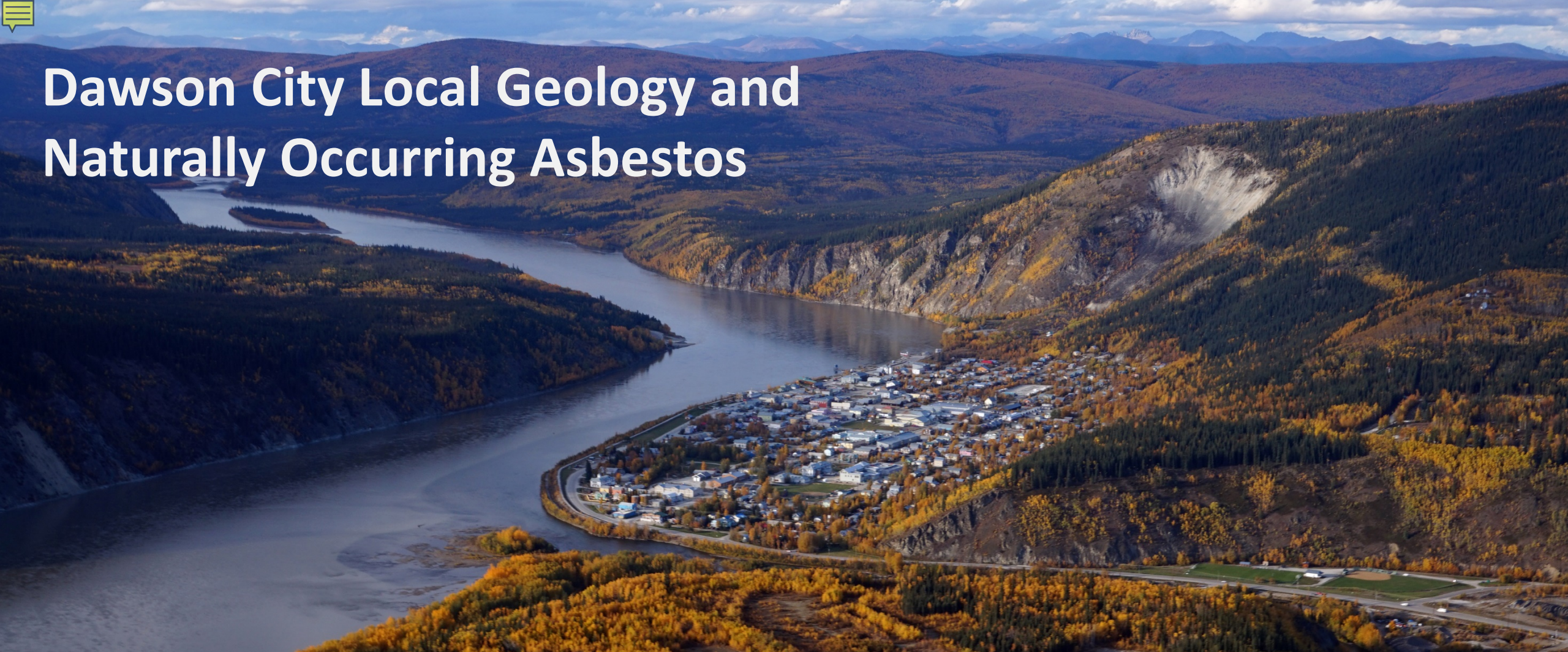




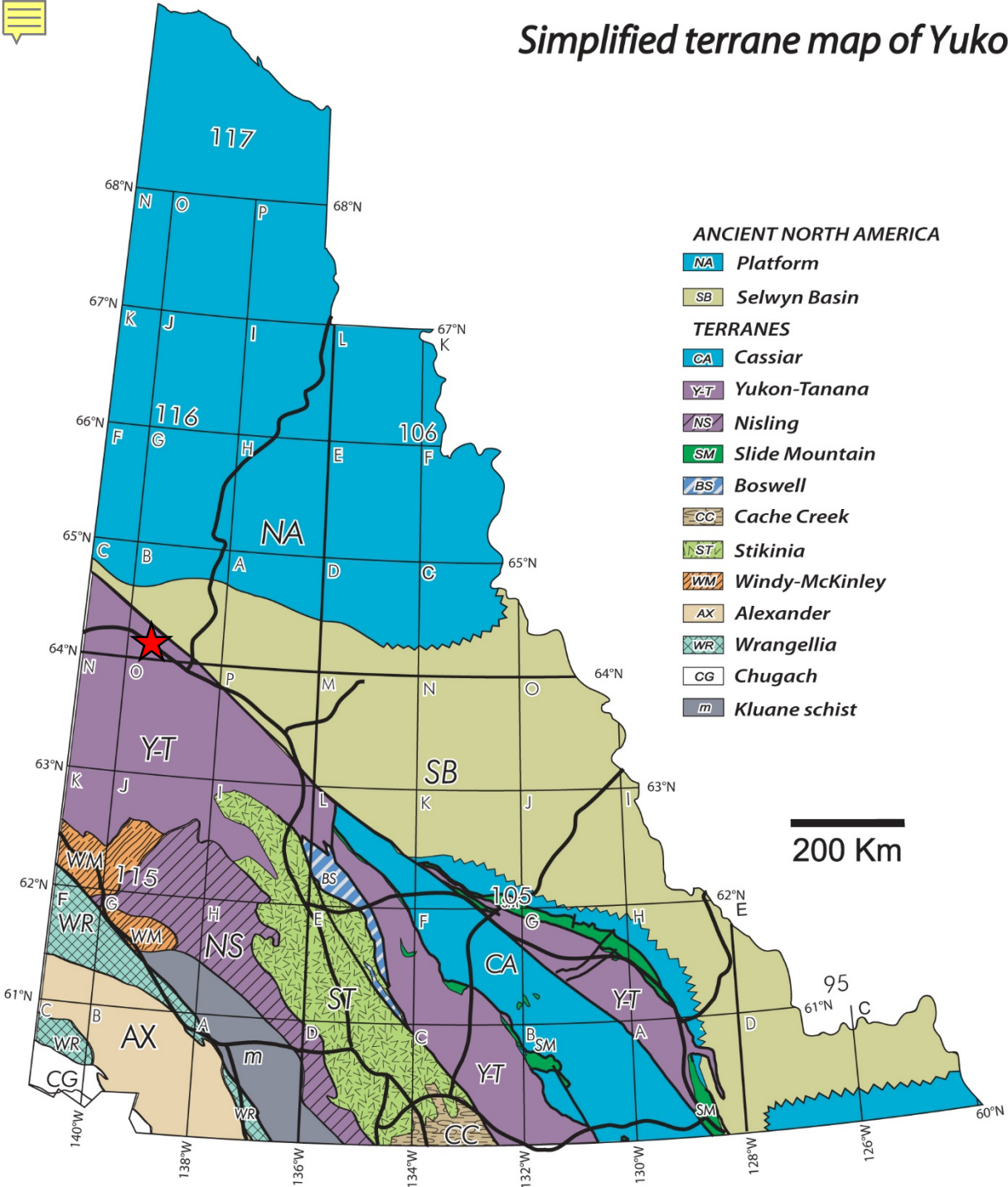
Dawson City Local Geology and Naturally Occurring Asbestos



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Yukon Geological Survey
February, 2018

