

Paleogene magmatism and mineralization, Boundary area, southern BC

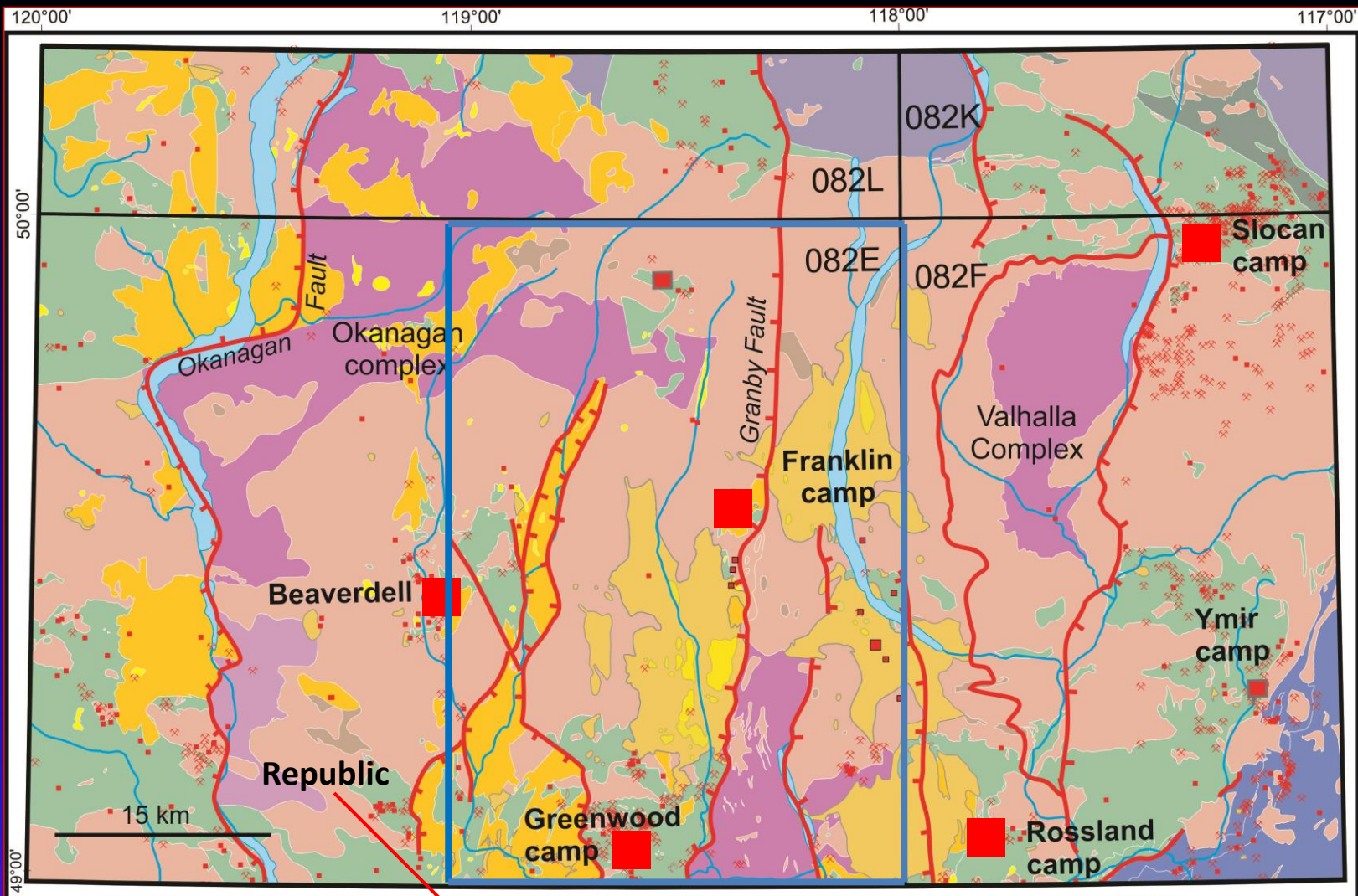
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Outline

Potential for discovery of:

1. Paleocene and Eocene intrusive-related mineralization (veins, porphyry)
 - high-level stocks within batholiths
2. Eocene epithermal mineralization
 - two horizons, basal Penticton Group

