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Trenching Report, Salerno Claim, Glamorgan Township, Ontario

SO 1500020 (Lot 3, Concession 4),

By

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For

The Municipality of Highlands East
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June 1, 2016

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Introduction

Crystallized minerals from the Precambrian rocks of southern Ontario are well known among museum curators and mineralogist from around the world. For this reason, many consider the region, often referred to in general as the Bancroft area, the “Mineral Capital of Canada”. A wide variety of minerals are known from hundreds of different occurrences throughout the region. The Municipality of Highlands East acquired the Salerno claim to explore its crystallized mineral potential.

The Salerno Claim, located approximately 3 km east of the town of Irondale and 20 km east-southeast of Minden, is one of the claims held by the Municipality of Highlands East and is the subject of this report (Figure 1). Superb mineral specimens of tremolite, scapolite, apatite, amphibole, feldspar and titanite from localities within 20 kilometres of the Salerno claim are well known. The goal of this study was to locate and identify mineral occurrences on the Salerno claim.

The author, with the assistance of one helper, explored this claim for its crystallized mineral potential by hand trenching for a total of eight days between October 2014 and May 2016.

Claim Information

The Salerno claim was staked on June 3, 2011 and its claim number is SO 1500020. Its ownership is currently the Corporation of the Municipality of Highlands East. The Salerno claim covers 1 concession lot in Glamorgan Township (Lot 3, Concession 4), consists of two claim units and carries an \$800 annual exploration work commitment. The claim has an expiry date of June 3, 2016. Currently \$632 of work is required to keep the claim in good standing until June 3, 2017.

For ease of reference, the mineral claim covering Lot 3, Concession 4 in the township of Glamorgan (SO 1500020) is being referred to in this report as the “Salerno claim”.