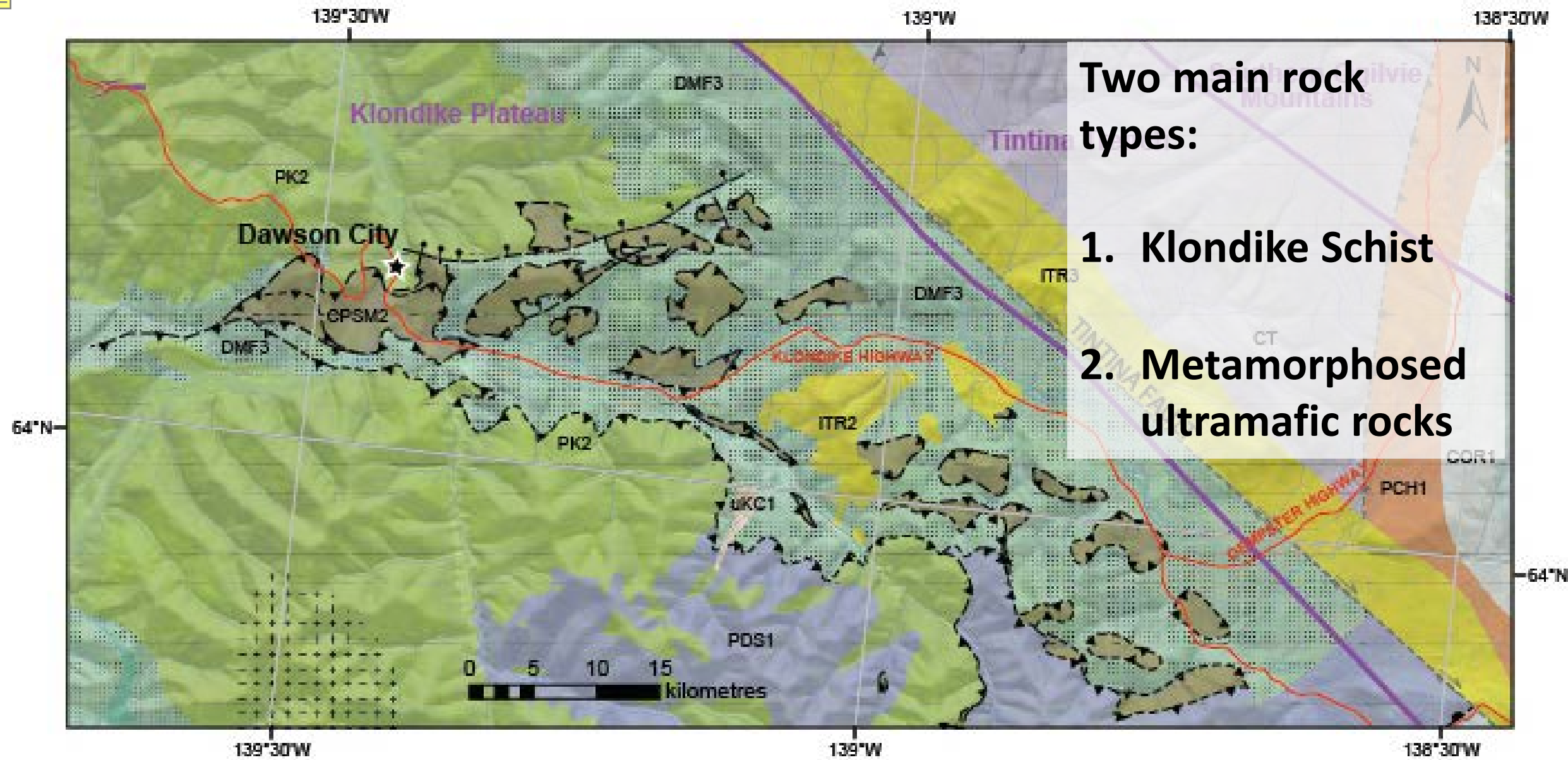


Simplified terrane map of Yukon



Dawson City is situated on what is known as the Yukon-Tanana geologic terrane comprising of metamorphic (heated) rocks of sedimentary and volcanic origin.

These rocks originally formed some distance away from Ancient North America and range in age from about 365 to 250 million years.