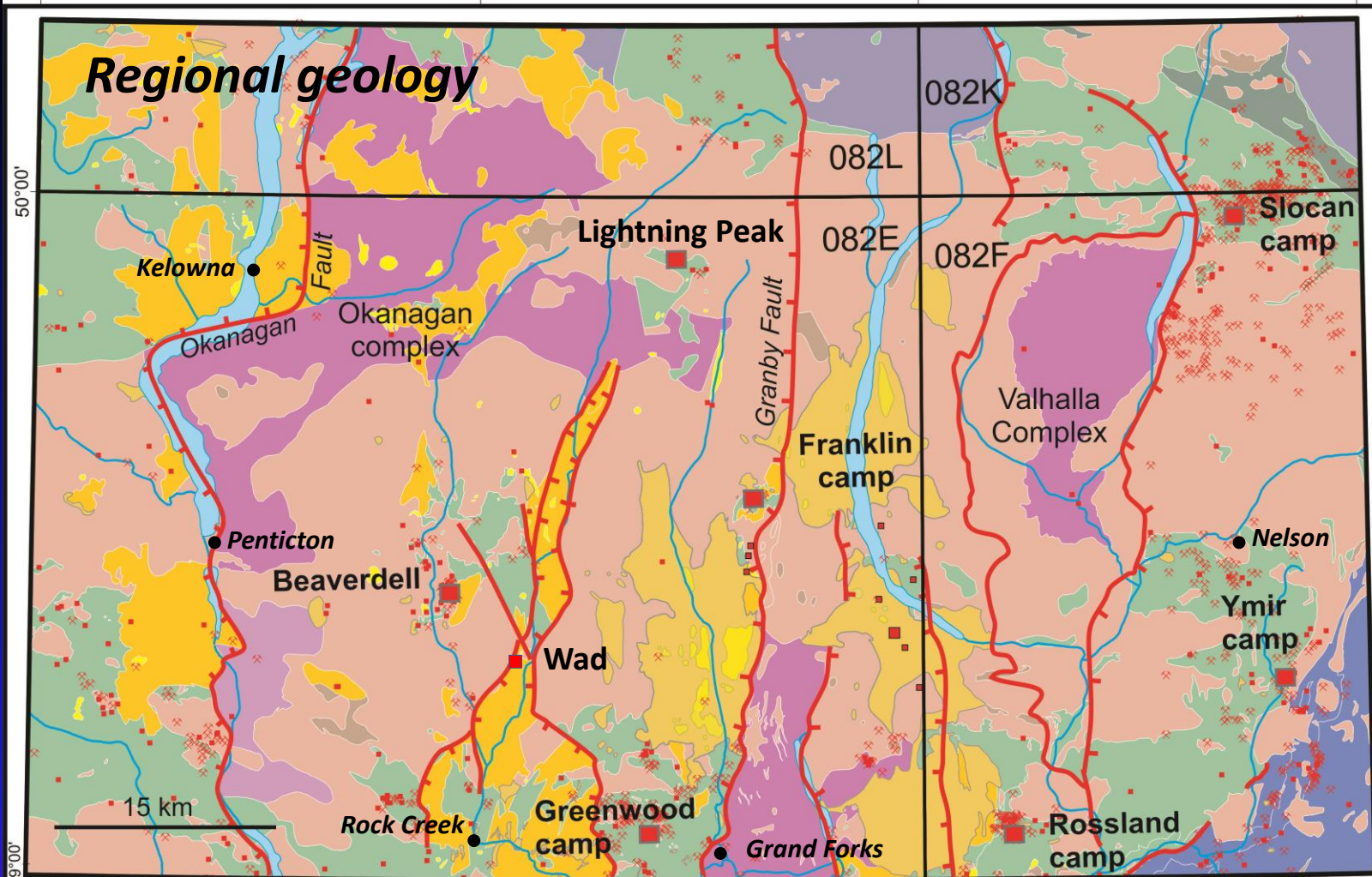


Wealth of mineral production:

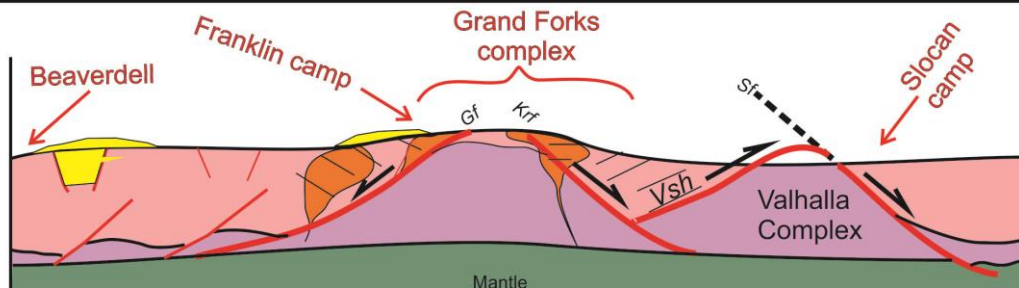
Au - 9 million oz: Republic, Rossland, Greenwood

