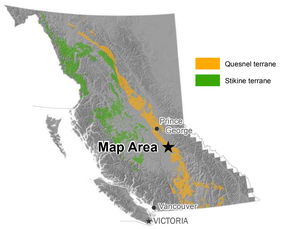
Map 1. Geology of Mount Polley Intrusive Complex (pre-mining, except Cariboo-Bell zones)



Note: Areas of outcrops are shown with a darker shade

EARLY JURASSIC

EJt Trachyandesite tuff. Plagioclase-hornblende-biotite and minor (1%) quartz grains in aphanitic mauve-grey matrix. 196.7 ±1.3 Ma, U-Pb zircon (Logan et al. 2007b).

LATE TRIASSIC - EARLY JURASSIC

NICOLA GROUP (IN PART)

LTrJNbc Breccia, conglomerate. Massive, coarse, matrix-supported polymictic breccia and minor cobble conglomerate, with clasts of intermediate intrusives, volcanics and microporphyries, in grey to maroon crystal-lithic matrix. Minor lithic sandstone-siltstone, and rare trachyte-latite. Strong hematite cement immediately north of and overlying MPIC. Labelled EJbc where known Jurassic.

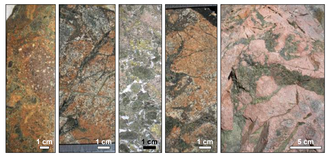
LATE TRIASSIC

MOUNT POLLEY INTRUSIVE COMPLEX (MPIC)

LTrpap Augite porphyry dike. Green-grey, fine grained basaltic-andesitic dikes with subequant clinopyroxene phenocrysts, and lesser aphyric mafic-intermediate dikes.

LTrpbx1 **LTrpbx1**. Intrusive complex with a significant amount of hydrothermal fragmental breccia (polymictic/oligomictic) or inclusion-rich intrusion, comprising (sub)rounded to subangular diorite to monzonite porphyry clasts in a cognate igneous 'cement' (igneous breccia), and/or a clastic matrix of fine to coarse rock flour. Clasts in igneous breccia may be partly resorbed. Contacts are gradational into variably brecciated (monomictic jigsaw-fit type) diorite to monzonite. Characteristic of bx1 (though not ubiquitous) is texture-destructive alteration due to moderate to strong secondary K-feldspar ± biotite ± albite ± magnetite ± actinolite/diopside ± garnet, replacing the igneous groundmass or breccia matrix, or permeating fractures. LTrpbx1m = mineralized to ore or near-ore grade with chalcopyrite ± bornite or pyrite.

LTrpbx1m

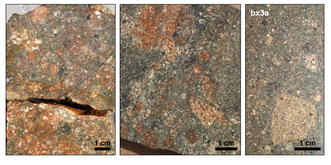


LTrpbx2 **LTrpbx2**. As bx1, but occurs outside central MPIC and is characterized by less texture-destructive alteration than bx1. Igneous cement is less common than rock flour matrix and/or mineral cement. bx2m = mineralized to ore or near-ore grade.

LTrpbx2m

LTrpbx3 **LTrpbx3**. Fragmental breccia (polymictic) comprising mm- to cm-scale, rounded to angular, monzonitic porphyry clasts in a related rock flour matrix. Mostly matrix supported. Distinguished from LTrpbx1 and LTrpbx2 by a lack of (1) coherent rocks, (2) igneous breccia cement, (3) potassic alteration (except in transported clasts), and (4) mineralization (except pyrite). Local garnet alteration. Subtype bx3a has a finer rock flour matrix, and a high matrix to clast ratio.

LTrpbx3a



LTrpkm Potassium feldspar-(plagioclase-)phyric monzonite. Pale to deep pink, fine to coarse grained groundmass, with sub-cm to megacrystic (2-3 cm) phenocrysts, with trachytoid alignment in some dikes and larger intrusions.

LTrppp Plagioclase feldspar porphyry (monzodiorite). Grey to red-pink where strongly altered, typically crowded with phenocrysts up to 5 mm, locally aligned, in fine-grained groundmass.

LTrpmz Monzonite to monzodiorite. Pale pink, medium-grained, even-textured, More homogeneous than units LTrpd2, LTrpmdu, and lacking in inclusions.

LTrpmdu Monzodiorite and monzonite, some diorite, undivided. General, heterogeneous unit of intermediate intrusions with poorly defined internal contacts. Pink to grey, fine to medium grained, equigranular to plagioclase-phyric; mafic lithic and other inclusions common, verging on igneous breccia locally. Includes small dikes and zones of bx1 or bx2 hydrothermal breccia not differentiated on map.

LTrpdb Leucodiorite porphyry, banded. Minor unit. Pale green and pale grey, fine to medium grained, characterized by wispy laminations (possible flow banding) and fluidal (?) clasts; gradational with unit Prndu.

LTrpd2 Diorite to monzodiorite, leucodiorite, and minor monzonite. Characterized by uneven textures and numerous small inclusions. Grey to green-grey, cream-grey (pink where more altered), medium grained, usually inequigranular to subporphyritic (plagioclase and local augite phenocrysts).