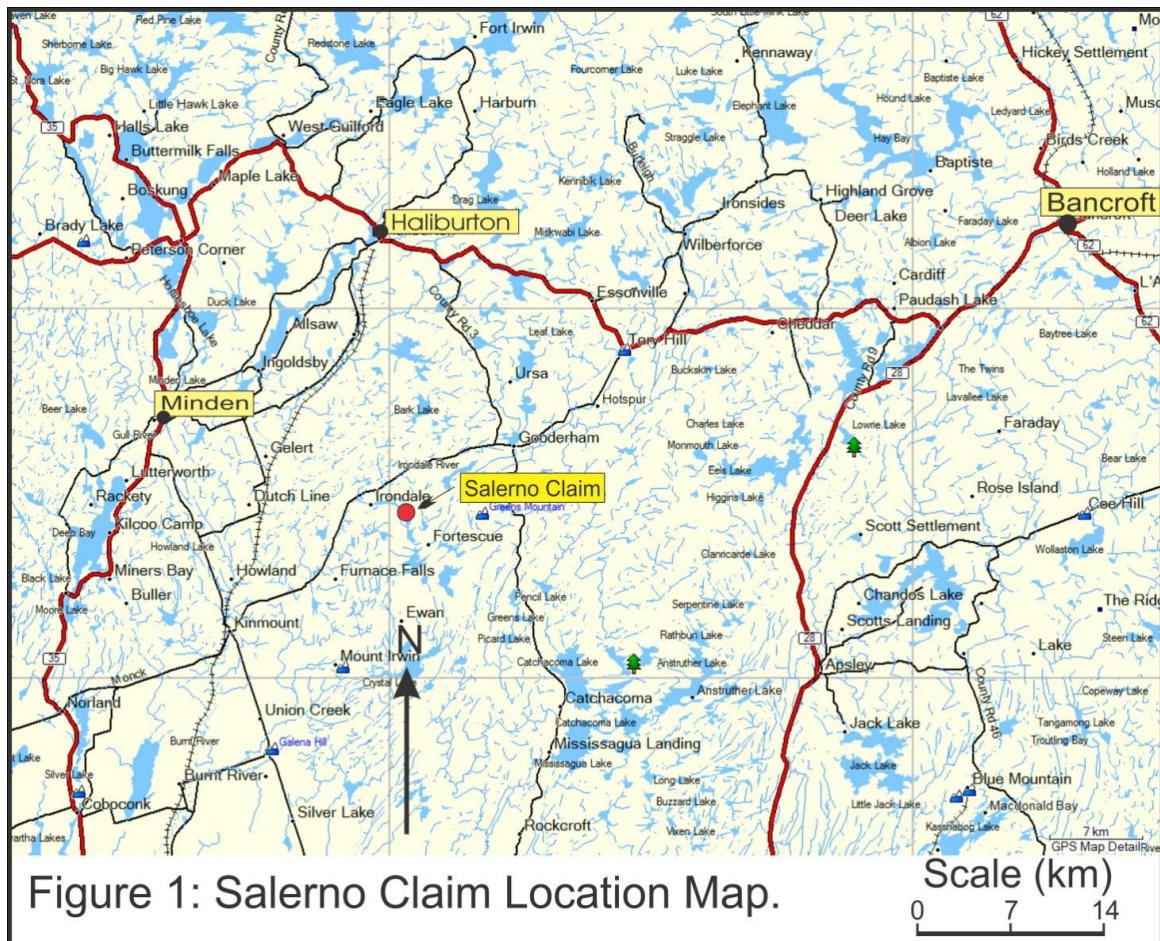
Location and Access

The Salerno claim is irregularly shaped because of the numerous small privately owned cottage lots that bound the claim on the south and west (Figure 2). It measures approximately 0.4 by 1.0 kilometre in size. It is located approximately 20 kilometres east-southeast of Minden and 56 kilometres west-southwest from Bancroft, two of the largest towns in the region and is approximately 3 kilometres east of Irondale (Figure 1). The claim is located on NTS map 31D/16.

The claim is bounded by private land and a small section of shoreline on Salerno Lake. The easiest way to access the claim is to start at the public boat launch on the north end of Salerno Lake, just south of the town of Irondale. Travel by boat southeast along Salerno Lake for approximately 3 kilometres to the section of the claim exposed on the shore of Salerno Lake.

Previous Work

The Salerno claim is underlain by rocks of the Grenville Province of the Canadian Shield. On a regional level Grenville Province rocks have been extensively studied and prospected for various ores over the last century. Numerous authors have studied and described these rocks. Lumbers and Vertolli (2000) mapped the region's complex geology and produced a detailed map at a scale of 1:50,000.



Guides to mineral collecting sites in southern Ontario have been published by various authors. One of the more recent guides covering the area is by Sabina (1986). Sabina (1986) describes mineral collecting sites throughout the Bancroft region, including several sites in the Minden, Tory Hill and Kinmount areas. Nothing has been described from the Salerno claim or its immediate vicinity.

