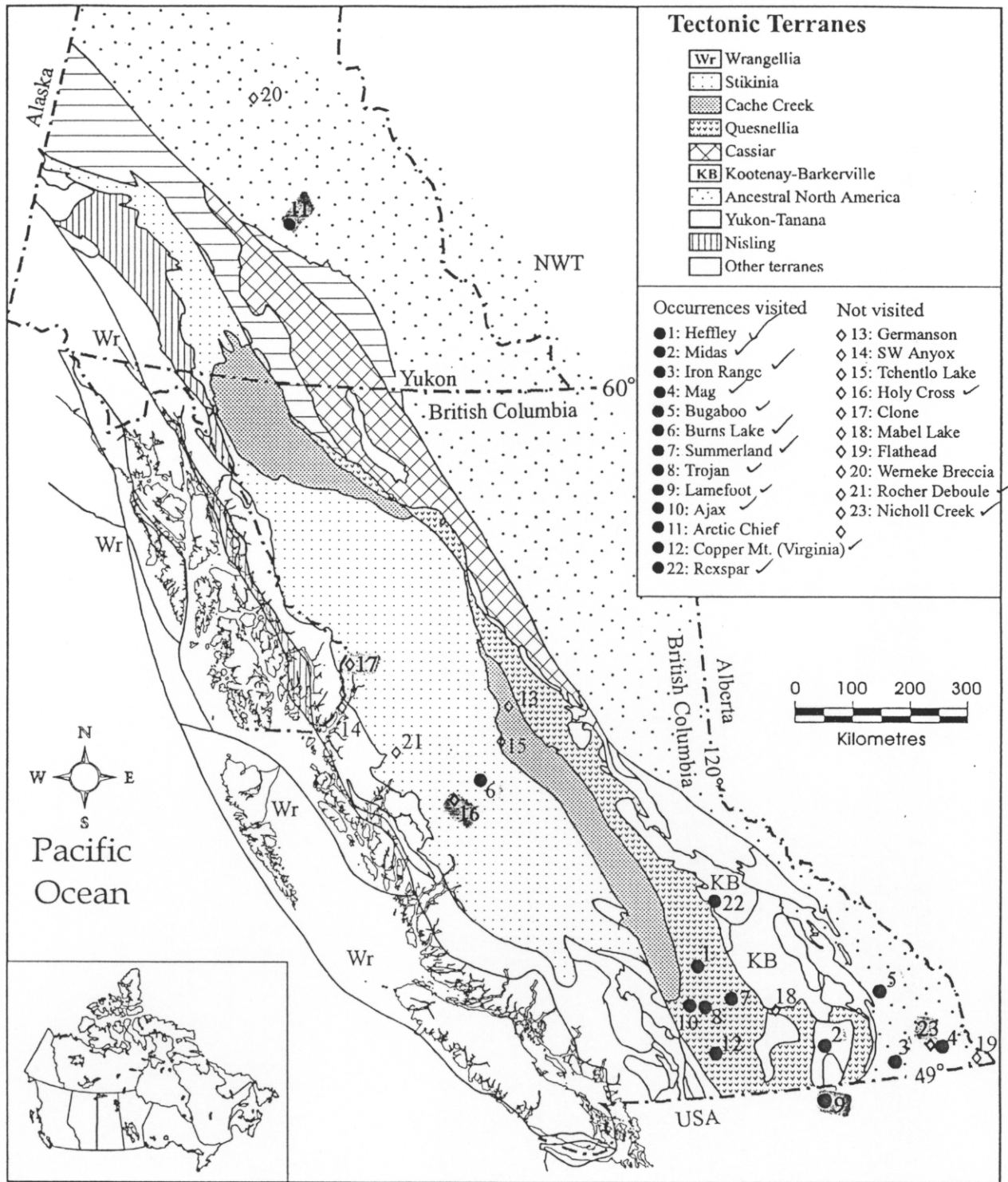


fig1.cdr

Figure 1

Properties visited and sampled, 1999

Properties with samples from previous visits,