Granite-related Polymetallic Mineralization in Central New Brunswick: Potential Exploration Targets

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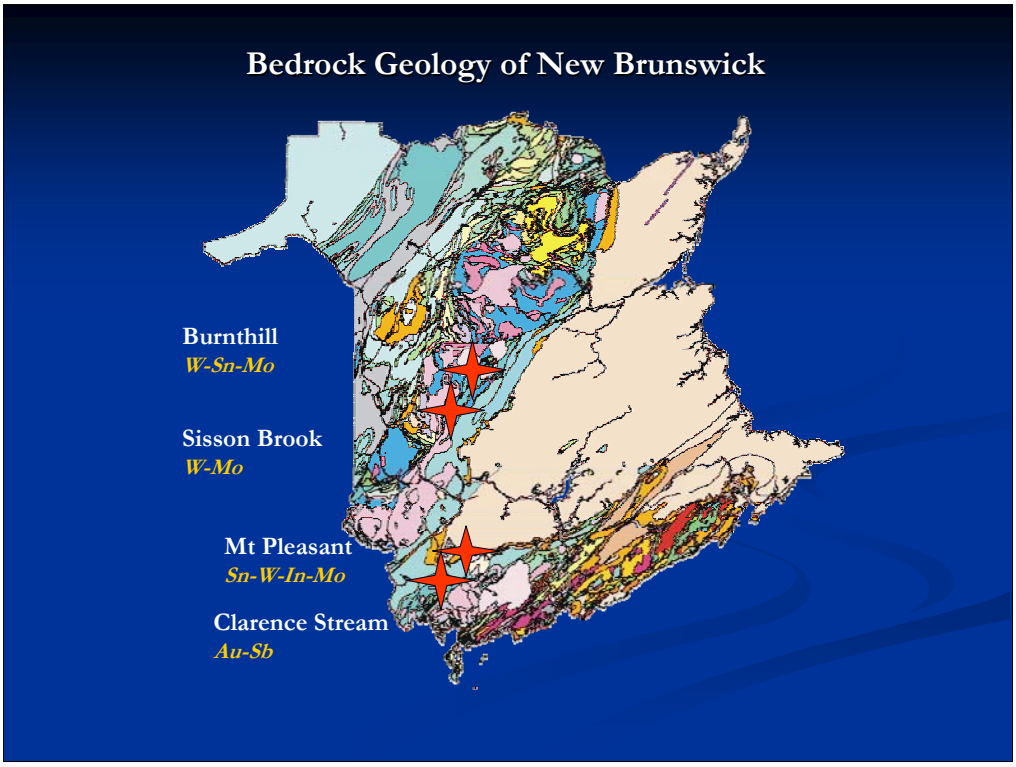
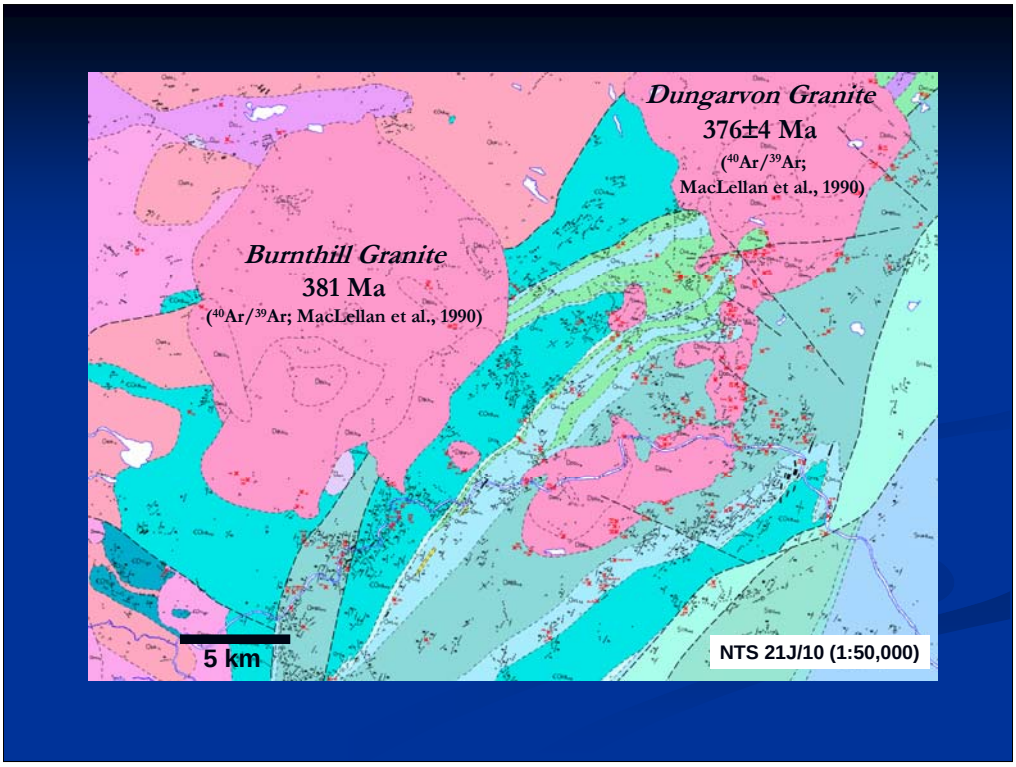
This presentation will introduce some examples of granite-related polymetallic mineralization in the Burnthill and Sisson Brook areas of central New Brunswick, and bring to your attention some potential exploration targets that have recently come to light.