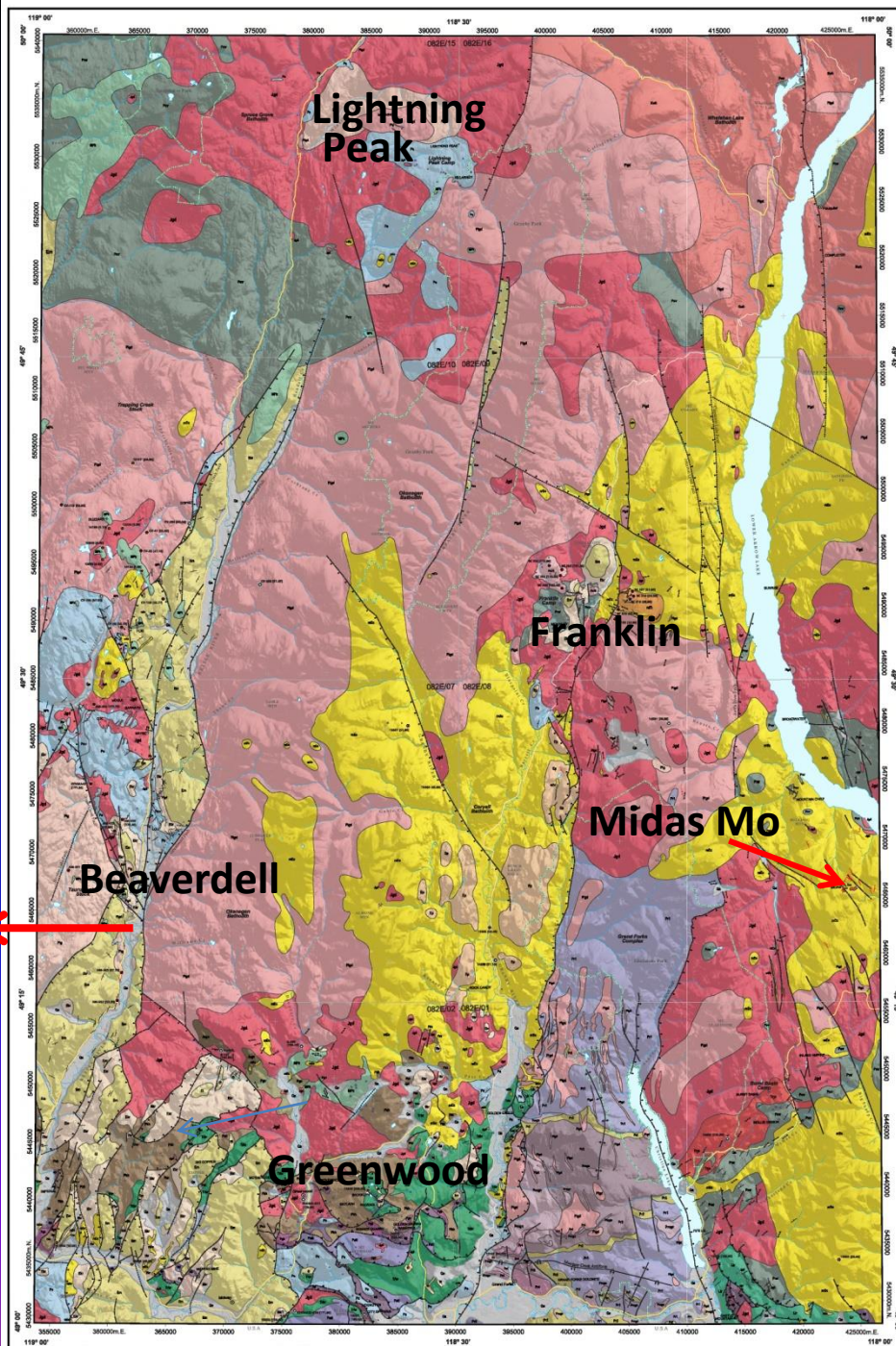
Ag - 80 million oz: Beaverdell, Slokan,

120°00' 119°00' 118°00' 117°00'



- Eocene Coryell intrusions
- Tertiary Penticton Group
- Paleogene intrusions
- Paleozoic successions

