

# Industrial Mineral potential of the Interior Plateau Beetle Impacted Zone (BIZ)

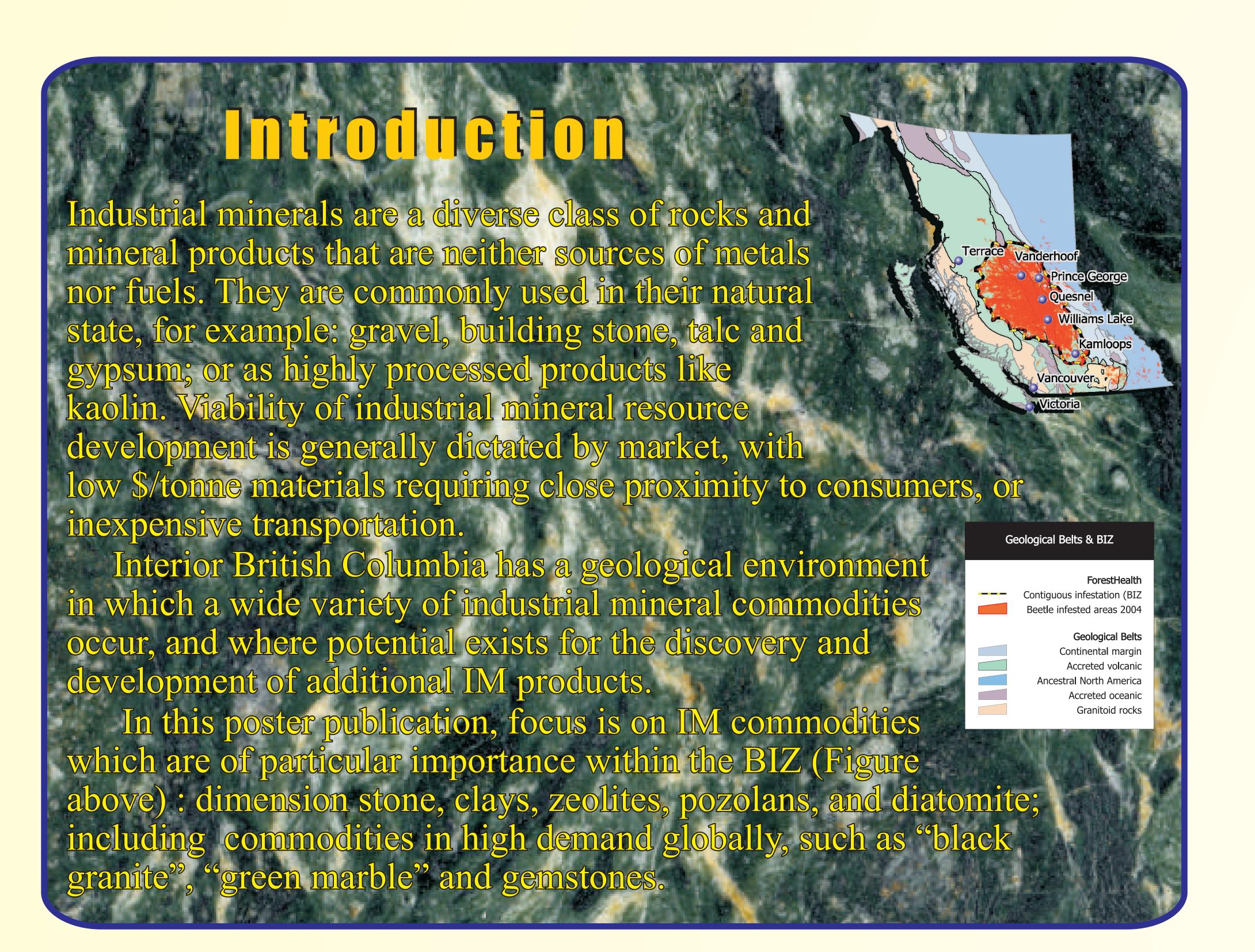
by Danny Hora (BC Geological Survey Branch, retired)

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available on-line together with digital data files at: www.mapplace.ca see Publications Catalogue



For More Information (250) 721 - 3728Danny Hora zdhora@telus.net



## Zeolites

Zeolites are known as "molecular sieves" because of their hollow, tubular molecular structure. This structure gives them desirable properties like large surface area, ion exchange capacity, and absorption properties. Depending upon their structure and chemical composition, they can absorb odours, ammonia and heavy metals. Clinoptilolite from Eocene sediments is

used as food additive to improve digestion, act as a chemical carrier, or to remove ammonia and heavy metals in environmental applications. Zeolites are also a very effective

Zeolites are most commonly developed in

younger acid composition volcanic ash deposited in lacustrine or marine environment, or affected by percolating ground water. They are less common in older sediments, because zeolites occur in rocks which have not undergone higher P-T conditions. In BC, Lower Cretaceous exceptions are known from the Spences Bridge Group between Spences Bridge and Merritt. Zeolites can be very difficult to identify in outcrop, but low density, affanitic appearance and blocky weathering are clues. X-ray ID is diagnostic.

When finely ground, pozzolan material

half of the cement value. Pozzolans

improves longevity. Some pozzolan

decrease the rate of concrete curing,

increasing its strength. For concrete in

sources have applications such as soil

# Magnetite-apatite



The alkaline group of porphyry deposits are known to be enriched in both magnetite and apatite (photo above left is magnetite-apatite dike, Iron Mask batholith). Apatite is a component of fertilizers, a growing market and potential coproduct from this class of deposits.

