

**SEG WHISTLER 2013: GEOSCIENCES FOR DISCOVERY**  
**Myra Falls mine tour with local in Sicker Group volcanics stops of interest**  
**Vancouver Island**  
**Saturday, Sept. 21<sup>st</sup> – Tuesday, Sept. 24<sup>th</sup>, 2013**

**LEADERS:**

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**WHERE:** Vancouver Island: Chemainus-Port Alberni-Campbell River

**WHEN:** Sept. 21st to 24th, 2013: Four day field trip; pre-conference

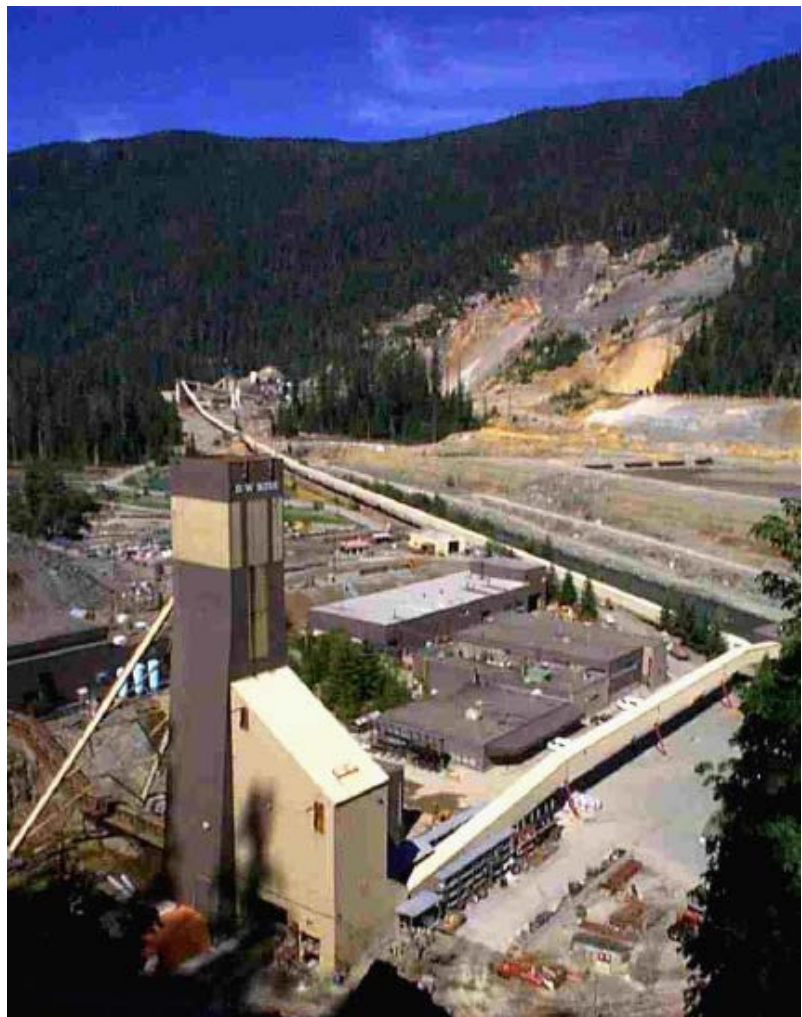
**COST:** \$CAD (based on single occupancy) and includes transportation beginning from Vancouver (Sept. 21st) back to West Vancouver (Horseshoe Bay) or Whistler (Sept. 24<sup>th</sup>), and accommodations. Participants are required to oversee costs for meals and provide their own bag lunches on field days.