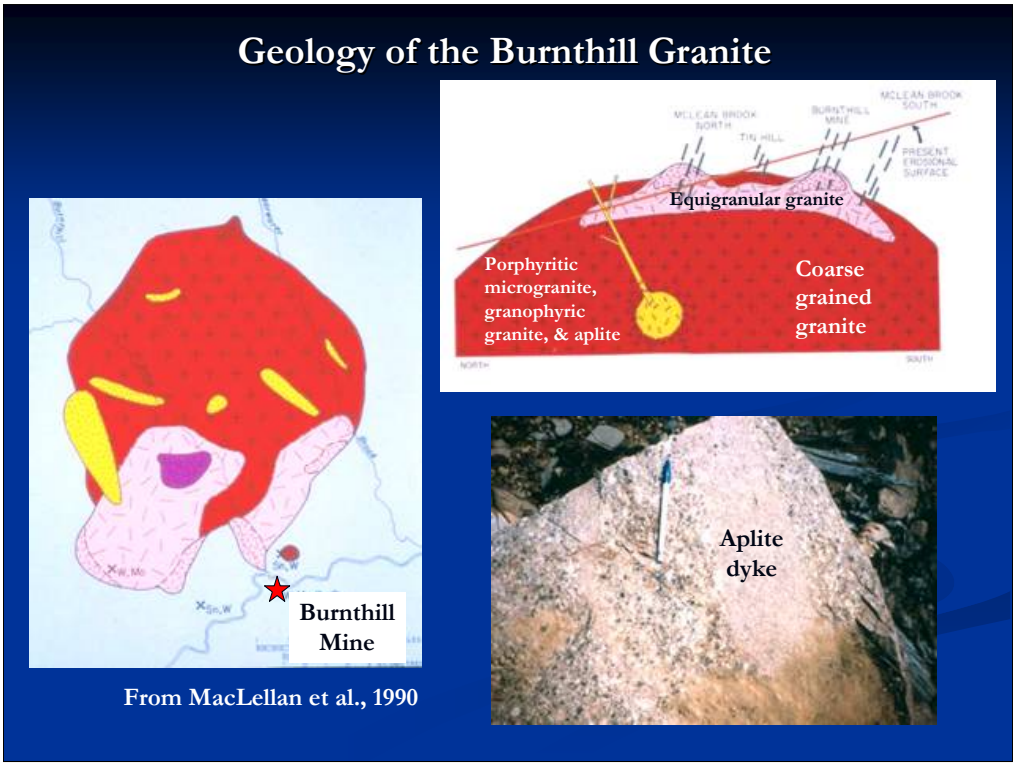
Many geoscientists are aware of the world-renowned Mount Pleasant granite-related Sn-W-In-Mo-Bi deposits in the southwestern part of the province, as well as the intrusion-related Clarence Stream gold deposit (associated with the Early to Late Devonian St. George Batholith), but many are not aware of the granite-related polymetallic deposits that exist in the central part of the province proximal to Early to Middle Devonian granites. Both of these intrusive suites comprise post-orogenic, highly evolved A-type granites; however, those in the Burnthill-Sisson Brook area are slightly older than those related to the Clarence Stream-Mt. Pleasant deposits.

Although the progenitor intrusions responsible for the mineralization in these two locales were emplaced in separate parts of the orogen, the deposits and occurrences at both the Burnthill-Sisson Brook and Mt Pleasant-Clarence Stream areas have many noteworthy similarities.

This presentation will highlight a few of the deposits/occurrences in the central part of the province (where very limited exploration has taken place) and bring to your attention new geochemical data that would justify having a closer look at the area - not only for tin-tungsten-molybdenum and indium, but for gold as well.



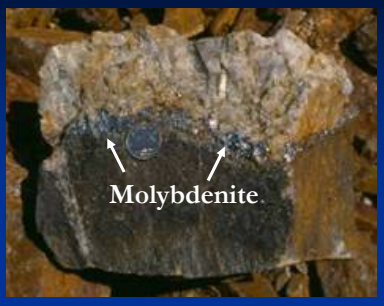
The Burnthill suite of granites (shown here in dark pink) are high-level peraluminous granites that intruded Ordovician to Early Devonian granites and Cambro-Ordovician sedimentary rocks of the Tetagouche Group. MacLellan et al. (1990) classified these high silica, highly evolved biotite granites as A-type post-orogenic granites and determined their age to be between 376 and 381 Ma. Numerous endogranitic and exogranitic occurrences (red X's on map), typically characterized by the presence of Sn, W, and Mo, are associated with the granites. Several exploration companies were active in the area in the 1980's, but because their main focus was on the Sn-W potential, the area is relatively under-explored with respect to its gold potential.