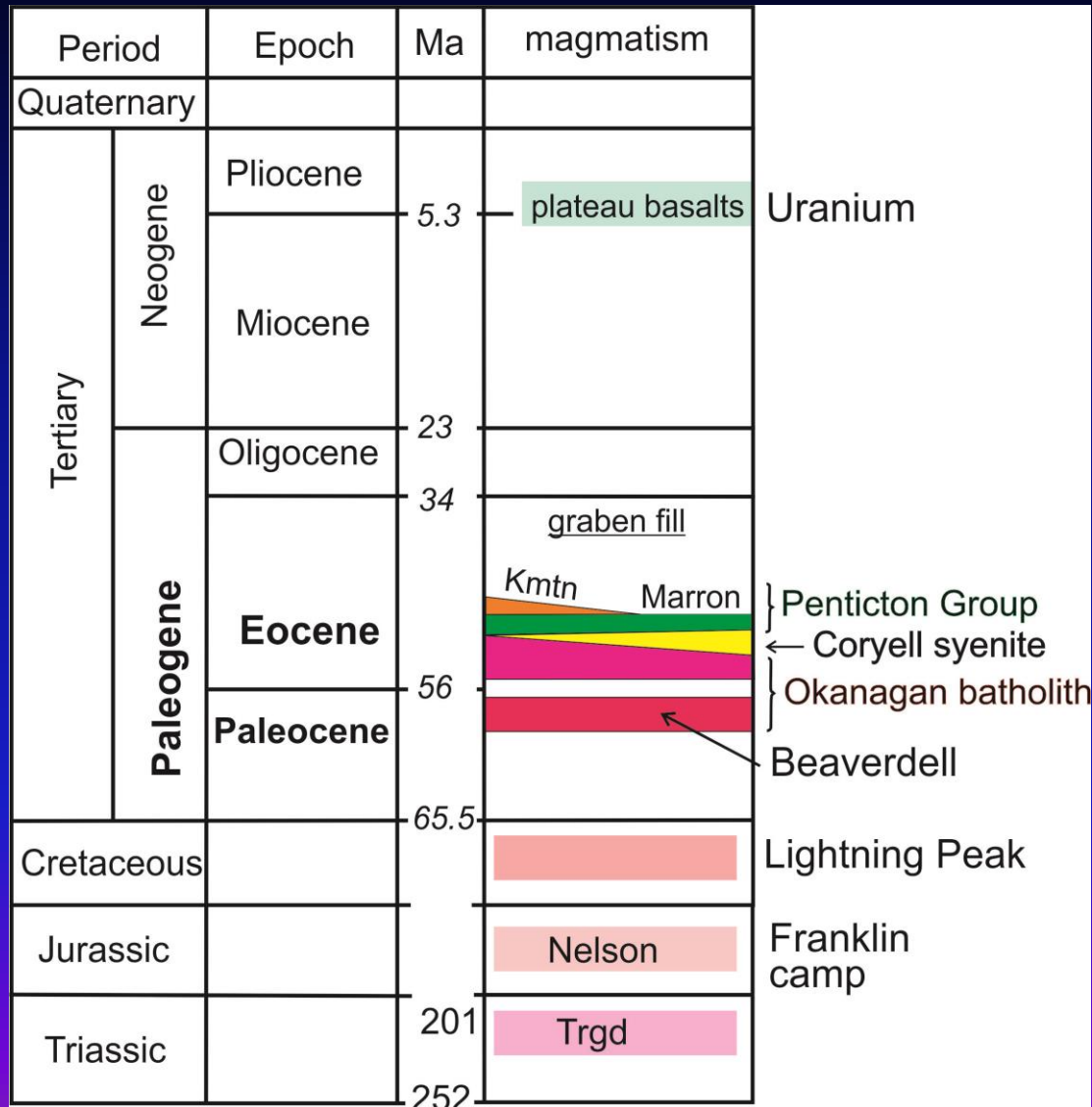




1. Potential for discovery of small high-level mineralized intrusions within batholiths

Penticton east-half
Geoscience BC map 2019-04

magmatism and mineralization



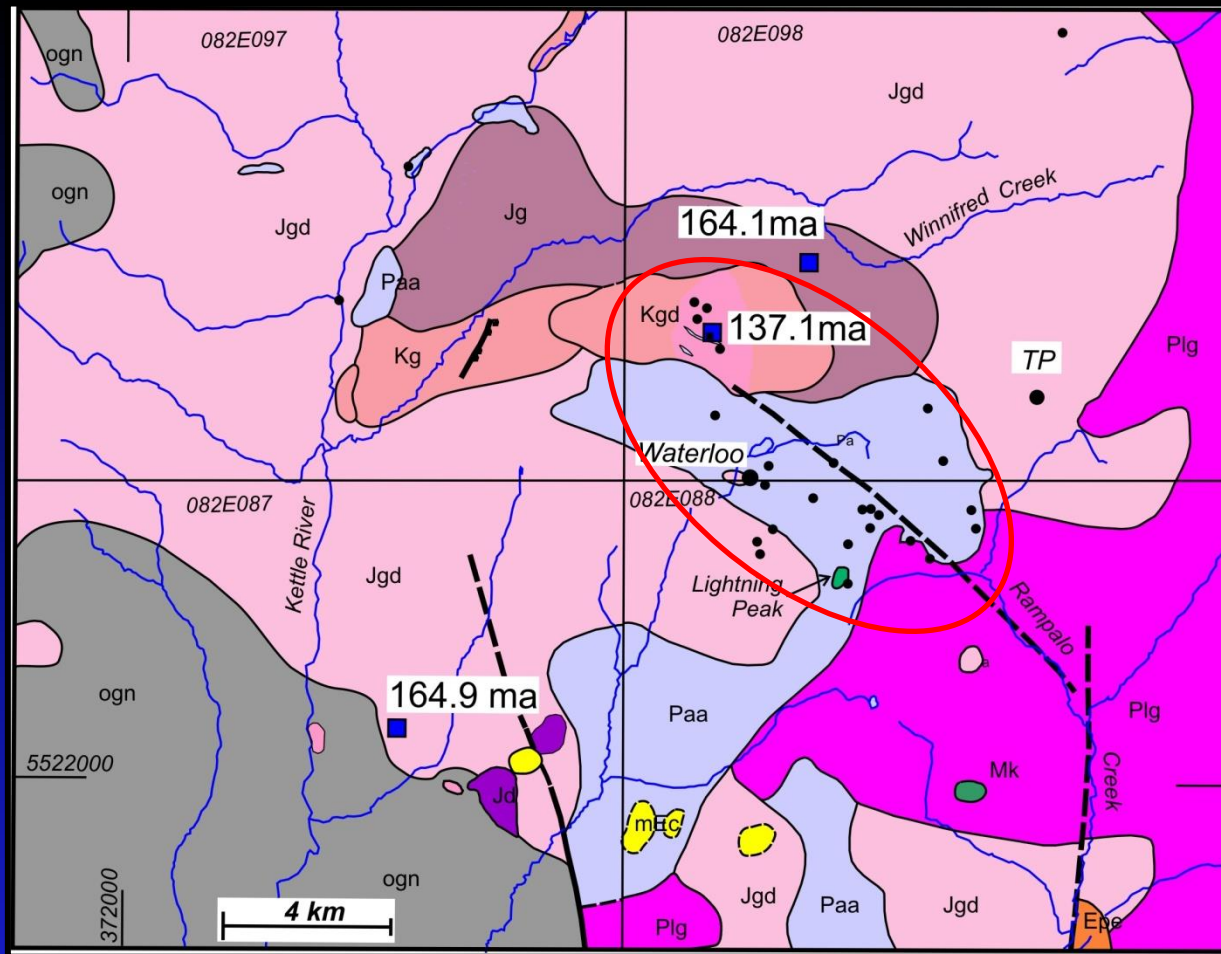
Paleogene is well represented

- Major period of extensional faulting, outpouring of alkalic lavas, several plutonic events, and several large and important mineral camps

Cretaceous – minor granite

Jurassic – extensive granodiorite magmatism

Lightning Peak vein camp



- Neogene
 - Mk Kallis Formation
- Eocene
 - Epe Penticton Group
 - mEc Coryell syenite
- Paleocene to Eocene
 - Plg Okanagan batholith
- Cretaceous
 - Kg pink, massive granite
 - Kgd porphyritic granodiorite, granite
- Jurassic
 - Jgd granodiorite, (granite)
 - Jg monzonite; granite (porphyritic)
 - Jd diorite
- Paleozoic
 - Paa metavolcanics; sediments
- Age unknown
 - ogn Okanagan gneiss
- mineral deposit / occurrence
- U/Pb zircon date

Northern gold veins

Morning Au vein
(082E022)