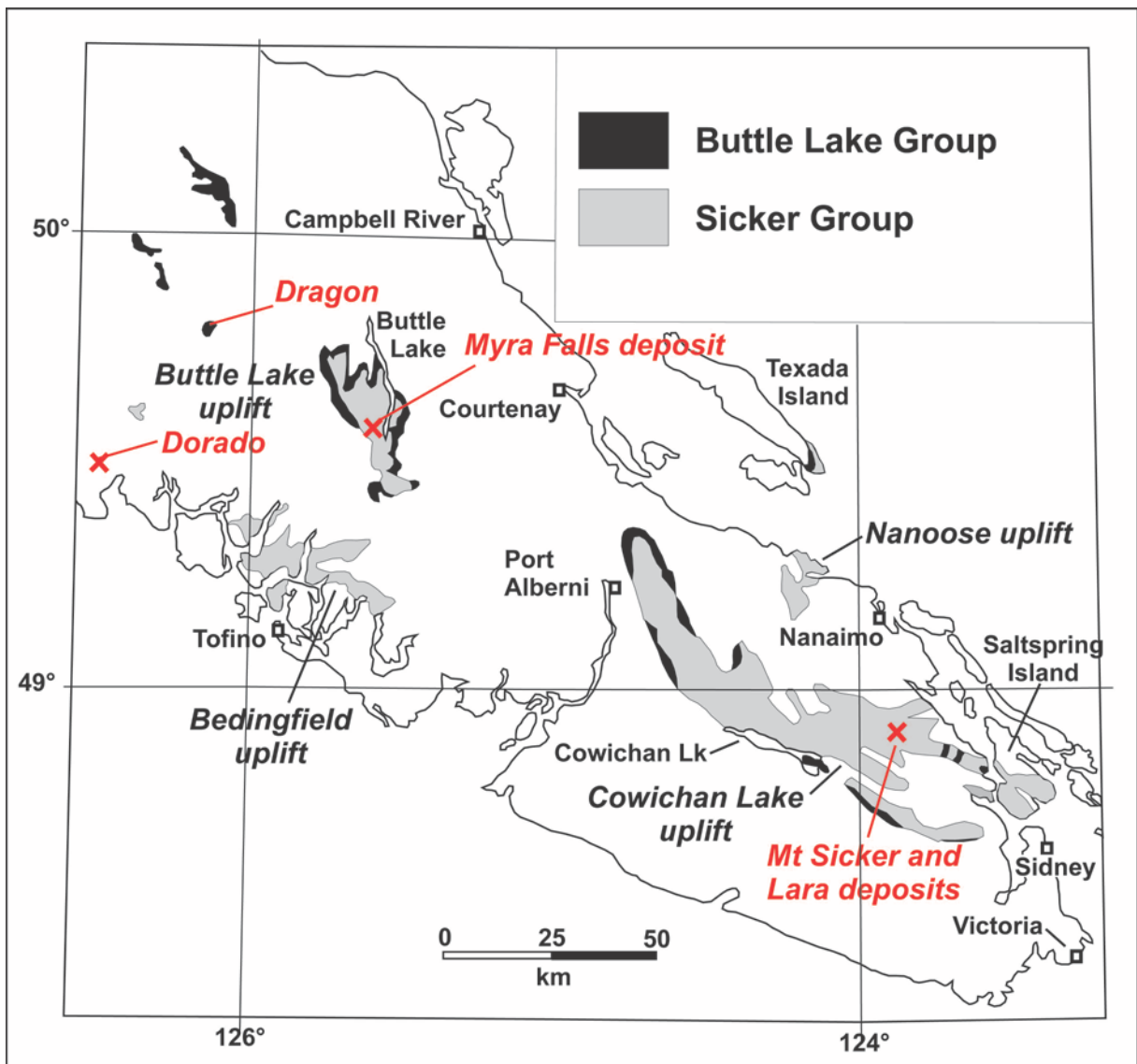
**MINIMUM PARTICIPANTS:** 10

**MAXIMUM PARTICIPANTS:** 13

**GEAR:** Comfortable hiking boots and outdoor clothing is recommended

*Myra Falls Operations (Nyrstar N.V.) (Chong et al., 2005)*





*Uplifts of Paleozoic rocks and associated VMS occurrences and deposits (shown in red) on Vancouver Island (Ruks et al., 2009).*

**SUMMARY:** Wrangellia, a component of the Insular Superterrane, is one of the first Cordilleran terranes to be recognized as truly allochthonous, and is host to several, important mineral deposits, many of which are of the volcanogenic massive sulphide (VMS) variety. Of these Wrangellian VMS deposits, the world class Myra Falls deposit is the most significant, having a pre-mining inventory (combined production and proven and probable reserves) in excess of 40 million tonnes of Zn-Cu-Au-Ag sulphides. The Myra Falls VMS deposit, in addition to other VMS deposits and occurrences in the terrane, are hosted in Late Devonian-Early Mississippian, bimodal volcanic strata of the Sicker Group. Volcanic rocks of the Sicker Group are overlain by Early Mississippian through Early Permian sedimentary and volcanosedimentary rocks of the Buttle Lake Group. Together, strata of the Sicker and Buttle Lake Groups have been interpreted to represent the remnants of a Paleozoic intraoceanic island arc complex, or the Paleozoic Wrangellia Arc (PWA). However, work by Massey et al. (1995) and recent work by Ruks et al. (2007, 2008, 2009, in prep.) indicate that the PWA is more complex than

previously thought, with the recognition that large areas of VMS associated stratigraphy previously mapped as part of the Late Devonian-Early Mississippian Sicker Group are actually part of a previously unrecognized cycle of bimodal arc volcanism of Pennsylvanian through Early Permian age. This newly recognized component of the PWA has geochemical and isotopic characteristics suggesting derivation from hotter and more primitive melts than its Sicker Group counterpart. In addition, Late Paleozoic, VMS associated, bimodal volcanic rocks are conformably overlain by limestones, suggesting formation in a shallow water environment. Collectively, these characteristics suggest that underexplored, Late Paleozoic volcanic rocks of the PWA may be prospective for precious metal enriched VMS deposits, similar to that of the famous Eskay Creek, LaRonde Penna, and Horne Mines.