The Burnthill granite is texturally heterogeneous and is dominated by biotite monzogranites and alkali feldspar granites with minor muscovite- and garnet-bearing phases. As this slide shows, the current erosional surface exposes a deeper, coarser-grained portion of the pluton along its northern margin. The southern portion of the pluton consists of equigranular medium- to fine-grained granite. The entire pluton is cross cut by numerous aplitic dykes (as seen in the photo) and granophyric phases. Of the known occurrences in the Burnthill area, the inactive Burnthill mine, located along the southern margin of the Burnthill pluton, is the most significant. The schematic cross section of the Burnthill pluton shows the present erosional surface and the related endogranitic and exogranitic quartz-vein-hosted mineralization.

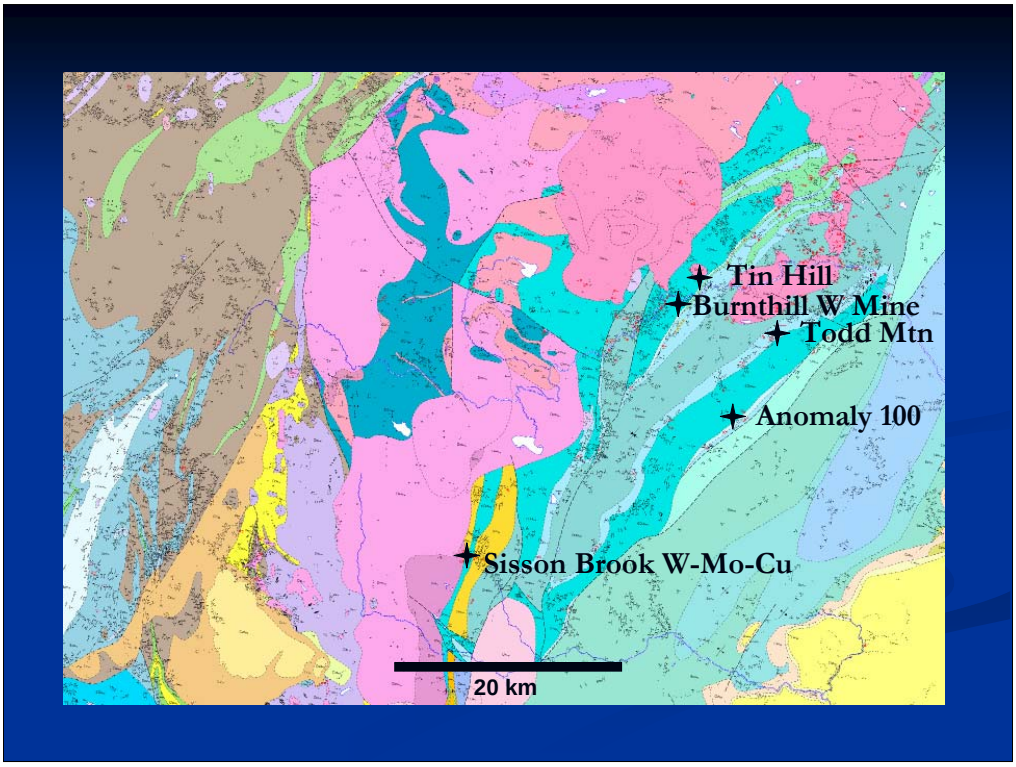
Burnthill Mine

Head Frame at the former Burnthill Mine



- Operated from 1912-1918 (2940 lbs; Wright, 1940) and 1952-1957 (~50,000 lbs of concentrate containing 69 % WO_3 and 3.5% Sn; MacLellan et al., 1990)
- Endo- and exogranitic mineral deposits; wolframite in NW-trending qtz veins
- Also contains: qtz, topaz, pyh, cpy, py, asp, fl, mo, beryl, bismuth, anatase, cassiterite
- Historical Resource estimate: 2,821,000t at 0.147 % WO_3; ACA Howe for Canadian International Paper Ltd. (Brewster, 1981)

Mineralization at the Burnthill Mine consists of both endo- and exogranitic deposits. The ore minerals (mainly wolframite) are concentrated in three different vein sets; the NW trending set being the most significantly mineralized. The Burnthill Mine produced tungsten and tin concentrates between 1912 and 1918 and between 1952-1957. Approximately 53,000 lbs of concentrate was extracted from the NW-trending veins that contained wolframite along with quartz, topaz, pyrrhotite, chalcopyrite, pyrite, arsenopyrite, fluorite, molybdenite, beryl, bismuth, anatase, and cassiterite. Historical resource estimates that were reported by ACA Howe for Canadian International Paper Ltd in 1981 totalled 2.8 million t of 0.147% WO_3. The property is currently being explored and re-evaluated by Noront Resources of Ontario. In the photos you can see the old head frame at the mine, some molybdenite along a quartz-vein margin, and also wolframite crystals within the quartz vein material.



A number of noteworthy occurrences are present in the area around Burnthill:

•Tin Hill, an enticing occurrence NE of the Burnthill Mine, occurs on the margin of the Buttermilk Brook cupola of the Burnthill Granite.

•Another interesting occurrence to the southeast of Tin Hill and the Burnthill mine is the Todd Mountain occurrence, which is hosted by sedimentary rocks along the southern limits of the Dungarvon pluton.

•The so called Anomaly 100 occurrence that was found by Miramichi Lumber occurs approximately 10 km to the southwest of Todd Mountain.