LTrpd1 Even-textured augite(-biotite) diorite to monzodiorite. Speckled medium-grey, medium to coarse grained, mostly equigranular.

LTrppx Pyroxenite, minor melagabbro. Dark green to black, medium to coarse grained.

NICOLA GROUP (NORIAN)

LTrNbabx Basalt to andesite, or intrusive-equivalent meladiorite, microdiorite. Undivided volcanic and subvolcanic coherent rocks and fragmental breccias. Grey, dark mauve, dark green, finely plagioclase- or pyroxene-phyric, local analcite or pseudoleucite. Breccias are undifferentiated igneous-hydrothermal and volcaniclastics, characterized by a lack of felsic porphyry fragments. Local lenses of mafic or calcareous sediments, limestone. Gradational contacts with MPIC, where some breccias may be hydrothermal and coeval with MPIC intrusions.

Geology
Geology is based on Imperial Metals' mapping by C. Rees, supplemented by L. Ferreira and L. Bjornson, and fault and geophysical interpretation by C. Taylor. Data is primarily from outcrops or trenching on the pre-mining surface, except for the Cariboo and Bell zones where geology is simplified from detailed bench mapping and computer projections, both by G. Gillstrom. Some geological contacts may be faults in part, in particular in the Cariboo-Bell zones. Other map sources include Logan et al. (2007a: unit EJt) and Read (1997).

Contact: defined, approximate, inferred

Fault: approximate, inferred

D = downthrown side

dip of fault plane, and slickenline orientation, sense of shear

Individual mapped outcrop location, area of mapped outcrop

Structure: bedding, fracture

Glacial striae: direction known, direction unknown

Geochronology sample (labelled by age, analysis method)

Elevation contour (20m interval): major, minor

References

Jackson, M.L. (2008): Evolution of the Northeast zone breccia body, Mount Polley mine, British Columbia; unpublished M.Sc. thesis, University of British Columbia, 232 p.

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Mortensen, J.K., Ghosh, D.K. and Ferri, F. (1995): U-Pb geochronology of intrusive rocks associated with copper-gold porphyry deposits in the Canadian Cordillera; in Porphyry Deposits of the Northwestern Cordillera of North America (Schroeter, T.G., ed.), CIM Special Volume No. 46, 142-158 pp.

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Data sources

Geological terrane data
Massey, N.W.D, MacIntyre, D.G., Desjardins, P.J. and Cooney, R.T. (2005): Digital Geology Map of British Columbia: Whole Province; B.C. Ministry of Energy and Mines, Geofile 2005-1,
URL < http://www.empr.gov.bc.ca/Mining/Geoscience/PublicationsCatalogue/GeoFiles/Pages/2005-1.aspx> [November 2007]

Elevation model data
Canadian Council on Geomatics (2004): Canadian digital elevation data; Natural Resources Canada, GeoBase®,
URL <http://www.geobase.ca/geobase/en/data/cded/description.html > [October 2004]

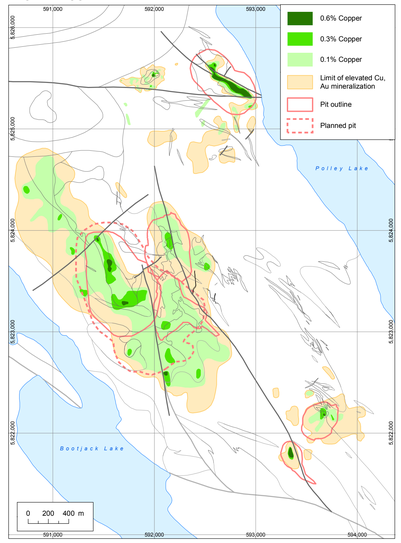
Topographic data
BC TRIM (2006): British Columbia Terrain Resource Information Mapping (TRIM) Digitial Map Products; B.C. Ministry of Forests, Lands and Natural Resource Operations, Crown Registry and Geographic Base Branch. URL <http://archive.ilmb.gov.bc.ca/crgb/pba/trim/> [March 2006]

Acknowledgments

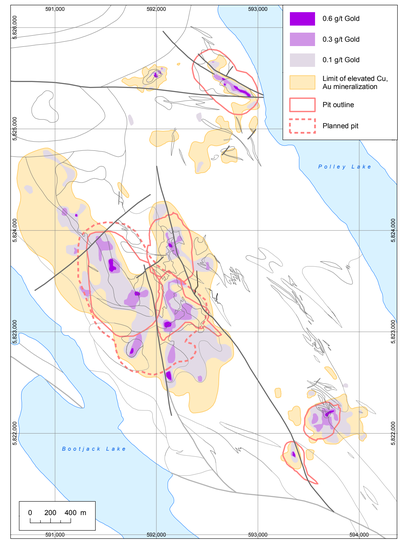
Cartography by Fion Ma and Fionnuala Devine from Geoscience BC, and Chris Rees from Imperial Metals Corporation.

