677045

MOUNT POLLEY COPPER-GOLD DEPOSIT

CARIBOO MINING DISTRICT
BRITISH COLUMBIA

IMPERIAL METALS CORPORATION
and
CORONA CORPORATION

MAY 1990

Z. T. Nikic
R. Pesalj
D. Gorc
K. McNaughton

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1.0 SUMMARY

The Mount Polley alkalic porphyry copper-gold deposit, located 56 km northeast of Williams Lake in central British Columbia, was discovered in 1964 by ground examination of a strong aeromagnetic anomaly and outcropping copper mineralization.

The deposit occurs in a multiple intrusive stock within the Quesnel Belt, an allochthonous terrain of dominantly Upper Triassic to Lower Jurassic mafic to intermediate volcanics that lie along the eastern margin of the Intermontane Belt.

Five main episodes of structural development are recognized at Mount Polley:

(1) intrusion of the Mount Polley syenodiorite phase into a volcanic pile;

(2) intrusion of monzonite porphyry #1 into syenodiorite and older lithologies and development of the intrusion breccia (ground preparation for mineralization);

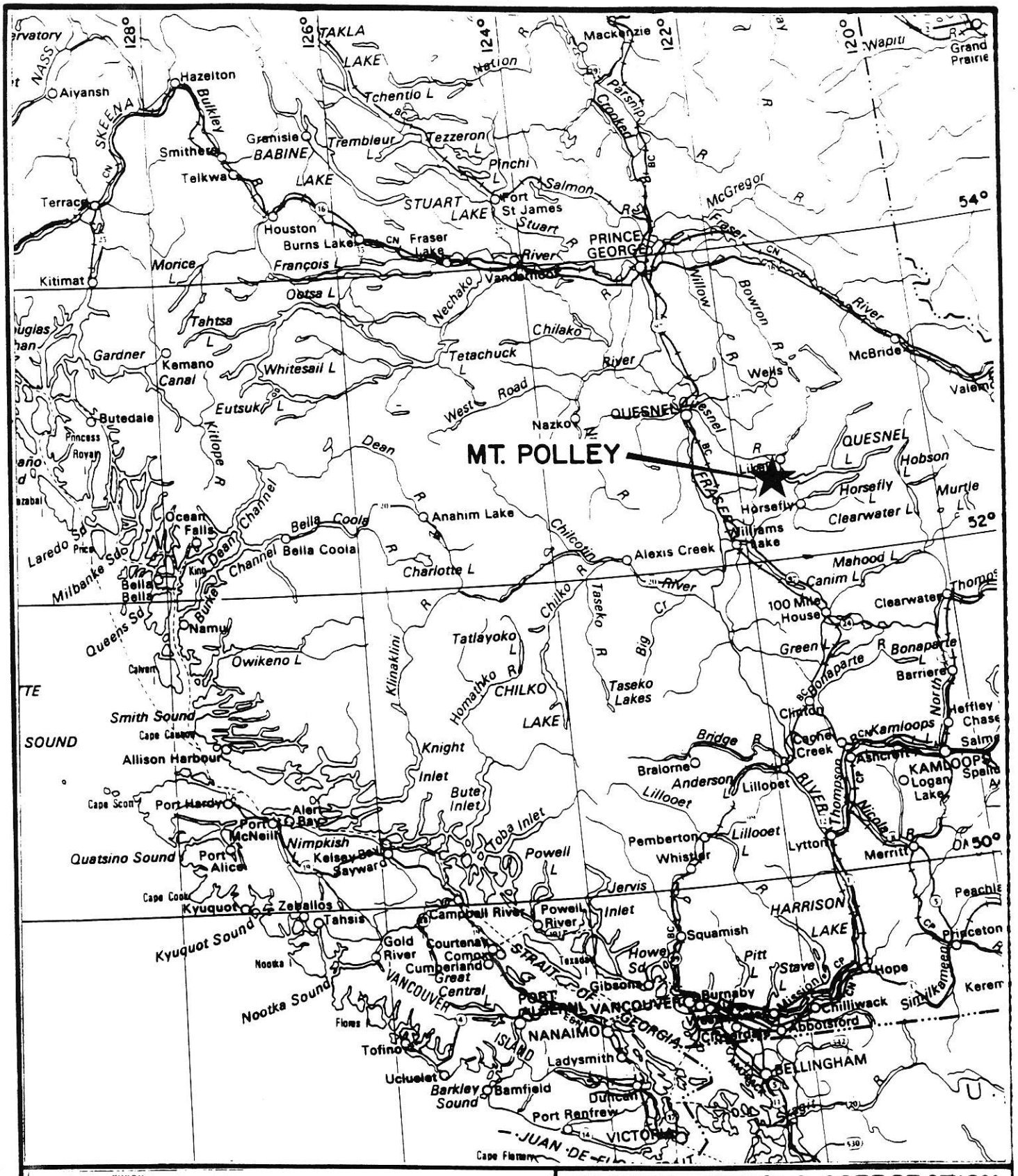
(3) deposition of Cu-Au mineralization;