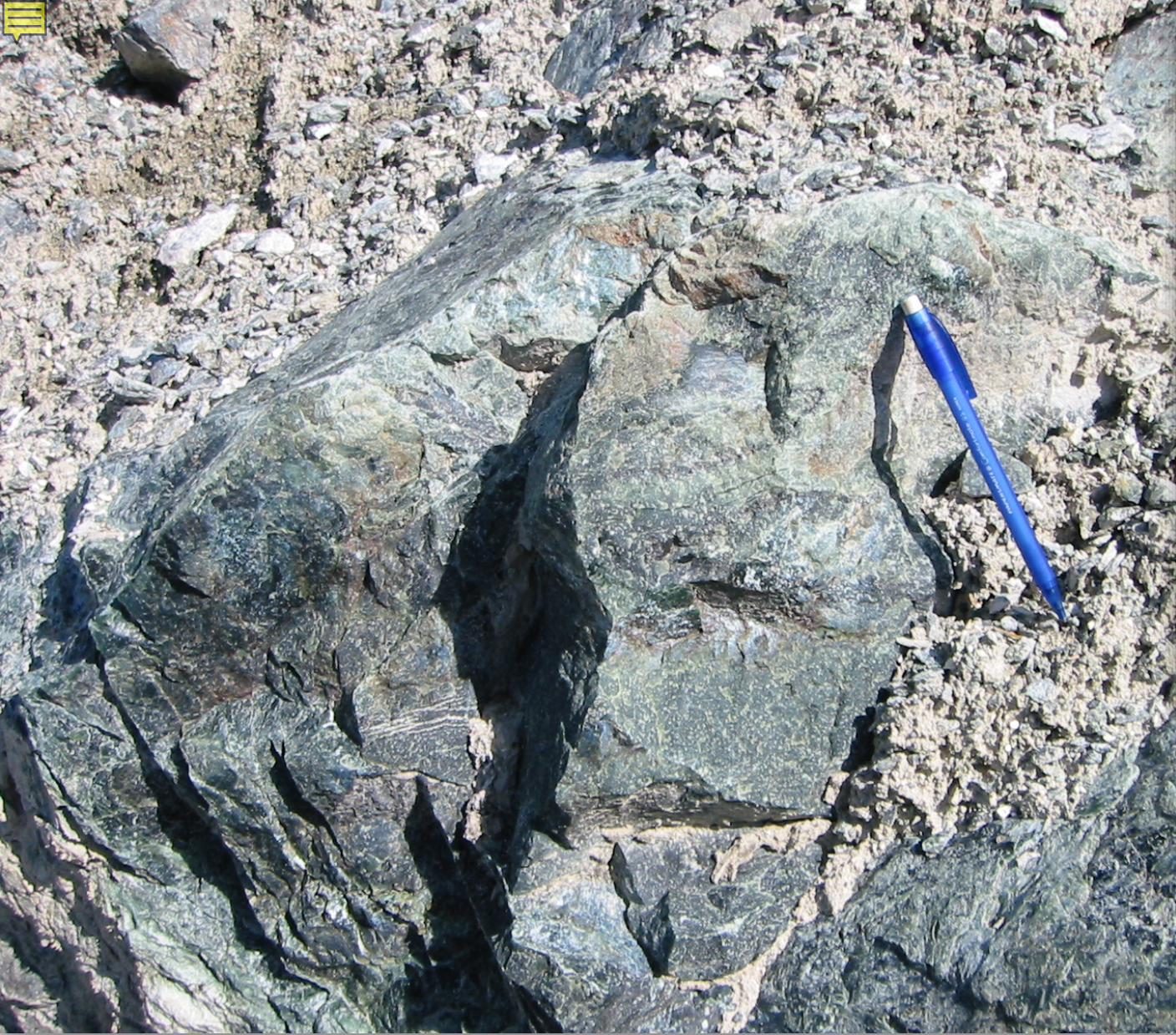


Two main rock types:

- 1. Klondike Schist**
- 2. Metamorphosed ultramafic rocks**



Klondike Schist



**metamorphosed
ultramafic rocks**



Date: 1900



Date: 2013

Moosehide Slide – a prehistoric slide exposing serpentinite rock and asbestos



Three main components of Moosehide Slide:

1. Initiation zone

2. Central landslide (creeping)

3. Lower landslide



CHRYBOTILE



AMOSITE



TREMOLITE



ACTINOLITE



CROCIDOLITE



ANTHOPHYLLITE

“Asbestos” is a commercial and legal term that includes six different minerals:

Chrysotile – white asbestos

Amosite – brown asbestos

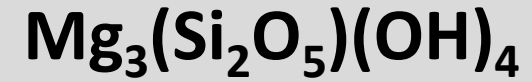
Crocidolite – blue asbestos

Anthophyllite, Tremolite & Actinolite

Asbestos is chemically inert, heat resistant and stable.



CHRYBOTILE



The only mineral from the **serpentine mineral class**.

Curly fibres made up of sheets of crystals.

Least hazardous of the asbestos minerals.