N-trending, epithermal
gold veins in Cret. intrusion

Qtz, minor py, sph, gal



Production – 1930s
Continued exploration



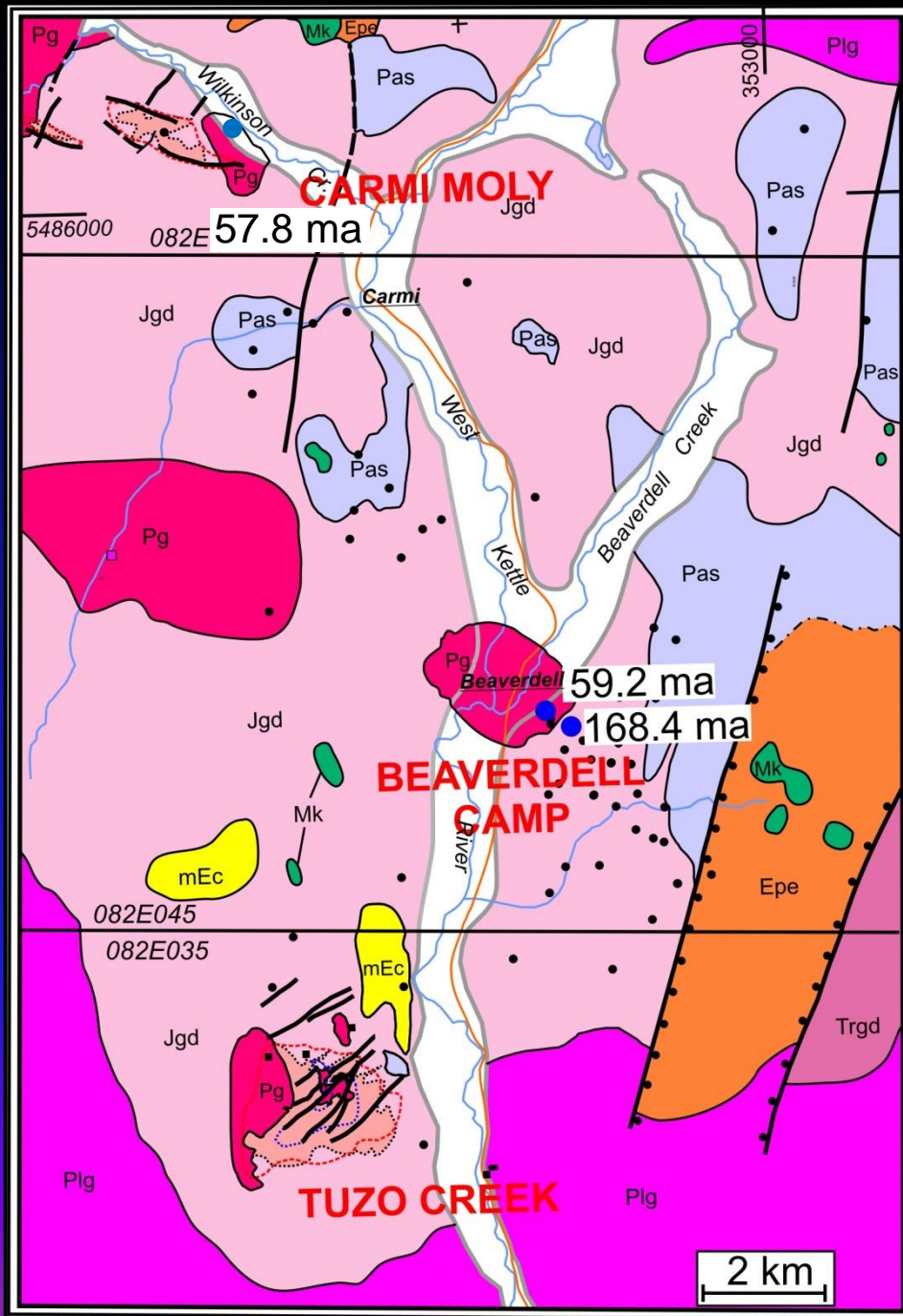
Silver Spot, AU deposits



N trending, high
grade, Ag-Pb-Zn-(Au)
qtz veins

Beaverdell regional geology

Highland Bell camp
Tuzo Creek porphyry Mo-Cu
Carmi Moly porphyry



Beaverdell mill site

Beaverdell (*Paleocene*)

Highland Bell



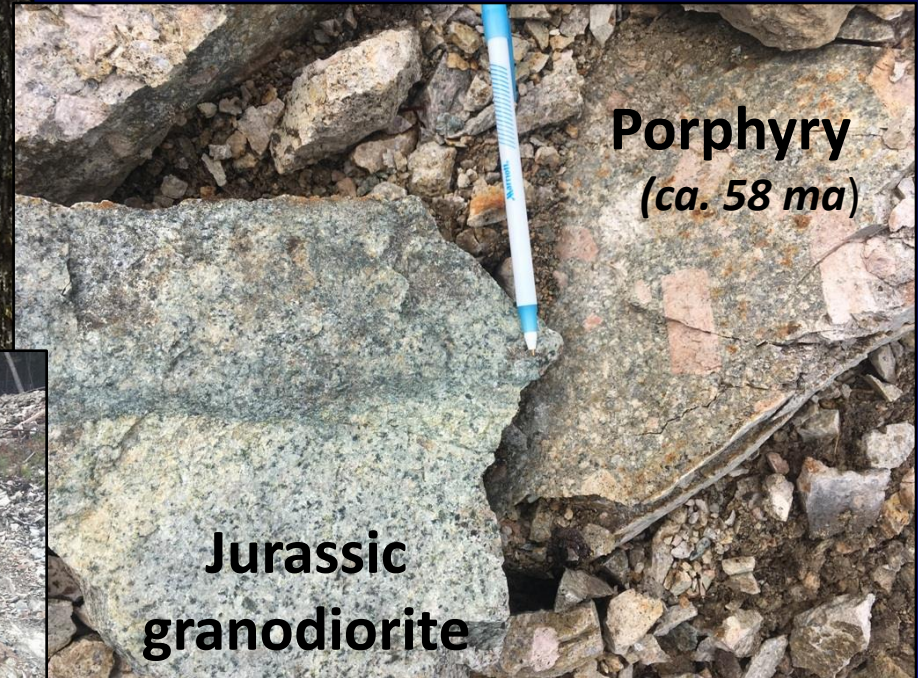
- Largest producer in camp - 1896-1991
- 1.2 million tonnes mined
34.5 million oz Ag, plus Au, Zn and Pb
- E-W striking silver-rich veins