(4) intrusion of post-ore lithologies (monzonite porphyry #2 and #3, augite porphyry, etc.); and

(5) uplift and erosion during the Tertiary and Quaternary periods.

Two principal zones of copper-gold mineralization, the Central Zone and West Zone, have been outlined by closely spaced drilling. The Central Zone is a tabular sill-like body of mineralized intrusion breccia with northerly strike and moderate easterly dip. The zone measures 1,100 m along strike and is 200 to 450 m wide. The West Zone forms the central portion of a westerly plunging pipe of mineralized intrusion breccia measuring 450 m in diameter and extending to at least the drilled depth of 275 m.

Principal primary minerals, magnetite and auriferous chalcopyrite, occur as disseminations and veinlets in the breccia. The contact between breccia and breccia hosting lithologies is gradational.



IMPERIAL METALS CORPORATION

MOUNT POLLEY

FIGURE 1 N.T.S. 93A/12

LOCATION MAP

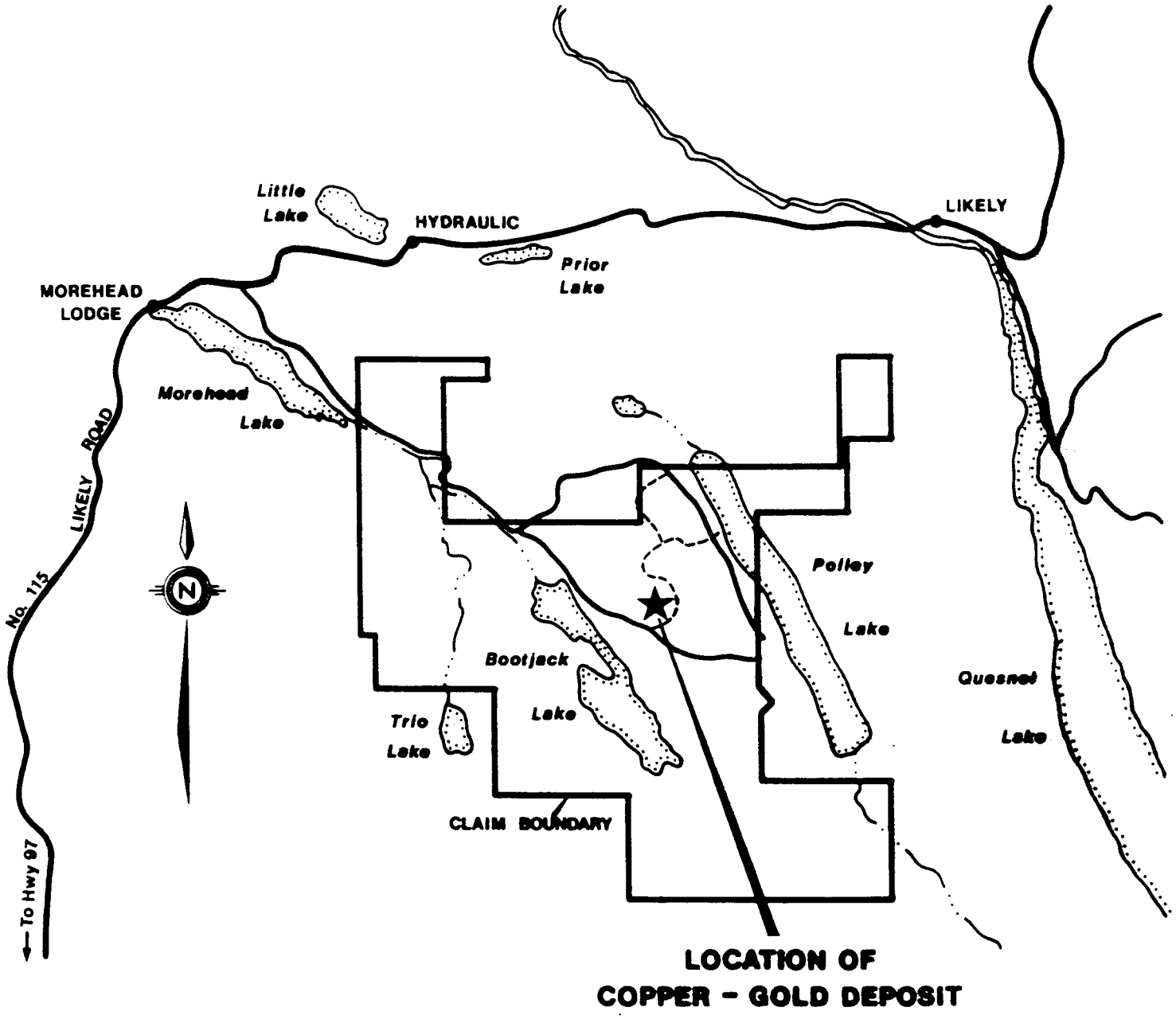
km 0 50 100 150 200 km

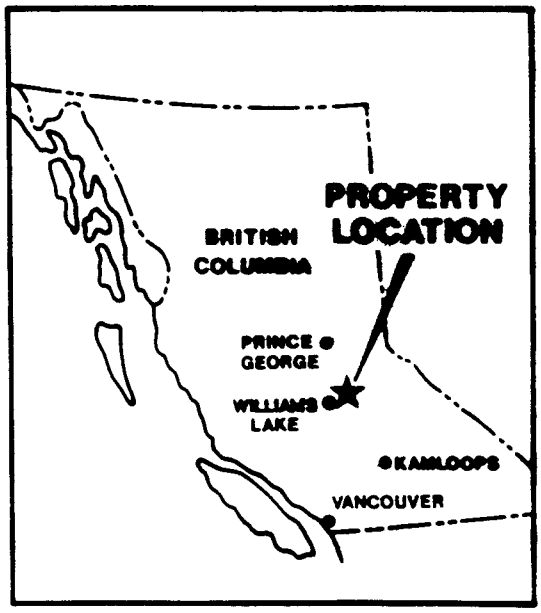
SCALE: 1:3,750,000	GEOLOGIST: K. McMILLAN/TON
DATE: DECEMBER, 1989	DRAWN BY: J. CORKUM

Although several parts of the deposit are strongly oxidized as a result of weathering, the very limited amount of supergene copper mineralization formed reflects the low pyrite content of the deposit. Pervasive potash K-spar-biotite-diopside alteration