Property Geology

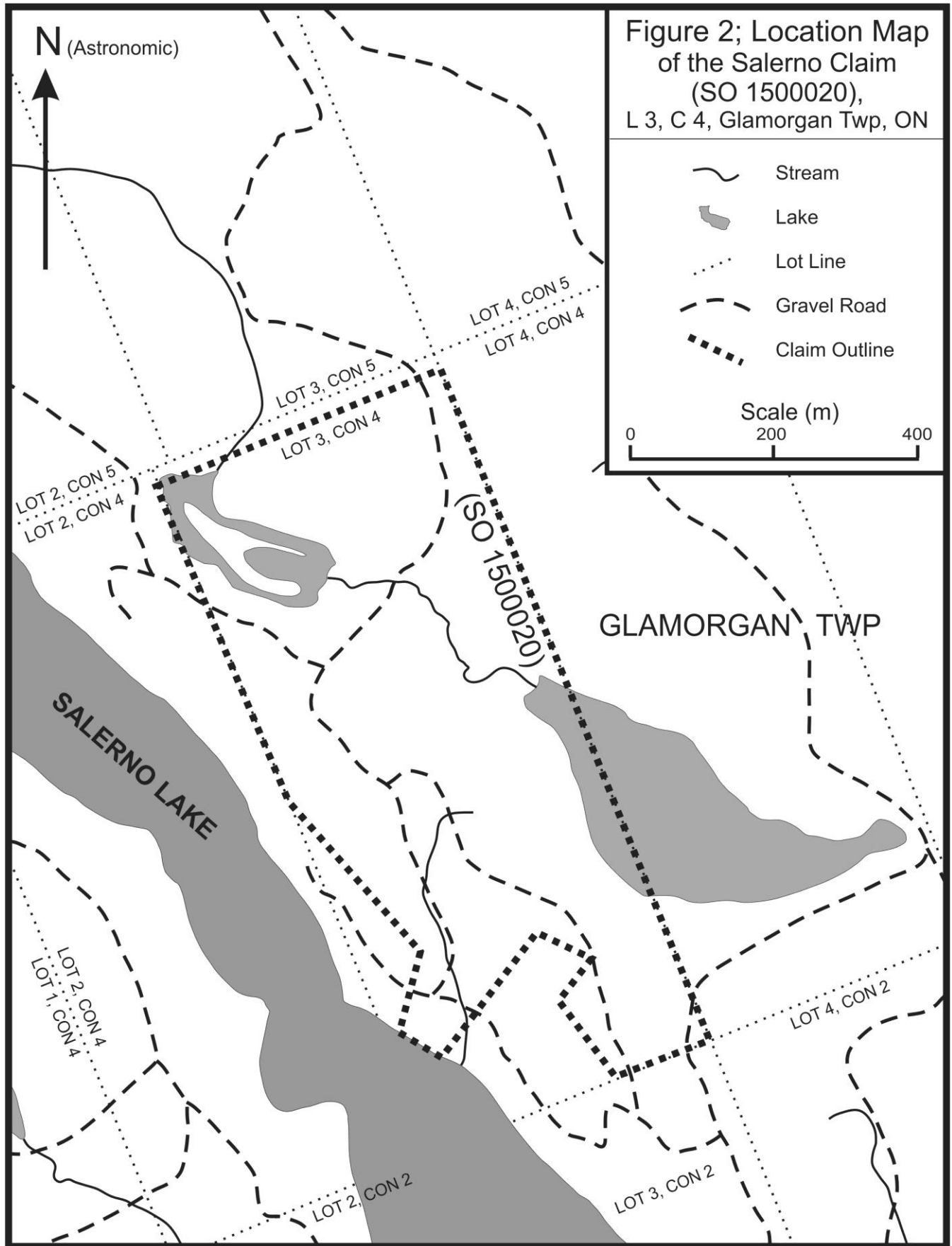
The Salerno claim is underlain by high-grade metamorphic rocks of the Grenville Province of the Canadian Shield. Rocks of the Grenville Province are well known and have been described by many authors. These rocks host virtually all the known mineral and crystal occurrences in the Bancroft area.

According to Lumbers and Vertolli (2000), who mapped area geology at a scale of 1:50,000, rocks underlying the Salerno claim consist of Mesoproterozoic quartz-rich and feldspathic metasedimentary rocks and dolomitic marble.

The focus of assessment work for this report was hand trenching. Detailed geologic mapping should be the focus of additional assessment work.

History

In 2009, Michael Bainbridge found euhedral crystals of tremolite at several sites near Salerno Lake on lot 3, concession 4, Glamorgan Township, Ontario. In 2010 he found fragments of euhedral tourmaline along with euhedral crystals of tremolite at another location on the same lot. The Salerno Claim (Lot 3, Concession 4, Glamorgan Twp.) was staked in 2011 and exploration for crystallized minerals and rough gemstones has continued.



Fieldwork

One of the recommendations from the 2014 assessment report on this claim was to expand a small trench where tourmaline and tremolite was found in the past (UTM - 17 T 698471 4971095, NAD 83), to test the limits of this mineralization.

Since October 2014, the author, assisted by Mr Bob Beckett, spent a total of 8 days (16 person days) trenching by hand on this claim. The dates the author and Mr Beckett spent on the claim were, October 21 & 22, 2014, June 17 - 19, 2015, May 11, 2016 and May 17 & 18, 2016. The trench was dug using pry bars of various sizes, shovels, chisels, rock hammers and sledge hammers. The location of this trench is shown in Figure 3.

At this site tremolite and tourmaline (dravite) crystals were originally found loose in an open and earth filled "cavity" within calc-silicate rock (diopside, potassium feldspar, tremolite, quartz). It has been postulated that the open cavity in which the crystals occurred was originally filled with calcite, which subsequently dissolved away due to surface weathering. The focus of trenching was to follow this open "cavity" to investigate potential patterns in the mineralization, test for the size and extent of mineralization and to test for the presence of calcite which could prove the postulation about calcite weathering away from the encased crystals. It was hoped that trenching would expose additional crystals of both tremolite and tourmaline and hence provide a better understanding the site's gem and crystal potential.



Figure 4; Photo showing site in 2012, prior to trenching.