59 ma Beaverdell granite
hosts veins

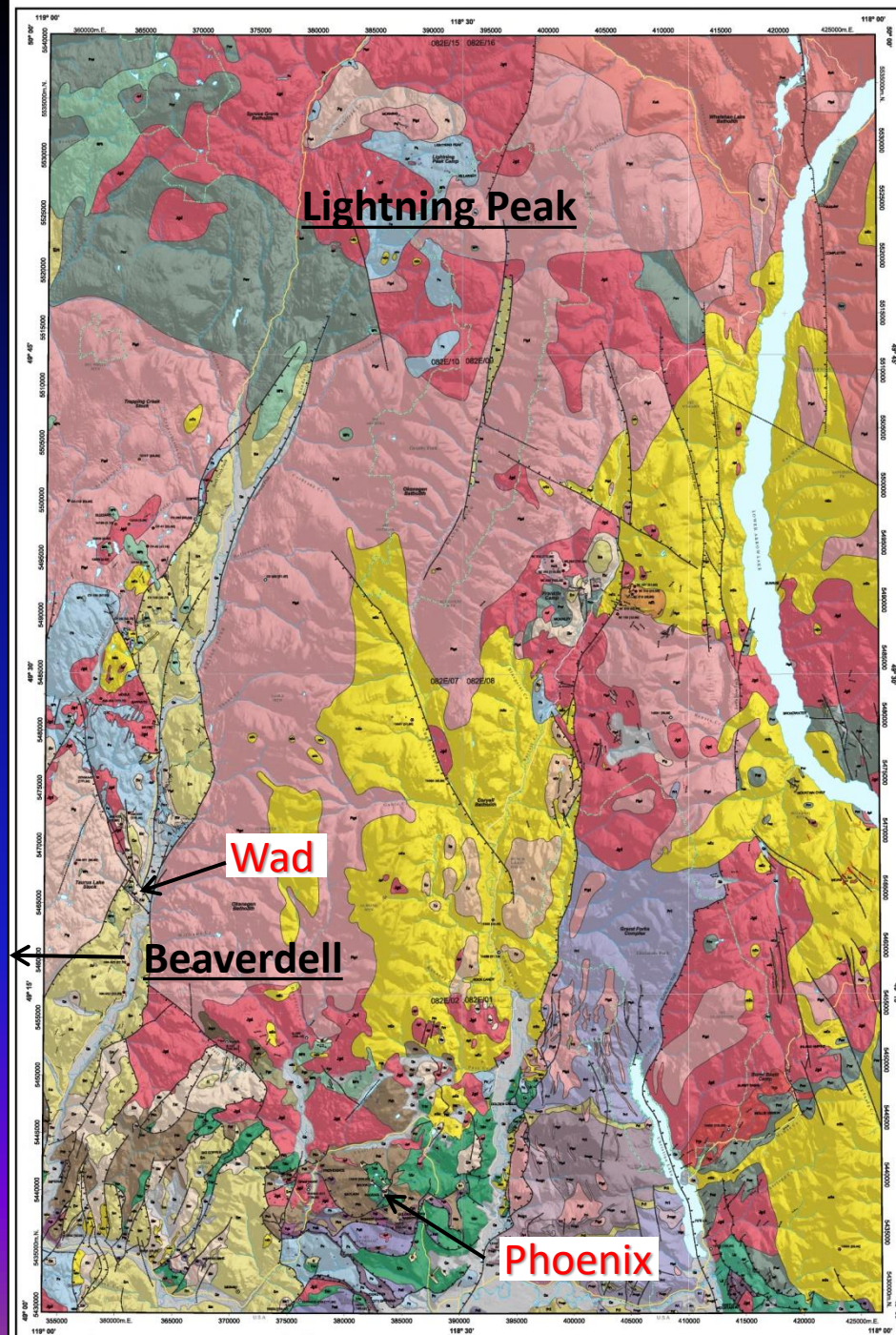


Tuzo Creek Mo

(*Paleocene*)