coincident with the breccia, is surrounded successively by garnet-epidote and epidote alteration zone in the volcanic and hypabyssal wall rocks. A pyrite halo measuring 4,500 m by 1,000 m occurs well outside and structurally above the two main mineralized breccia bodies. Calcite in veinlets throughout the ore body and wall rocks, the result of propylitic alteration, and absence of pyrite made the ore and waste rock acid-consuming.

A diamond drill summary follows:

YEAR	COMPANY	HOLES	FEET	REMARKS	AREA
1966/67	Cariboo Bell Copper	123 (S1-S123)	48,325	DD holes	Property Wide
1966/67	Cariboo Bell Copper	38 (P1-P38)	6,585	Percussion holes	Property Wide
1967-70	Cariboo Bell Copper	30 (S200-S229)	11,849	DD holes	Property Wide
1972	Cariboo Bell Copper	17 (P39-P51)	4,185	Percussion holes	Property Wide
1977	Highland Crow Res.	7 (P62-P68)	1,880	Percussion holes	NW End
1978	Highland Crow Res.	5 (P69-P73)	1,161	Percussion holes	NE End
1979	Teck Corporation	6 (CB1-CB6)	1,750	Percussion holes	Pit Area
1981	E & B	7 (S230-236)	5,727	DD holes	Pit Area
1981	E & B	7 (R1-R7)	4,250	Rotary holes	Pit Area
1982	E & B	17 (S237-S253)	11,762	DD holes	Pit Area
1982	E & B	11 (R8-R18)	5,040	Rotary holes	Pit Area
1986	E & B	22 (R19-R40)	8,170	Rotary holes	Property Wide
1988	Imperial Metals	99 (MP1-99)	29,126	DD holes	Pit Area
1989	Imperial Metals	139 (MP100-238)	61,313	DD holes	Pit Area
		528	201,123		