This field trip will highlight a newly revised model for the tectonic and metallogenic evolution of the PWA, with emphasis on characterizing the timing and geological setting of its contained VMS mineralization. The trip will also provide an introduction to how a combination of geological mapping, geochronological, lithogeochemical and isotopic studies can be applied to elucidate the most prospective components of a terrane for hosting VMS mineralization. The field trip will culminate with an underground tour of the world class Myra Falls VMS deposit (Nyrstar N.V.).

Support for research by Ruks et al. has been generously provided by Geoscience BC, Bitterroot Resources Ltd., Paget Resources Corporation, Treasury Metals Inc., Westridge Resources Inc., Nyrstar N.V., a Natural Sciences and Engineering Research Council of Canada (NSERC) Discovery Grant to Jim Mortensen, and an NSERC postgraduate scholarship to Tyler Ruks.

#### **DETAILED ITINERARY:**

##### **Saturday, Sept. 21<sup>st</sup> (travel from Vancouver to Vancouver Island; Cowichan area stratigraphy and VMS mineralization)**

The group will meet at Horseshoe Bay ferry terminal (West Vancouver) at 5:45 a.m. at the latest, in time for 6:20 a.m. sailing to Nanaimo. The group will arrive at the forestry gate on McMillan Bloedel Forest Service road at 8:30 a.m., where an overview of PWA tectonic evolution and metallogeny will commence. Field stops will begin by examining outcropping VMS mineralization and host strata exposed on Big Sicker Mountain, including the past producing Lenora deposit. Final stops for the day will include a visit to the Lara VMS deposit (Treasury Metals Inc.) and the nearby, Lady B iron formation. The group will leave the area around 3 p.m., arriving in Port Alberni around 6 p.m. that evening.

##### *Accommodations for the evening:*

Redford Hotel, 3723 Redford St., Port Alberni, BC; (250) 724-0121

**Sunday, Sept. 22<sup>nd</sup> (Middle to Late Paleozoic stratigraphy and VMS potential of the PWA)**

The group will meet at 8:00 a.m. outside Redford Motor Inn for an overview of PWA stratigraphy and VMS potential in the Alberni area, with emphasis on the stratigraphy and VMS potential of newly recognized Late Paleozoic strata in the area and elsewhere on Vancouver Island. Field trip stops for the day will investigate the Middle through Late Paleozoic evolution of the PWA, with emphasis on describing the economic potential of newly recognized Late Paleozoic bimodal volcanic strata in the terrane. The group will leave the Alberni area at 3 p.m. and arrive in Campbell River by 5 p.m. that evening.

*Accommodations for the evening:*

Best Western, 462 S Island Hwy, Campbell River, BC; (250) 923-4231

**Monday, Sept. 23<sup>rd</sup> (Myra Falls Operations underground tour)**

The group will leave for Myra Falls Operations (MFO; Nyrstar N.V.) at 5:30 a.m., and will conduct MFO mine site orientation between 7:00-8:00 a.m. The group will commence the MFO underground tour at 8:30 a.m. An overview of MFO geology and mineralization will be conducted in one of the underground refuge stations at the start of the tour. The group will leave MFO at 3:30 p.m., and will be back in Campbell River by 5:00 p.m. that evening.

*Accommodations for the evening:*

Best Western, 462 S Island Hwy, Campbell River, BC; (250) 923-4231

**Tuesday, Sept. 24<sup>th</sup> (Campbell River to Vancouver)**

The group will leave Campbell River at 7:40 a.m. and arrive in Departure Bay at 9:40 a.m., in time for the 10:40 a.m. sailing to Horseshoe Bay (West Vancouver). The group can eat lunch on the ferry, and will arrive at Horseshoe Bay at 12:20 p.m. Rental trucks with passengers destined for Whistler will leave the ferry terminal, arriving in Whistler at approximately 2 p.m.



*Banded, massive pyrite-chalcopyrite-sphalerite ore from MFO (Chong et al., 2005)*

## **References**

Chong, A., Becherer, M., Sawyer, R., Wasteneys, H., Baldwin, R., Bakker, F., and McWilliams, I., 2005, Massive sulphide deposits at Myra Falls Operations, Vancouver Island, British Columbia; Mineral Deposits Division of the Geological Association of Canada Cordilleran Round-Up Field Trip, January 2005.

Ruks, T. W., Mortensen, J. K., and Cordey, F., 2009, Preliminary results of geological mapping, uranium-lead zircon dating, and micropaleontological and lead isotopic studies of volcanogenic massive sulphide-hosting stratigraphy of the Middle and Late Paleozoic Sicker and Lower Buttle Lake groups on Vancouver Island, British Columbia (NTS 092B/13, 092C/16, 092E/09, /16, 092F/02, /07): Geoscience BC Summary of Activities 2008, Geoscience BC, Report 2009-1, p. 103-122.