MINFILE
NTS 082ENE - KETTLE RIVER

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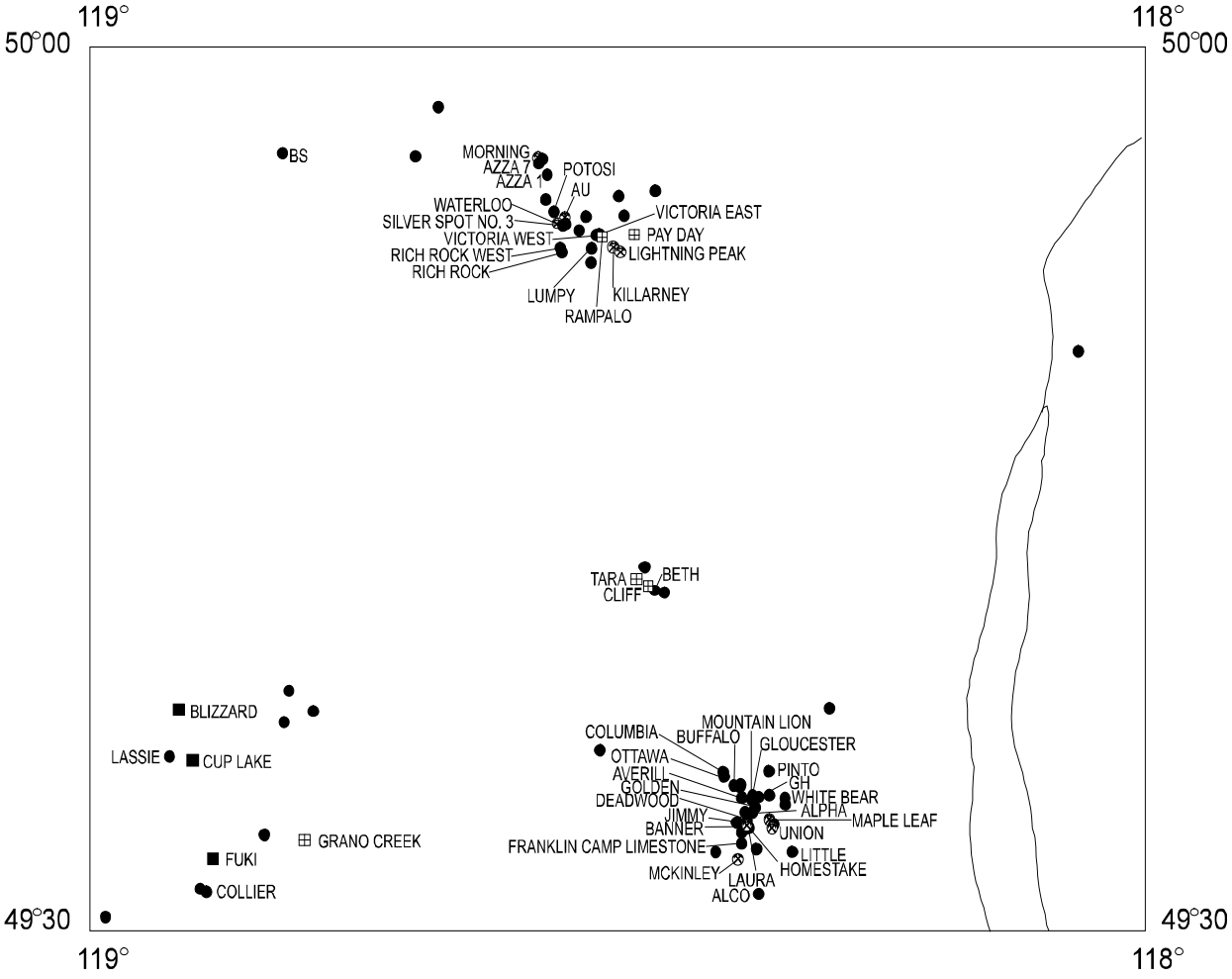
The Kettle River map area, located in south-central British Columbia, contains 81 documented mineral occurrences, of which 4 are industrial and 77 are precious, base metal and uranium occurrences. The map covers part of the Okanagan Highland physiographic area which is found within the Omineca tectonic belt. The map is published at a 1:100,000 scale.

The oldest rocks in this area belong to the Proterozoic Monashee Complex. These pericratonic rocks, composed largely of amphibolite and gneiss, form the basement to the Kettle River map sheet area.



The Omineca Belt formed in Early to Middle Jurassic time as a result of the accretion of the Intermontane Superterrane onto the continental margin of North America. The resulting calc-alkaline plutonism created a large number of Middle Jurassic intrusions of intermediate composition. A subsequent episode of plutonism during the Cretaceous and continuing into the Tertiary resulted in the extensive Okanagan Batholith. Remnants of the Intermontane Superterrane are preserved as pendants of the Devonian-Triassic Harper Ranch Group Subterrane, and the Carboniferous-Permian Anarchist Group of the Okanagan Subterrane. Both subterranes formed the basement of Quesnellia and may represent a co-extensive oceanic/marginal basin to island arc environment.

Mixed alkalic and calc-alkalic volcanism, centered in the Okanagan valley to the west, became active during the Eocene in response to extensional forces, possibly related to dextral movement on the Rocky Mountain Trench and Fraser River fault zones. The resulting Penticton Group, Marron Formation volcanic rocks unconformably overlie the Monashee Complex, Harper Ranch Group, Anarchist Group, and post-collision intrusive rocks in the Kettle River map sheet area. The Eocene Coryell syenitic intrusions are high-level intrusive equivalents of the Penticton Group, Marron Formation.