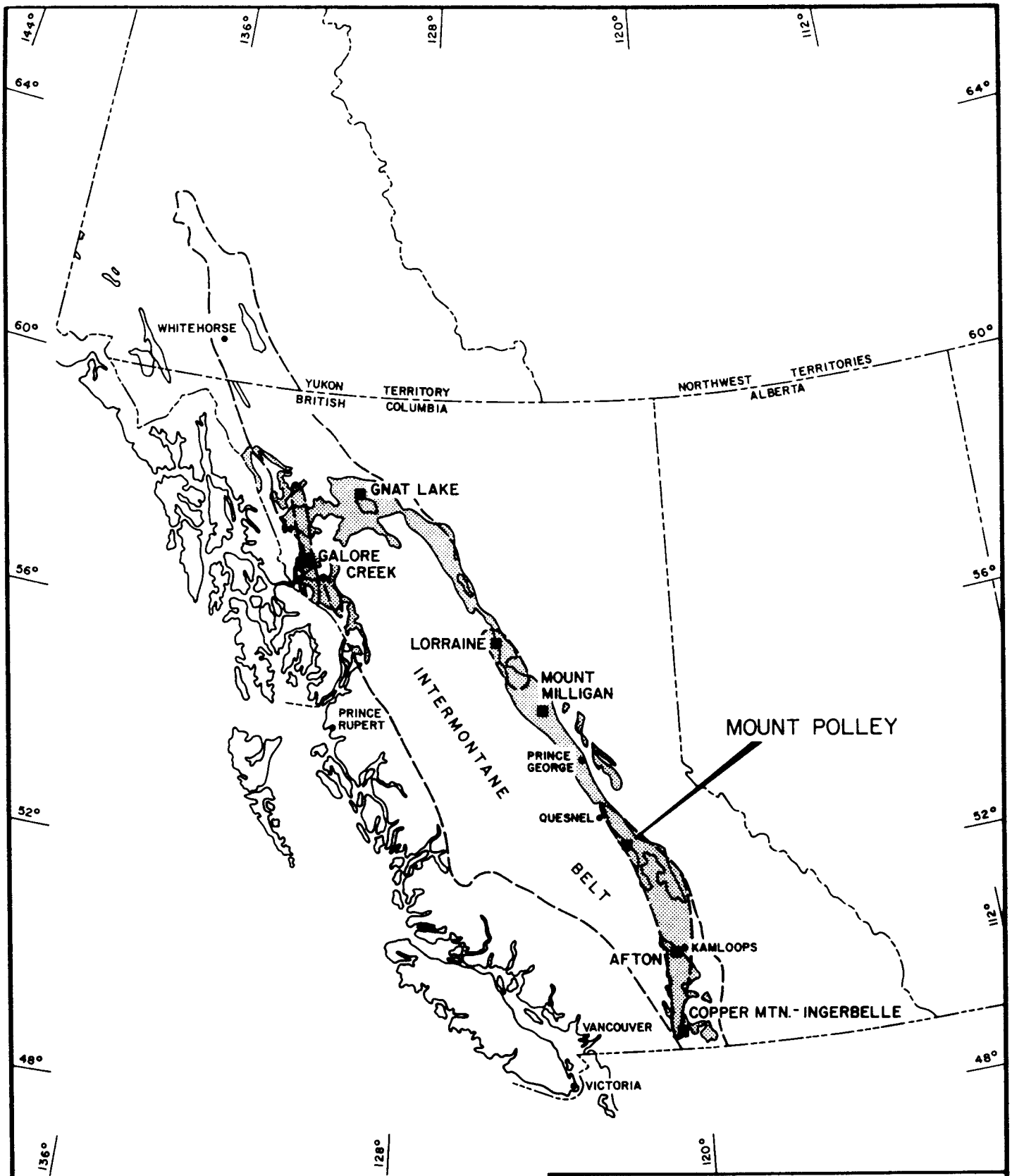
IMPERIAL METALS CORPORATION
CORONA CORPORATION

MOUNT POLLEY PROJECT

CARIBOO MINING DIVISION, B.C.

m 0 2500 5000 m

Figure 2



LEGEND

ALKALIC VOLCANIC AND INTRUSIVE COMPLEXE

AFTER BARR ET AL (1976)