•Further to the southwest is the Sisson Brook W-Mo-Cu deposit that is currently being explored by Geodex Minerals of Vancouver. Mineralization occurs on the periphery of the Nashwaak granite (~ 422 Ma), which is more primitive than the Burnthill suite of granites and is quite similar to the Magaguadavic Granite in southwestern New Brunswick that has associated gold occurrences (i.e., Clarence Stream gold deposit).

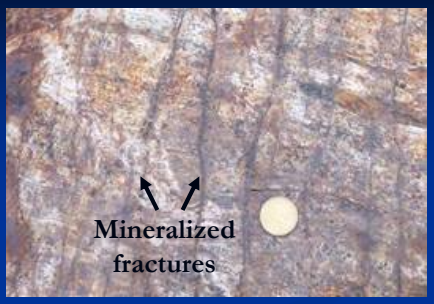
Tin Hill

- Endogranitic tungsten-tin deposits in Buttermilk Brook cupola of the Burnthill Granite
- NW-trending quartz veins and mineralized greisen
- Qtz veins up to 1 m wide with wolf, cass, moly, gn, mt, py, sph, and fl
- Grab samples of greisen contain up to 9400 ppm Sn and 566 ppm W (Fyffe and MacLellan, 1988)

The Tin Hill occurrence consists of endogranitic tungsten and tin deposits in the form of mineralized NW-trending quartz veins and associated greisen. The quartz veins are up to 1 metre wide and contain wolframite, cassiterite, molybdenite, galena, magnetite, pyrite, sphalerite and fluorite. One grab sample of the greisen from the area ran 9400 ppm Sn and 556 ppm W. The top photo here shows some of the cassiterite crystals that were found in the trenches at Tin Hill. The bottom photo shows an example of the mineralized greisen.

Todd Mountain

- Mineralization occurs within the wall rocks above the Trout Brook cupola of the Dungarvon Granite
- NW-trending sheeted veins hosted by spessartine garnet-bearing metasiltstone and metaquartzite
- Cass, asp, muscovite ±qtz and chl
- 9 holes drilled in 1983 by Billiton: 0.67% Sn over 1.5 m and 0.18% Sn over 15 m (Lutes, personal communication, 1988)



At Todd Mountain, mineralization is hosted within metasiltstone and metaquartzite above a buried apophyses of the Dungarvon Granite. The mineralization at Todd Mountain consists of a series of closely spaced mineralized fractures (see top photo) that contain cassiterite, arsenopyrite, and muscovite, with or without quartz and chlorite. In 1983, Billiton drilled a fence of nine holes at the Todd Mountain occurrence and had favourable drill intersections of 0.67% Sn over 1.5 m and 0.18 % Sn over 15 m (Lutes, 1988). The bottom photo shows a cassiterite crystal within one of the mineralized quartz veins.

Anomaly 100 (Lower Hayden Bk)

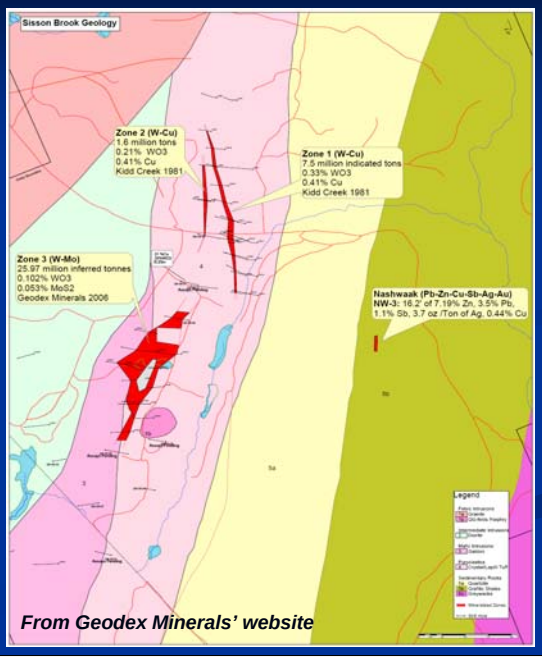
- Metasedimentary hosted veins containing gn, sph, cpy, and py
- Resembles tin lodes at Mt. Pleasant
- Drilling yielded 2.06 g/t Au over 3.05 m (Crosby, 1976)
- Grab sample (Gardiner, 1990): 0.38% Cu, 3.39% Zn, 160 ppm Ag, 280 ppm Cd, 1.54% Pb, 32 ppm In, 22 ppm W, and 280 ppm Bi

Trenching of this soil anomaly by Miramichi Lumber exposed metasedimentary-hosted quartz veins that contain galena, sphalerite, chalcopyrite, and pyrite – a style of mineralization that is very similar to the tin lodes at Mount Pleasant. Gold was also intersected in a drill hole at this anomaly, which yielded 2.06 g/t Au over 3.05 m (Crosby, 1975). This occurrence contains an abundance of sphalerite and there are reports of elevated indium samples from this occurrence as well. A grab sample from the area shows elevated base metals, particularly Zn, thus intensifying the potential for In deposits. This recent photo shows the limited exposure at the surface.