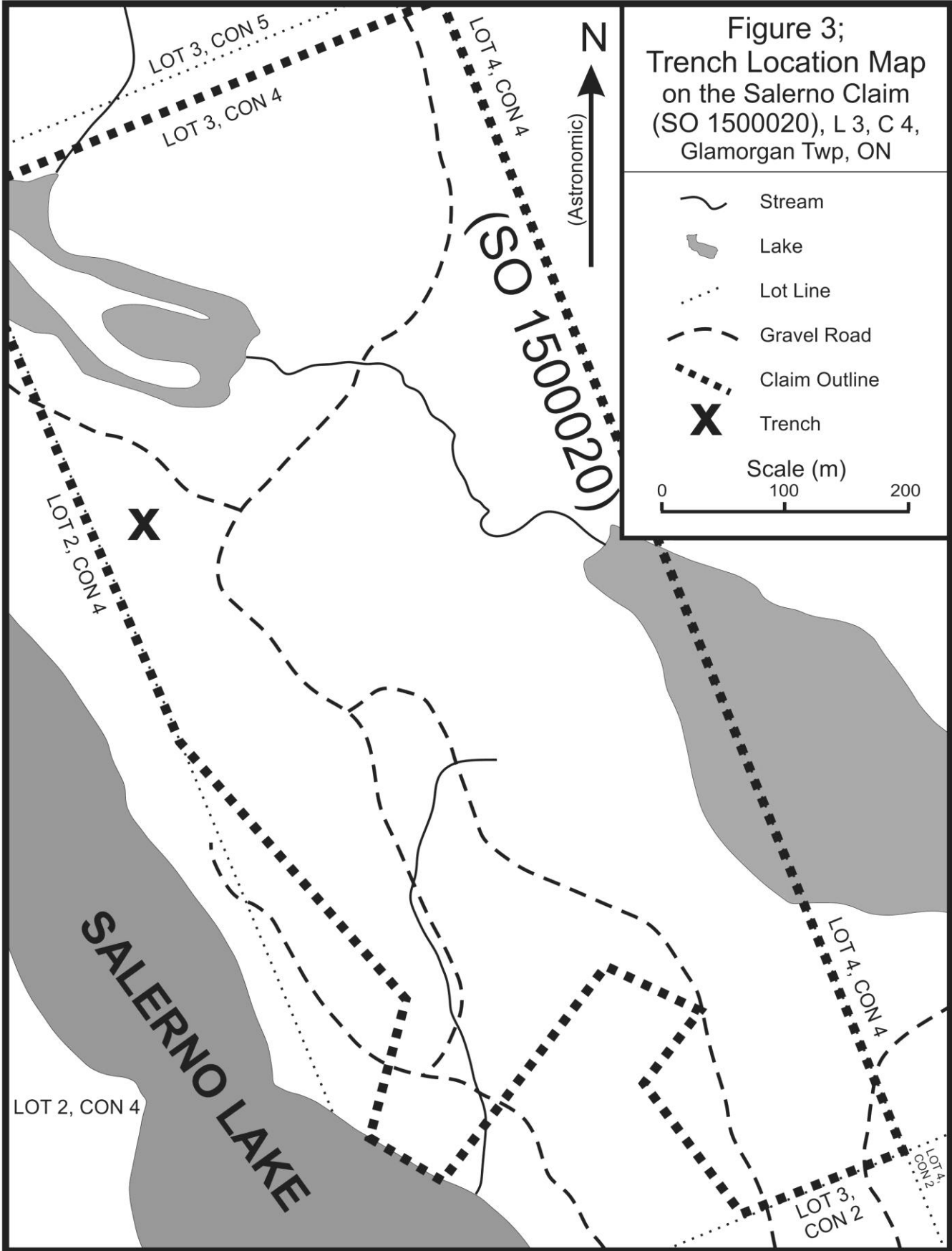
Figure 5; Photo of Trench in October 2014 showing partially unroofed cavity.

Log of Activity

Oct 21-22, 2014

Relocated the outcrop where tremolite and tourmaline had been found previously. Examined the cavity where the crystals originally occurred and found several loose tremolite crystals that had been overlooked. The cavity near surface is mostly cylindrical in shape, about 15 to 30 centimetres wide, longer than an arm and angled gently downward at less than 45 degrees. Figure 4 shows this outcrop as it appeared in 2012 with Michael Bainbridge's right arm inside the cavity. Its angle relative to the strike of the hillside was approximately 45 degrees. Spent most of the day clearing off dirt and vegetation from around the outcrop and successfully removed some of the rock covering the cavity (Figure 5). This allow us to reach farther into the cavity.