R061087

1 cm

TREMOLITE



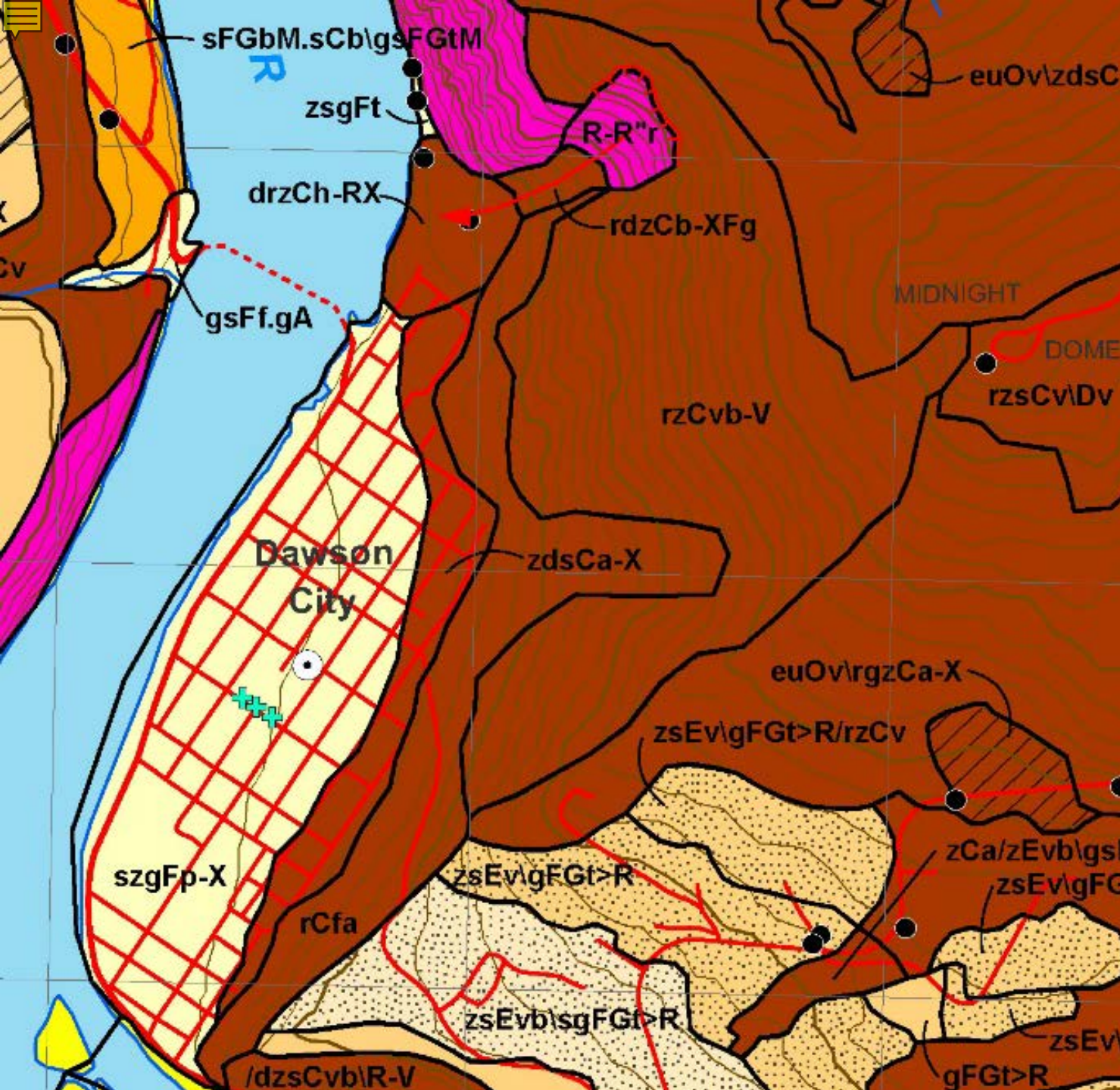
White to grey, needle-shaped fibres.

Although not used commercially, they can be found as contaminants in other minerals.



Serpentinite in the Dawson area has been found to contain chrysotile asbestos (and likely equivalent amounts of tremolite) at very low concentrations.