Sisson Brook

- Situated proximal to the Nashwaak Granite
- Three main zones of mineralization; concentrated in qtz veins; silicification & sericitization
- Currently being explored by Geodex Minerals
- Indicated Resource (historical) *(Kidd Creek, 1981)*
  - Zone 1: 7.5 million t @ 0.35% WO_3; 0.21 % Cu
  - Zone 2: 2.16 million t @ 0.15% WO_3 and 0.2 % Cu
- Inferred Resource (NI 43-101 compatible)

  (Geodex Minerals, 2006)
  - Zone 3: 25.97 million tonnes @ 0.102% WO_3 and 0.053% MoS_2



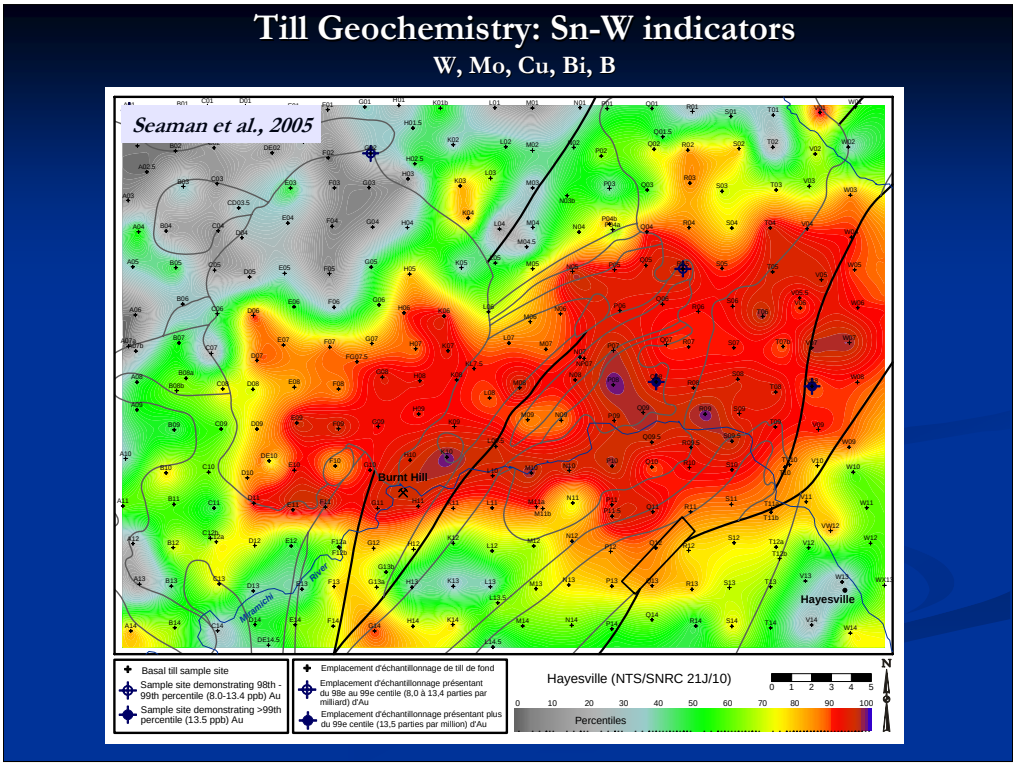
From Geodex Minerals' website

At Sisson Brook, mineralization occurs within shear-zone hosted quartz veins and stockwork proximal to the Nashwaak Granite that are concentrated in three main mineralized zones that have associated silicification and sericitization. Zones 1 and 2 are the northernmost zones of mineralization that are enriched in W and Cu. In 1981, Kidd Creek defined a historical indicated resource of 7.5 million of 0.35% WO_3 and 0.21 % Cu and at Zone 2, they reported 2.16 million tons at 0.15% WO_3 and 0.2% Cu. At the southernmost zone (Zone 3), Geodex Minerals has reported a 43-101 compatible inferred resource of 25.97 million tonnes at 0.102% WO_3 and 0.053% MoS_2 (Geodex, 2006).