IMPERIAL METALS CORPORATION

MOUNT POLLEY

FIGURE 3 N.T.S. 93A/12

REGIONAL GEOLOGY

0 200 400 600

SCALE:	1:10,000,000	GEOLOGIST:	K. McNAUGHTON
DATE:	DECEMBER, 1989	DRAWN BY:	J. CORKUM

2.0 PROPERTY GEOLOGY

The Mount Polley intrusive complex is located Bootjack Lake on the west side and Polley Lake on the east side. The intrusive complex is tilted laccolith approximately 6 km long and up to 2 to 3 km thick at the center. Six lithologically distinct phases are recognized, of which five comprise one or more stacked lenses concordant with the northeast-dipping host strata, and the sixth, the Cu-Au bearing breccia which is partly concordant and partly discordant.

The principal lithological phases of the intrusive complex recognized are mafic pseudoleucite syenite, pseudoleucite syenite, syenodiorite, monzonite porphyry and intrusion breccia.

Mafic pseudoleucite syenite forms the westernmost or stratigraphically lowest member of the complex. The unit is grey-weathered, medium to coarse-grained rock composed of 20% pseudoleucite phenocrysts in a fine-grained groundmass of K-spar, nepheline, albite, aegirine-augite, hornblende and magnetite. Mafic minerals comprise 15-25% of the rock. The unit is expesed east of Trio Lake.

Pseudoleucite syenite consists of less than 5% mafic minerals and 30%-90% pseudoleucite phenocrysts often up to 4 cm in diameter. The phenocrysts stand out on a weathered surface and the rock is called "golf ball syenite" in the field.

Syenodiorite is exposed along the east shore of Bootjack Lake, forming a long lens that broadens southeast towards Polley Lake. Large inclusions of syenodiorite occur throughout the property. These inclusions are within the monzonite porphyry, suggesting that syenodiorite represents an earlier phase of the complex. The rock is grey, fine to medium-grained, porphyritic, with plagioclase 55%, orthoclase 20%, augite 15% and biotite 5%. Accessory minerals are amphibole, magnetite, sphene, zircon and apatite.

Monzonite porphyry (M1) is buff to pink rock with up to 40% subparallel plagioclase laths in a fine-grained matrix of K-spar, plagioclase and augite. Accessory minerals include biotite, magnetite, sphene and apatite. Its colour index is lower than that of syenodiorite, K-spar content is higher and has abundant plagioclase phenocrysts. Miarolitic cavities are common in this unit and usually filled with prehnite and zeolite.

Intrusion breccia underlies the central part of the property including the top of Mount Polley. Two out of three main breccia bodies outlined by drilling to date host economic concentrations of porphyry-type copper-gold mineralization. Tho western breccia, as indicated by drilling, is a steeply plunging pipe discordant with enclosing intrusive phases of volcaniclastics and partly discordant. The third main breccia that underlies the top of Mount Polley is void of mineralization and appears to be younger than the other two breccias. This is supported by a presence of sanidine porphyry dyke fragments in the breccia. These dykes crosscut other major units of the intrusive complex elsewhere in the property.

The breccia consists of fragments of syenodiorite, monzonite porphyry and volcaniclastics cemented by pink, fine-grained syenite matrix made up of 70% K-spar and 30% plagioclase. Fragments of up to 30 m in length have been seen in drill core.

Several younger rocks intrude the intrusive complex. There are two stages of monzonite porphyry dykes known as M2 and M3 respectively. M2 dykes occur adjacent to intrusion breccia and this unit is similar to the main mass of the monzonite porphyry. M3 dykes are common in the upper portion of the laccolith and as fragments in the Mount Polley breccia. Pyroxenite gabbro has been encountered in several holes east of Bootjack Lake and its surface areas has been encountered in several holes east of Bootjack Lake and its surface area has been interpreted mainly from the ground magnetic surveys. These intrusions are considered to be coeval with augite porphyry dykes, the youngest intrusives in the laccolith, that cut off phases east of Bootjack Lake with the exception of the pyroxenite gabbo lense.

The volcanic rocks are coeval with the alkalic complex and are represented by augite trachyte basalts and lesser analcite trachyte basalts and abundant pyroclastics. Pyroclastic deposits in the immediate area adjacent to the mineralized zones are mainly feldspathic crystal and lapilli tuffs. Polymictic volcanic breccia that represents a lahar deposit is systematically distributed on both east and west sides of the complex.