Many broken crystals of medium greenish-gray tremolite were found both weakly attached to the walls and loose on the bottom of the newly exposed cavity. Towards the extent of our reach euhedral and broken, gemmy brown tourmaline crystals were found and appeared to be as abundant as the tremolite. When the cavity was first discovered tremolite was much more abundant than the tourmaline (personal communication, Michael Bainbridge). In addition some of the tremolite occurred as masses of fine needle-like crystals which easily broke into tiny fragments.



Loose material in the cavity was examined for crystals and fragments then screened to recover potentially gem-quality pieces of tourmaline. The cavity continues and dirt covered crystals can still be felt at the bottom.



Figure 6; Photo showing trench on June 17, 2015

June 17-19, 2015

Returned to site and cleaned off dirt, leaves and vegetation that accumulated over the winter. Dug more dirt from below area worked in 2014 to prepare to remove more of the rock covering the cavity (Figure 6). With difficulty we removed more of the rock covering the cavity. Part of the cavity continues in roughly the same orientation but part of the cavity branched off horizontally. Calcite with embedded tremolite and tourmaline was encountered on the bottom and side of the newly uncovered main cavity and a smaller amount of calcite was found in the horizontal branch. Several tourmaline crystals at the extent of our trench could be seen and felt but could not be sampled. The calcite holds the greatest potential for both the

highest-quality tourmaline gem rough and for high-quality crystallized tremolite and tourmaline. Unfortunately after 3 days of work we could not extract nor examine closely the calcite with embedded crystals (Figure 7).



Figure 7; Photo showing work at trench on June 19, 2015.

May 11, 17-18, 2016

Returned to the trench and cleaned off a year's worth of accumulated dirt and vegetation. Worked for most of these three days to expose and sample the tourmaline discovered in June 2015. By the end of the first day (May 11, 2016) we were able to see what appeared to be a euhedral brown to greenish-brown crystal of tourmaline nearly 10 centimetres across along with several other smaller tourmaline crystals. The bottom of this cavity is about 1.2 metres from the original surface expression of the cavity. The horizontal branch of the cavity continued towards the left another 30-40 centimetres, then headed downward and into the hillside. At this point the minerals lining the cavity had changed to mostly short (1-3 cm) needles of tremolite and blocky crudely shaped crystals of potassium-feldspar. With this change in mineralization towards non-economic minerals and the amount of work required to follow this zone farther into the hillside, we abandoned work in this direction.

Some of the rock we removed had patches of very coarse quartz to 30 centimetres across with embedded tremolite crystals up to 4 centimetres across and 20 centimetres long.

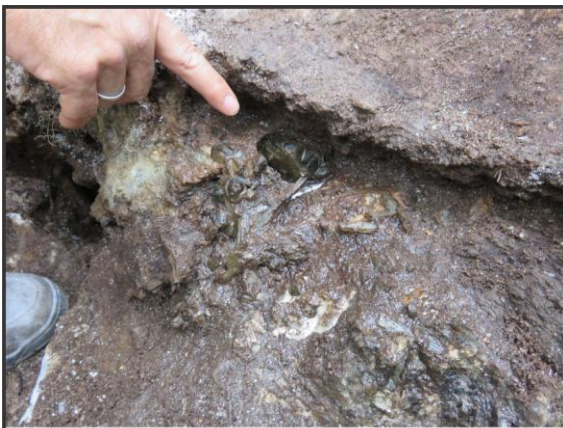


Figure 8; Photo showing brown tourmaline crystal and greenish tremolite.



Figure 9; Photo showing trench on May 18, 2016. The finger is pointing to the tourmaline crystal in Figure 8.

Towards the end of the third day we were at a point where we could see the large tourmaline crystal clearly and we attempted to sample it and the surrounding calcite (Figures 8 & 9). Unfortunately the crystal was not recovered as one intact sample, but this crystal appears to contain a small amount of transparent tourmaline in between the fractures. Gemstones as large as one carat might possibly be recovered if any of this material were faceted.