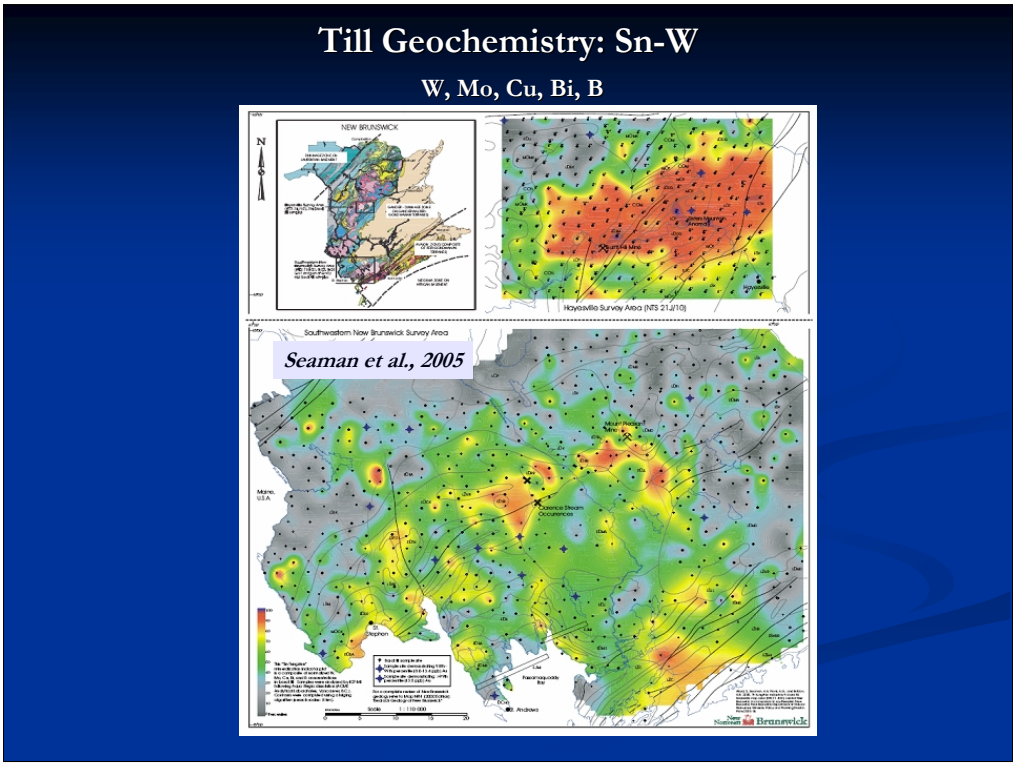
Sisson Brook

- Zone 3 – W-Mo stockwork mineralization possibly related to a larger, buried porphyry system
  - Mo, scheelite
- Au- and Sb-mineralized boulder found during trenching; ~6 g/t Au & 1.1% Sb; source unknown

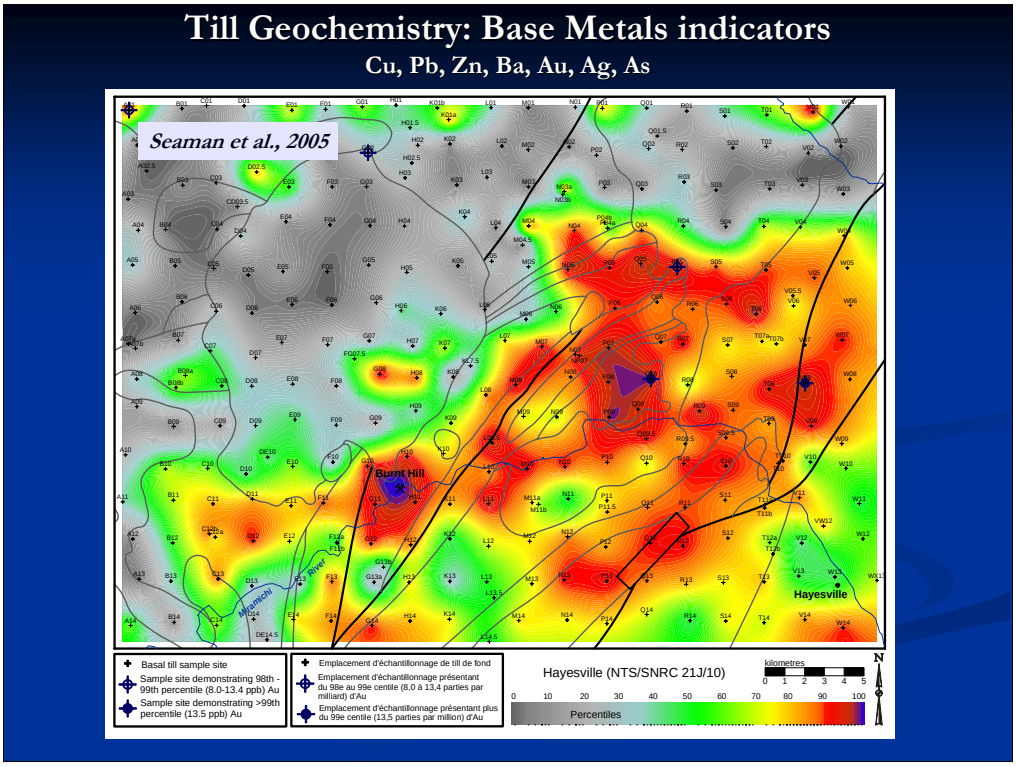
At Zone 3, the mineralization consists of molybdenite- and scheelite-bearing stockwork veins within a gabbroic host rock. This style of mineralization is interpreted to be related to a larger, buried porphyry system that underlies the area at depth. Shown are a couple of samples of the drill core showing the Mo in the quartz veins. Trenching in the area in the 1980's uncovered a rather noteworthy find that consisted of a gold and antimony mineralized boulder that assayed ~6 g/t Au and 1.1% Sb. The source of this mineralized boulder was never ascertained; however, the fact that such a boulder was found in the area has great significance with respect to the precious metal potential of the area.



The next few slides will show some of the geochemical anomalies identified from a till geochemistry survey (Seaman, 2004) based on metal associations outlined by Rose et al. (1979). The anomalous areas identified on this plot consist of a composite of normalized W, Mo, Cu, Bi, and B; all of which are common indicators of Sn-W mineralization. Background lines correspond to the geological contacts shown in Slide #3 above.