Elevation model prepared by Kaz Shimamura, Geological Survey of Canada

Map 2. Copper Mineralization



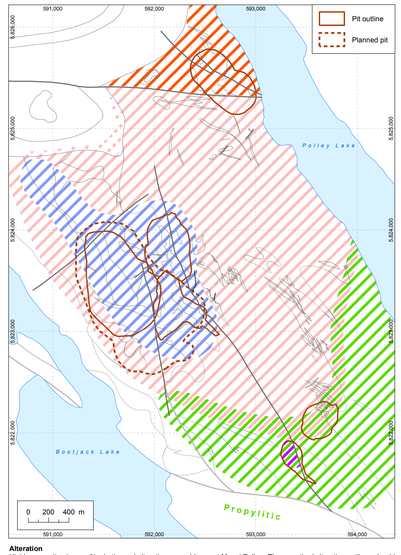
Map 3. Gold Mineralization



Grade contours
The Cu and Au grade contours were generated from the 3-D computerized block models used at the Mount Polley Mine for reserve estimation. The grade values in each block in the model are geostatistically estimated using 'Ordinary Kriging' from exploration drill assay results. The block models include already mined ore as well as remaining resources (to December, 2012). The three main contours shown are the smoothed outlines of grade blocks averaging 0.1, 0.3 and 0.6 percent copper on Map 2, and 0.1, 0.3 and 0.6 grams per ton gold on Map 3. These contours display the grade distribution at an elevation most representative of the ore zones. In the core of Mount Polley centred on the Springer zone the contours are at an elevation of 1,000 metres (a.s.l.); in the Northeast zone (Wight pit) the contours are at an elevation of 900 metres (a.s.l.). This is roughly equivalent to 100-200 metres below the pre-mining topography. Patterns of grade distribution at deeper levels may be different in detail but are generally conformable. The 'Limit of elevated Cu, Au mineralization' contour is less rigorously defined, based on assay results from exploration drilling, trenching and mapping.

(Kriging is a geostatistical estimation method that infers the value of a random field at an unobserved location from observed samples at known locations.)

Map 4. Alteration Map



Alteration
Highly generalized map of hydrothermal alteration assemblages at Mount Polley. The smoothed alteration outlines should not be taken to indicate that the alteration pattern necessarily postdates intrusion or breccia contacts, or faulting.

Fault: approximate, inferred

Contact: defined, approximate, inferred

Alteration

POTASSIC-SODIC, CALC-POTASSIC

I **K-feldspar* − biotite − albite − magnetite − diopside/actinolite** ± calcite ± andradite garnet ± sulfides. Retrograde chlorite ± sericite ± albite ± epidote, ± calcite ± zeolite ± prehnite ± clay.

II **K-feldspar − biotite − magnetite − albite** ± calcite ± sulfides. Minor diopside/actinolite ± epidote ± andradite garnet. Retrograde chlorite ± sericite ± albite ± gypsum. Dashed hatch pattern where ill-defined.

III **K-feldspar − magnetite − biotite − chlorite − calcite − andradite garnet** ± albite ± epidote ± apatite ± clinozoisite ± anhydrite ± sulfides. Minor diopside/actinolite. Retrograde chlorite ± carbonate ± sericite ± gypsum ± rare quartz.

MARGINAL POTASSIC - PROPYLITIC

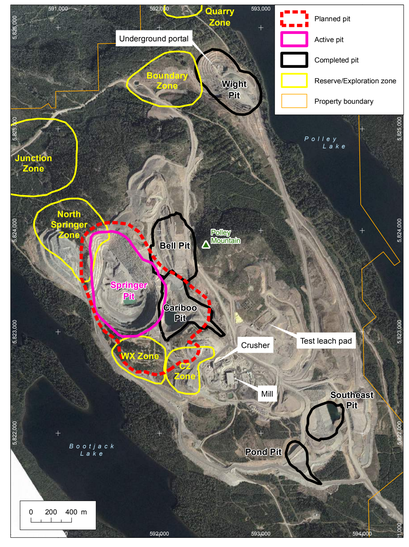
IV **Albite − epidote − pyrite** ± magnetite ± K-feldspar ± calcite ± sulfides.

SKARN (s.l.)

V **Andradite garnet − epidote** ± albite ± calcite ± magnetite ± sulfides.

*Note: Weak to intense, fracture-controlled to pervasive 'reddening' due to nanoscale hematite inclusions in secondary K-feldspar is common in I, II, III; sporadic in IV.

Map 5. Mount Polley Pits and Zones



Imperial Metals

Geoscience BC

Geoscience BC Map 2014-08-1

Geology of the Mount Polley Intrusive Complex

Part of NTS Sheet 93A/12

Chris Rees, Greg Gillstrom, Lee Ferreira, Leif Bjornson and Chris Taylor

1 : 10,000

0 250 500 1,000 m

Universal Transverse Mercator Projection, Zone 10
Horizontal Datum: North American Datum 1983

True north is 1.08° west of grid north

April 2014

Suggested Reference:
Rees, C., Gillstrom, G., Ferreira, L., Bjornson, L. and Taylor, C. (2014); Geology of the Mount Polley Intrusive Complex; Geoscience BC Map 2014-08-1, 1:10,000 scale.