# What's in it for you?

Industrial minerals are most commonly produced from young, little deformed rocks. Such rocks cover more of the Interior Plateau than any other part of the province.

(photo: First high grade zeolite occurrence (clinoptolite) discovered in BC c. 1979 near Princeton).



Ceramic clay / bentonite

High quality ceramic clays

and kaolin can compete in

global markets while lower

quality varieties supply

local cottage industries

# Landscape aggregate



the BIZ include dissected Anahim Belt strata volcanoes such as the one in the

are partly lithified and would require some crushing to produce an aggregate product.

Volcanic scoria of the Nazco cinder cone is produced for landscape aggregate. Other sources of scoria in

Chezacut area. These

Bentonite is used used for drilling muds, impervious liners for reservoir construction like tailing ponds, and production of domestic and industrial absorbents and deodorizers and

such as artisan pottery. Most deposits are

(above left) may be Miocene. Upper

Eocene, but some, like the Fraser Formation

Cretaceous strata are also prospective hosts.

Residual kaolin occurrences are known on



unconformities.

filtration products. Tertiary strata are most prospective. Bentonite may be associated with highly sought after leonardite (or lignite) – a

weathered subbituminous coal product (black layer on the right) used in the oil and gas industry for a drilling mud viscosity control.

popcorn weathering on dessicated surfaces are characteristic of bentonitic



## Dimension Stone

Dimension stone is used in construction of buildings, retaining walls, monuments, paving, flagging, curbing, wall facing, countertops, floors, roofing slate among other applications. Rough or split stone tend to be of relatively

low \$ / tonne value; however some properties, like black or white colour and easy workability are in high demand globally. Such materials include "Green marble" which is type of serpentinite ±carbonate veining (introduction

panel) and fine to medium grained black intrusive rock called "Black granite" (left). Also pure white granites are highly sought after dimension stone. Serpentinite is common constituent of the oceanic rocks that span axis of the Interior Plateau (Fig. above), but is

generally highly fractured. Soapstone of carving quality, as well as jade (nephrite) can be found in the

same unit. Prospective facing stone sources should form uniform outcrops with fractures spaced metres

apart (top).Good flagstone sources, on the other hand, have a pervasive parting



easy splitting Potential flagstone sources include Eocene tuffaceous sediments (produced in Kelowna area) and flowbanded units in the Anahim

#### Gemstones

pozzolan component used from

times of the Roman empire.

Opal, peridote and jade are semi-precious stones found

within the Interior Plateau. Opalescent are common within Eocene volcanic rocks

silica amygdales

(right) and quality peridote (olivine) is found as xenocrysts in young basalt plugs. Nephritic jade occurs where serpentinite is cut by intrusions, or in contact with cherty sediments.

Prospective geological environments for these semi-precious stones are widespread in the BIZ.

Another pozzolan react with lime and alkalis saving up to used in Quesnel 50% of cement and its cost is in general area is a silty clay sediment calcined by subterranean coal direct contact with water it significantly seam fires (photos at right) Potential pozzolan sources

Pozzolan

filtration products. absorbents and filler (e.g. perlite photo below left). Potential

pozzolan sources in the BIZ include Eocene volcano-sedimentary strata. For example andesitic pumicite glass had been quarried by Quesnel Ready-Mix.

contain a high

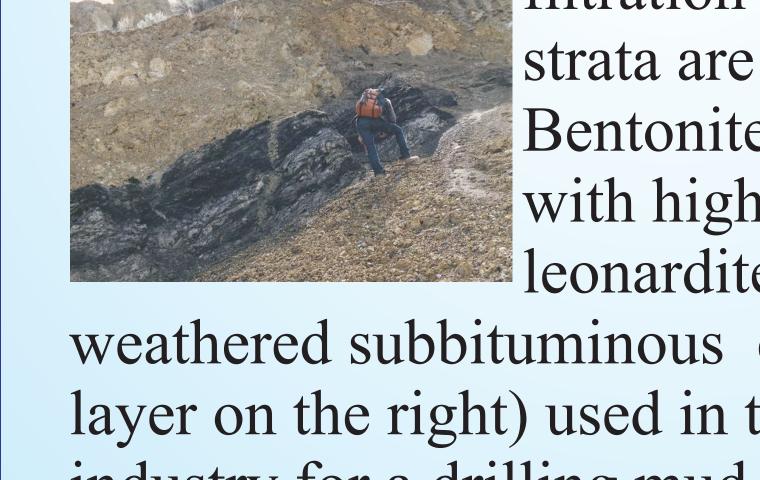
proportion of reactive silica – e.g. volcanic glass like perlite and obsidian, pumice, chalcedony and other amorphous silica forms like diatomite; and should be brittle enough to have a good grindability. Natural zeolites are also good pozzolan materials.

## Miocene channels

Perched Miocene to Quaternary channels may be sources of heavy minerals such as gold, ilmenite, garnet (right). For example, gold has been recovered by gravity separation

from eskers in the Baezaeko River area near Nazko (left). Channels dammed by

basalt flows produced diatomite and fullers earth deposits in the Kamloops



Slump blocks and

occurrences.