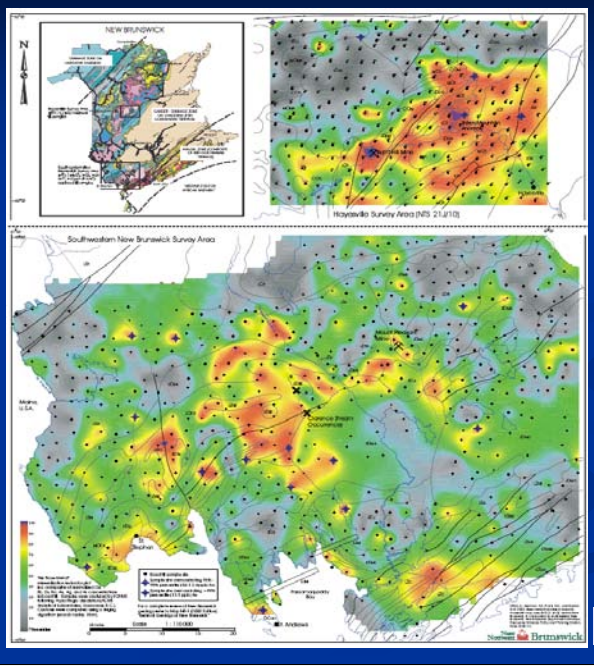
For comparison purposes, this slide shows the anomaly in the Burnthill area (upper right and previous slide) and the anomalies peripheral to the Mount Pleasant mine (bottom). As you can see, the anomaly at Burnthill is quite significant relative to the Mount Pleasant area where Sn, W, and Mo deposits have been economically mined in the past. The two map areas are outlined on the overview map (upper left).



This figure shows anomalies of base-metal indicators (composite of normalized Cu, Pb, Zn, Ba, Au, Ag, and As values) in the Burnthill area. Note the spot highs near the Burnthill Mine.

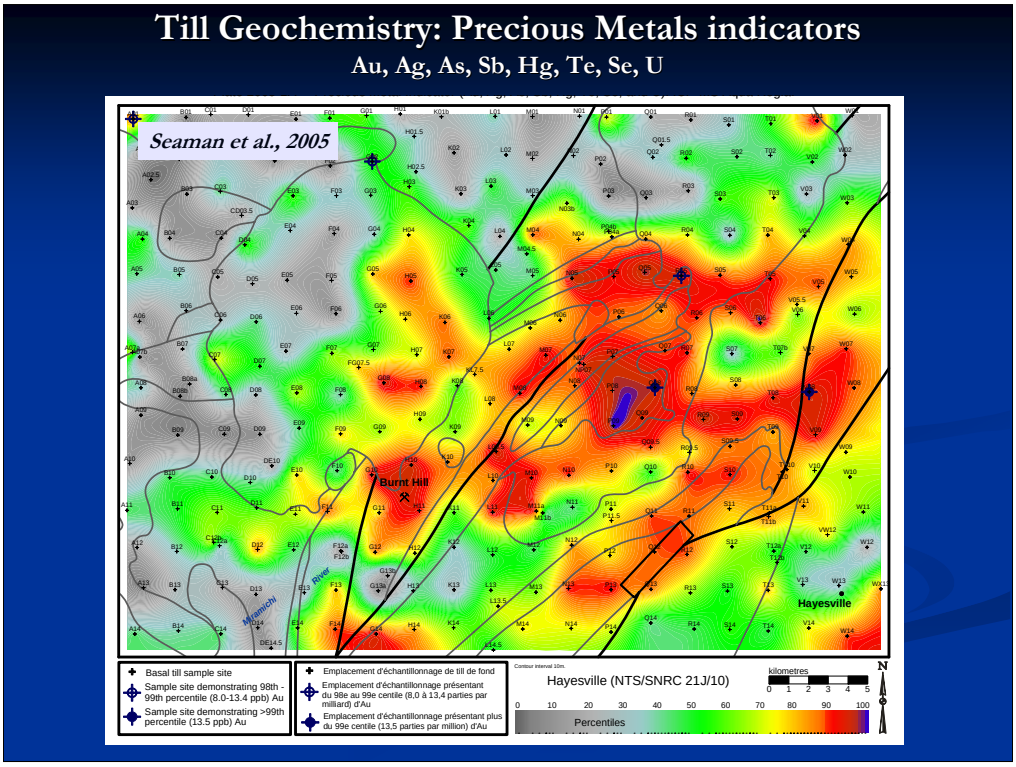
Till Geochemistry: Base Metal indicators

Cu, Pb, Zn, Ba, Au, Ag, As



Seaman et al., 2005

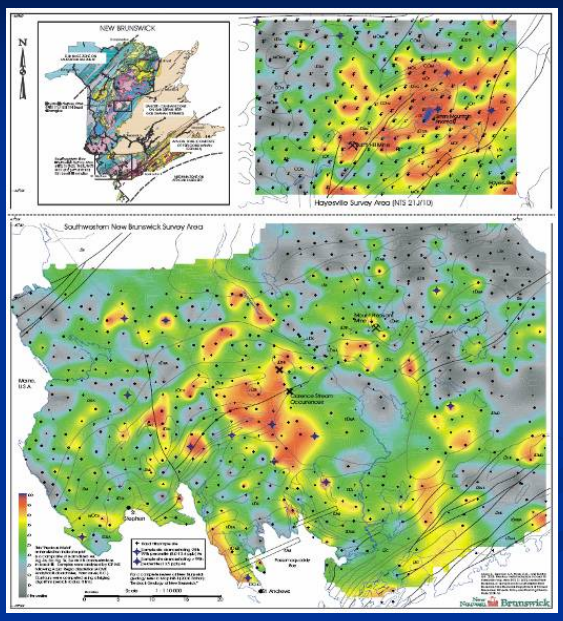
With this slide you can compare base-metal indicator anomalies between the Burnthill area (upper right and previous slide) and the Clarence Stream-Mount Pleasant area (bottom). Again, the anomalous area at Burnthill is quite significant compared to the Clarence Stream-Mt Pleasant area. The two map areas are outlined on the overview map (upper left).