The main cylindrical cavity that was uncovered by this trenching program appears to have ended. It's possible that this zone has simply pinched out locally and continues a short distance into the hillside. If it were to continue it would likely be a calcite filled crystal-bearing zone instead of an open cavity. Continued trenching is the only conceivable way to know if this zone continues. If trenching were to continue, use of heavy equipment, such as a backhoe, would be necessary.

At completion, the trench was a maximum of 1.9 metres across, 1.3 metres into the hillside and 1.6 metres deep.

Summary and Results

Over course of eight days a two-person crew dug a trench, 1.9 x 1.3 x 1.6 metres, to expose a tremolite and gem tourmaline-bearing zone on the Salerno Claim. The tourmaline-bearing zone extended at least 1.2 metres into the hillside. Its character changed beyond that to contain

only crude crystals of feldspar and smaller needle-like crystals of tremolite.

Mineralization changes character across the length of the cavity exposed during this trenching program. At the surface, or right side of the cavity euhedral crystals of lustrous, greenish-gray tremolite up to 10 centimetres occurred in abundance, while brown tourmaline crystals up to 4 centimetres across were rare. Farther into the cavity and to the left about 0.5 to 1 metre, tourmaline was volumetrically more abundant than the tremolite and ranged in size up to 10 centimetres across. Towards the bottom of the cavity calcite with embedded crystal of both tourmaline and tremolite occurs. A mostly horizontal branch of the cavity continued to the left another 30-40 centimetres before changing direction downward and into the hillside. Here the mineralization change to needle-like tremolite crystals and crude crystals of potassium-feldspar. The bottom of this branch was not reached.

Much of the tourmaline is glassy and highly fractured, giving this material a very gemmy appearance. Light from a strong flashlight can be seen shining through some of the fragments, but upon closer examination only small areas, up to 8 mm are actually transparent. This is very encouraging as small gems could be cut from this material. Although tourmaline (in this case, dravite) can be valuable and desirable as a gemstone in today's jewellery industry, the colour of this material is not the most desired colour. Bright greens, blues and reds are the most valuable colours for tourmaline. Gems that are brown, brownish or with gray, brown or yellow overtones are considerably less valuable. Tourmaline gems from the Salerno Claim are unlikely to compete favourably with more colourful gems from elsewhere. However, Salerno tourmaline should be desirable to a local market where provenance of a gemstone could be more important than its colour.

Recommendations

The author feels that the Salerno Claim holds significant potential for the discovery of additional occurrences of rough gem tourmaline and well crystallized mineral samples. In addition, the site where the trenching described in this report took place still holds gem and crystal potential should a larger trench be excavated.

Based on the results of this trenching project, the author recommends the following;

1/ Map, in detail, the geology of the entire claim, paying close attention to the occurrence of tourmaline and zones with coarse-grained calcite with tremolite and/or diopside.

2/ Strip an area surrounding the trench of soil to explore in detail for additional tourmaline and tremolite-bearing zones similar to one that was trenched.

3/ Consider trenching any of the previously discovered tremolite crystal-bearing zones on the claim.

4/ If budget and permitting allows, bring in a backhoe to excavate a larger trench at the site described in this report. A larger trench would give a much better idea of this site's mineral potential.

References

Lumbers, S.B. and Vertolli, V.M., 2000: Precambrian geology, Gooderham area; *Ontario Geological Survey, Preliminary Map P. 3405*, scale 1:50,000.

Sabina, Ann P., 1986: Rocks and Minerals for the Collector: Bancroft - Parry Sound Area and Southern Ontario; *Geological Survey of Canada Miscellaneous Report 39*, 182 p.

Appendix 1; Statement of Qualifications of the Author

I, Bradley S. Wilson of P.O. Box 352, Kingston, Ontario, K7L 4W2, do hereby state that I:

- 1/ graduated from Queen's University in 1982 with an Honours B.Sc. degree in Geology.
- 2/ graduated from Carleton University in 1987 with a M.Sc. degree in Geology.
- 3/ received a degree in gemmology in 1991 from the Canadian Gemmological Association (F.C.Gm.A).
- 4/ worked as an independent consultant on over 20 coloured gemstone projects since 1991.
- 5/ worked for mineral exploration companies during parts of 23 of the last 35 years either as a consultant or as a seasonal employee.
- 6/ conducted gemstone exploration on my own behalf nearly continuously since 1982.
- 7/ have no interest, direct or indirect, in the Salerno claim (SO 1500020).
- 8/ performed the work described in this report.

Bradley S. Wilson

June 1, 2016