< 0.1% to 1%

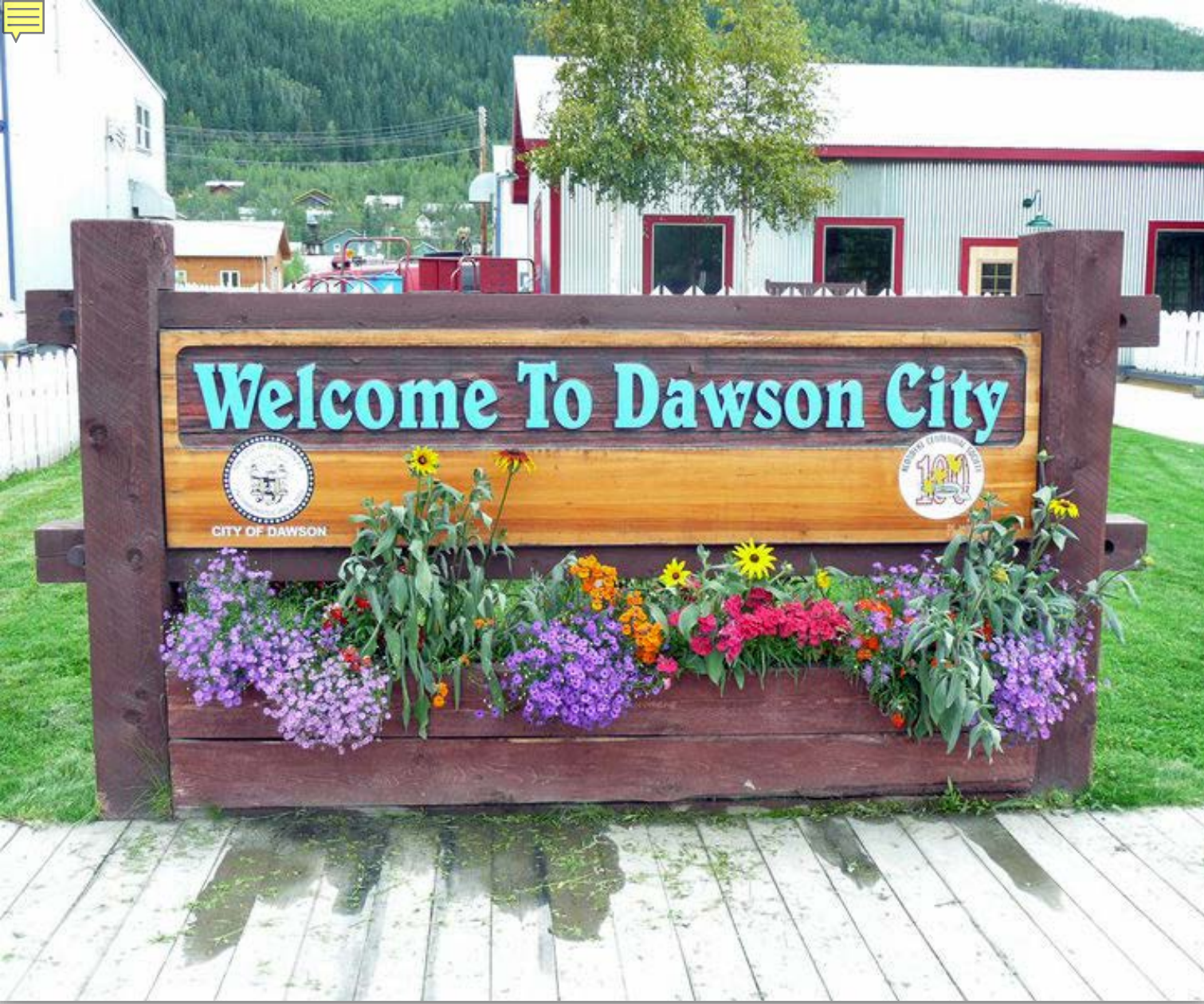


SURFICIAL GEOLOGY

Dawson City is located at the edge of unglaciated terrain and has not been overridden by ice in the last 2.6 Ma.

Approximately 10 m of fluvial (river sediments) underlie the townsite of Dawson.

Slopes and high ground are covered with ~1-8 m of colluvium.



Soils derived from serpentinite and other ultramafic rocks have:

- **low calcium/high magnesium ratio**
- **low levels of nitrogen, phosphorus and potassium**
- **high levels of iron and heavy metals such as nickel, chromium, and cobalt**

HEALTH HAZARDS

If rocks or products containing asbestos are disturbed, tiny asbestos fibres may be released into the air and may be inhaled.



Fibres that remain in the body may lead to asbestos-related diseases.

Risk of disease depends on the intensity and duration of exposure.

Workplace exposures are higher and much more likely to cause disease.

CONCLUSIONS

Local bedrock contains very low concentrations of naturally occurring asbestos (chrysotile and tremolite).

Asbestos is chemically inert and stable.



Dawson City is situated on thick deposits of gravel, sand and silt which does not contain naturally occurring asbestos.

Naturally occurring asbestos fibres in rock and soil only pose a health risk if disturbed.

CROCIDOLITE



ANTHOPHYLLITE



AMOSITE



ACTINOLITE