The development of low-angle detachment surfaces during the Eocene and extensional movement on the Okanagan Valley fault to the east, redistributed Quesnellia strata and Penticton Group rocks, and exposed the Shuswap Metamorphic Complex east of Okanagan Lake. The Shuswap Metamorphic Complex, comprised of schist, gneiss and paragneiss, is the part of the Proterozoic Monashee Complex affected by a superimposed Eocene extensional strain. Graben structures, related to the Eocene tectonics, have preserved Penticton Group volcanic rocks in the Christian and Granby River valleys. Plateau basalts of the Chilcotin Group covered this area during the Miocene-Pliocene, and remnants are left, forming a cap on some topographic highs.

Early exploration in the Kettle River map sheet area dates from the 1890s and was focused in 2 areas: the Lightning Peak area and the Mount Franklin area. Both developed into mining camps, each with a large number of Crown granted claims and producing mines. The earliest producer was the **Lightning Peak** (082ENE035) mine, where 5 tonnes of silver-lead ore was mined in 1904. The largest and most important producer was the **Union** (082ENE003) mine in the Franklin camp, which produced 43.3 million grams of silver, 1.7 million grams of gold, 298,664 kilograms of zinc, 168,527 kilograms of lead, and 12,665 kilograms of copper from 122,555 tonnes of ore mined. The Union mine operated intermittently during the period 1913 to 1947, although tailings were processed as recently as 1989. Approximately 90,000 tonnes of tailings were processed during the periods 1934-36 and 1987-89. Other producers include the **Waterloo** (082ENE017), **AU** (082ENE027) and **Killarney** (082ENE034) properties in the Lightning Peak camp, and the **McKinley** (082ENE001), **Maple Leaf** (082ENE009) and **Homestake** (082ENE051) properties in the Franklin camp.

The Devonian-Triassic Harper Ranch Group hosts, or is closely associated with, many of the mineral occurrences in the Lightning Peak and Franklin camps. In the Lightning Peak camp, most mineralization is hosted by quartz veins and shear zones in the Harper Ranch Group. The association of quartz porphyry dikes, of unknown age, with mineralization is important. Silver rich occurrences include **Waterloo** (082ENE017), **Killarney** (082ENE034), **Potosi** (082ENE024), **Silver Spot No. 3** (082ENE028), **Lumpy** (082ENE031), **Rich Rock** (082ENE078) and **Rich Rock West** (082ENE079). Gold rich occurrences include **AU** (082ENE027), **Rampalo** (082ENE032), **Victoria East** (082ENE076) and **Victoria West** (082ENE077). The **Pay Day** (082ENE037) prospect is a volcanogenic occurrence within Harper Ranch Group stratigraphy. In the Franklin camp, Harper Ranch Group rocks host silver-gold-base metal mineralization in veins, shears and replacements in the **Union** (082ENE003) mine. Veins and shears in Harper Ranch Group rocks also host silver mineralization on the **Jimmy** (082ENE042) showing, gold-silver mineralization on the **Alpha** (082ENE052) showing, and copper mineralization on the **White Bear** (082ENE057). The **Franklin Camp Limestone** (082ENE062) includes extensive beds of limestone within the Harper Ranch Group.

Middle Jurassic granodiorite and quartz monzonite intrusions are host to a variety of mineral occurrences. Porphyry copper mineralization is found on the **Alco** (082ENE014) and **Pinto** (082ENE019) showings. Porphyry related gold mineralization is represented by the **Tara** (082ENE022), **Sab** (082ENE044), **Cliff** (082ENE067) and **Beth** (082ENE068) occurrences, which also display features of epithermal gold-silver mineralization. An unnamed Middle Jurassic intrusion in the Lightning Peak camp hosts epigenetic quartz veins in shear zones (**Morning** (082ENE022), **Azza 1** (082ENE072) and **Azza 7** (082ENE073)). Precious and base metal skarns found on contacts between Harper Ranch Group rocks and Middle Jurassic intrusions include the **McKinley** (082ENE001), **Gloucester** (082ENE005) and **GH** (082ENE006) occurrences.

The Eocene Coryell Intrusions include platinum bearing pyroxenite in the Franklin camp (**Averill** (082ENE007), **Buffalo** (082ENE008), **Golden** (082ENE053), **Ottawa** (082ENE061), **Columbia** (082ENE060) and **Mountain Lion** (082ENE055)). The co-magmatic Eocene Penticton Group, Marron Formation hosts epigenetic, gold-silver rich quartz veins (**Banner** (082ENE002), **Homestake** (082ENE051), **Laura** (082ENE066) and **Deadwood** (082ENE063)).

Basal uranium deposits in Miocene paleochannels include the **Blizzard** (082ENE046) deposit with measured reserves of 2.2 million tonnes grading 0.181 per cent uranium, the **Cup Lake** (082ENE041) deposit with indicated reserves of 2.25 million tonnes grading 0.037 per cent uranium and the **Fuki** deposit (082ENE015) with indicated reserves of 0.477 million tonnes grading 0.033 per cent uranium. Other basal uranium showings include the **Collier** (082ENE030) and **Lassie** (082ENE047) occurrences.

The **Grano Creek** (082ENE081) quarry was opened by Quadra Stone Co. Ltd. in 1994. The rock is a prophyrytic, pink granite of the Okanagan Batholith.

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