Zoned alteration, dyke swarm



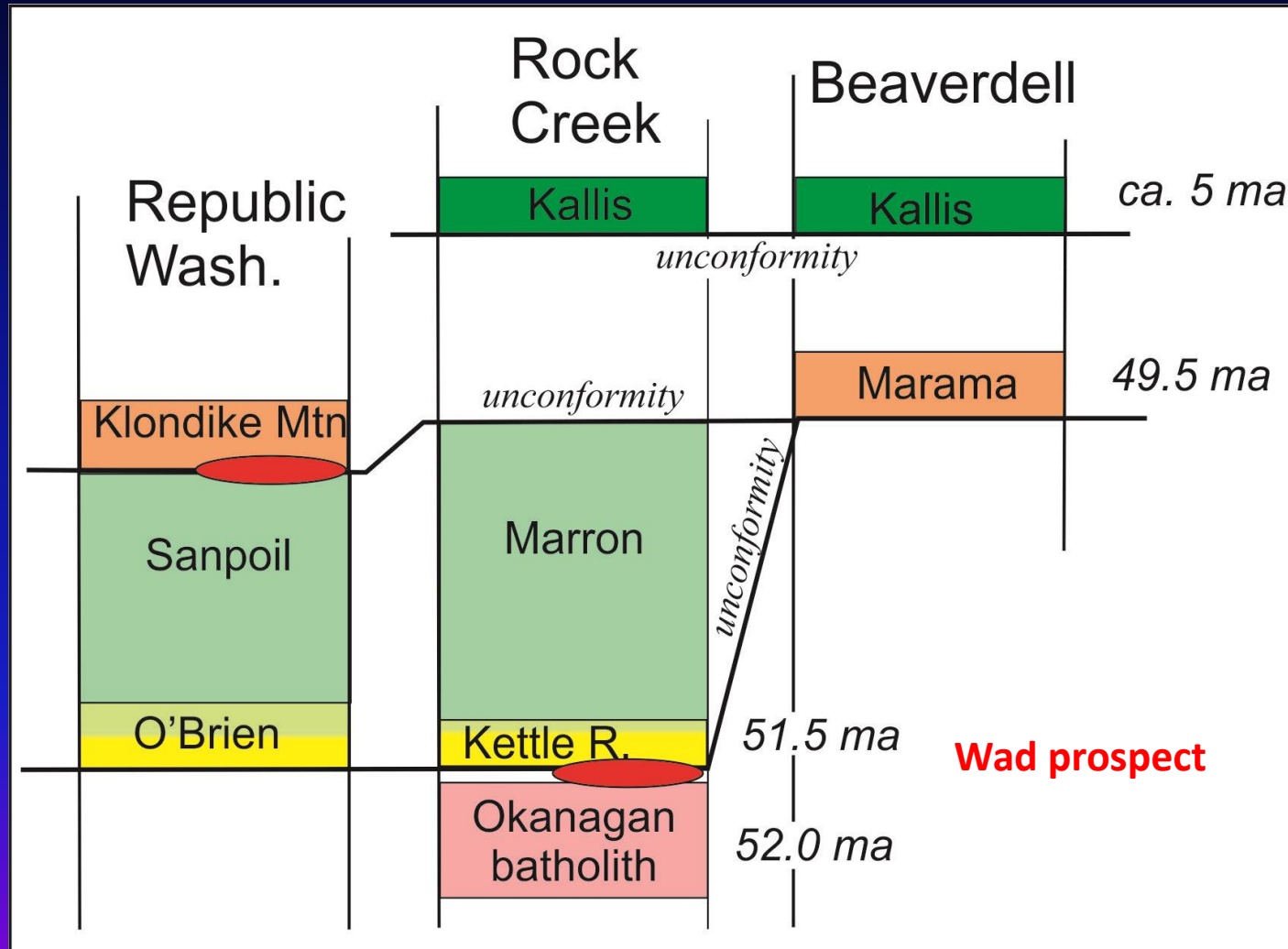
1. Potential for discovery of small high-level mineralized intrusions within batholiths

2. Potential for epithermal precious-metal deposits

- a. Mineralized horizon in the Republic district may extend north of the Greenwood area
- b. A lower horizon, the Kettle River Fm, has known epithermal mineralization
- c. Wad – new discovery

Geoscience BC map 2019-04

Eocene stratigraphic correlations (Penticton Group)



Phoenix pit, Greenwood



Small epithermal showing
overprints earlier (Jurassic) skarn



Host: Eocene (51.5 Ma)
Kettle River Fm

Wad prospect



- Discovered, 2016
- Staked by W. Murton, 2019
- Optioned to Gold Cliff, 2020
- Currently, intense exploration

- Low sulphidation epithermal gold
- Kettle River Fm felsic tuff and basal grit host
- approx. 800m x 300m
- intense clay alteration, silica, carbonate and minor adularia
- hand samples to 2.4 g/T Au
- fault controlled

Overlain and cut by fresh Marron
Formation and related dikes
(ca. 51.0 ma)



WAD Prospect



“Basement” of intensely altered
megacrystic granite (ca. 56-60 ma) and
Paleozoic metavolcanics.



Summary: Paleogene magmatism and mineralization

Penticton East-half: lithologies, ages and mineralization

Mineralization	Lithologies	Age	Note
	Cover	<u>Quaternary</u>	
Basal uranium Fuki, Donen →	Kallis ←	4-6 ma <u>Pliocene</u>	Plateau basalts
		49.5 ma <u>Eocene</u>	Uplift, erosion mineralization
Epithermal Precious metal ←	Marama (Klondike Mtn)		Widespread alkalic volcanism, graben fill
Republic →	Marron (Sanpoil)	ca. 51.5 ma	extensional faults, grabens, mineralization
Kettle River →	Kettle R.		
Mo porphyry Midas →	Coryell	<u>Paleocene</u> 58-60 ma	Rapid uplift following granite intrusion
Silver Vein camps Beaverdell →	Paleocene granite	<u>Cretaceous</u> 137 ma	Permo-Triassic deformation and magmatism
Lightning Peak Au-Ag-Pb-Zn veins →	Kg	<u>Jurassic</u>	
Franklin camp Base metal veins →	mJgd (Averill complex)	<u>Triassic</u>	Permo-Carboniferous arc volcanism, sedimentation
	Trbr	<u>Paleozoic</u>	
	Paleozoic basement		

**2. Epithermal mineralization
in Eocene felsic tuffs and basal
sands: several horizons**

**1. Intrusive –related vein
and porphyry mineralization
in high level Cretaceous
to Eocene stocks**

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