One intriguing outcome of the 2004 till sampling program are the precious metal anomalies in the Burnthill area. This contoured plot reflects the composite normalized Au, Ag, As, Sb, Hg, Te, Se, and U values within the till samples. Exploration for precious metals in the area has been limited since the main focus in the area was Sn-W-Mo.

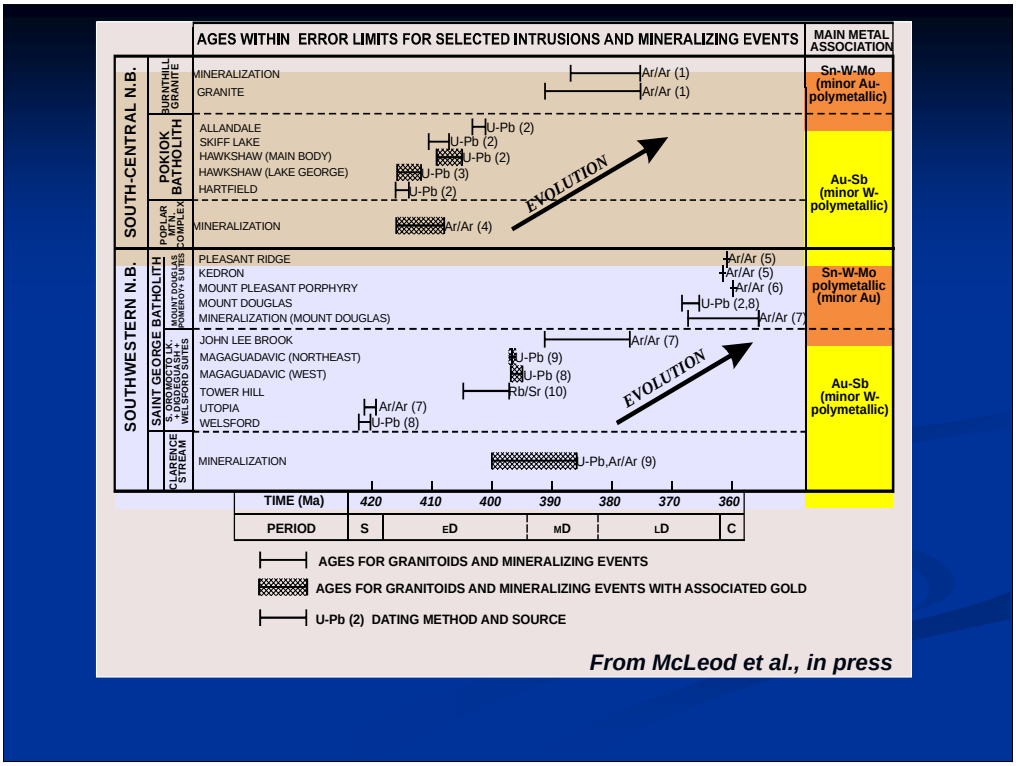
Till Geochemistry: Precious Metals

Au, Ag, As, Sb, Hg, Te, Se, U



Seaman et al., 2005

And once again, this slide compares the precious metal anomalies in the Clarence Stream-Mount Pleasant area with those in the Burnthill area. The Burnthill anomaly appears to be much larger and more widespread than those in the Clarence Stream-Mount Pleasant area where numerous mining companies have successfully explored for gold.



Although we aren't able to definitively explain the reason for the precious metal anomalies in the Burnthill area, it may be explained in terms of the geochemical characteristics of the granites and their associated mineralization. BOTH the Clarence Stream-Mount Pleasant and Burnthill areas are underlain by two main suites of granites: 1) an older, more primitive granite suite that has associated gold and antimony mineralization, and; 2) a younger, more evolved granite suite that has associated tin-tungsten-molybdenum mineralization. In the area immediately adjacent to the Burnthill Mine, we generally see the highly evolved granites with associated Sn-W mineralization; however, there may be older granites that lie at depth that may be responsible for the precious metal anomalies in the area.

For more information:

http://www.gnb.ca/0078/minerals/index-e.asp

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As of April 2006, much of the area underlying the precious metal anomalies has not been staked. Nor has any of the area been previously explored for gold mineralization.

For information on staking in New Brunswick and for

- compilation of previous work using CARST and PARIS databases
- downloadable digital copies of all Assessment Reports
- digital maps and publications
- claim status, credits, expiry dates, etc.
- regulatory forms
- email notifications
- contact information

please visit our web site.

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The above listing comprises reference material cited in this presentation.