Data illustrating the whole rock geochemistry of various Mount Polley rock types is given in Table 1.

Table 1 Whole Rock Geochemistry

Zone	Depth*	SIO2	AL2O3	FE2O3	CAO	NA2O	K2O	ROCK TYPE
West	65	51.15	17.87	8.34	4.02	5.75	3.16	Intrusion Breccia
West	272	57.49	15.79	7.94	4.80	4.80	4.42	Intrusion Breccia
Central	387	55.90	17.19	8.10	3.68	4.71	4.60	Intrusion Breccia
West	42	52.00	17.89	8.09	5.97	3.36	4.31	Syenodiorite
West	40	52.56	17.39	7.89	7.87	3.94	3.71	Syenodiorite
West	148	49.17	18.12	9.11	6.37	3.63	3.23	Syenodiorite
West	205	59.13	16.04	3.87	4.50	2.00	9.37	Monzonite Porphyry#1
West	570	60.22	16.83	5.70	1.43	2.66	9.19	Monzonite Porphyry#1
Central	438	61.07	17.33	4.32	3.11	5.87	4.78	Monzonite Porphyry#1
Central	704	48.60	14.87	7.72	7.02	3.19	1.88	Mafic Dyke
Central	723	53.13	16.56	6.96	4.52	4.59	3.40	Mafic Dyke
Central	765	48.28	12.99	10.00	11.09	1.65	3.41	Mafic Dyke
Central	263	48.07	15.82	10.52	11.02	1.44	4.46	Augite Porphyry
Central	629	54.90	16.41	11.32	3.66	4.79	5.49	Intrusion Breccia
Central	378	56.70	15.27	7.49	5.37	4.73	6.26	Intrusion Breccia
Central	404	60.80	17.09	4.27	3.23	4.11	8.25	Intrusion Breccia
Central	353	60.80	17.24	4.10	3.73	5.14	7.52	Intrusion Breccia
Central	352	52.60	18.07	9.61	8.84	4.69	3.78	Syenodiorite
Central	387	52.90	17.69	9.61	7.33	5.18	3.55	Syenodiorite
Central	346	50.90	16.71	9.09	11.25	3.96	4.08	Syenodiorite
Central	380	52.00	16.10	9.04	8.45	4.03	3.73	Syenodiorite
Central	854	60.30	15.80	5.08	4.37	6.63	3.24	Monzonite Porphyry#1
Central	852	60.50	16.25	5.95	5.32	6.85	3.26	Monzonite Porphyry#1
Central	866	58.90	17.09	6.81	7.44	7.33	1.84	Monzonite Porphyry#1
Central	856	59.80	16.56	6.86	4.72	6.79	3.15	Monzonite Porphyry#1

* feet

3.0 MINERALIZATION

Two principal zones of significant Cu-Au mineralization known as the Central and West zones have been outlined to date.

Magnetite, chalcopyrite, minor pyrite, trace bornite and native gold are the primary minerals in the deposit. Supergene minerals include malachite, amorphous chrysocolla, native copper, cuprite, dignete and covellite. Magnetite and chalcopyrite occur as very fine-grained disseminations and in fractures and drusy cavities.

The Central Zone is a tabular sill-like body of mineralized intrusion breccia with a northerly strike and moderately eastward dip. The zone measures 1,100 m along strike and is 200 to 450 m in width. The West Zone forms the central section of a westerly-plunging pipe of mineralized intrusion breccia measuring 450 m in diameter and extending to a drilled depth of 275 m. A pyrite "halo" measuring 4,500 by 1,000 m is located outside and structurally above the two main mineralized breccia zones.

The laccolith displays a complex history of rock alteration in which a wide variety of hydrothermal minerals formed at different periods during its intrusive and post-intrusive history. The most intense alteration developed comtemporaneously with mineralization in three coaxial zones: a central zone or potash feldspar-biotite-diopside; intermediate garnet-epidote zone; and a peripheral epidote zone. Additional alteration minerals associated with these assemblages above include prehnite, analsite, thompsonite, chabbosite, stobite, sphene, calcite and chlorite. Alteration effects, not directly related to mineralization, include pervasive moderately intense sericitic and argillic deuteric alteration of feldspars and syenodiorite, monzonite porphyry and post-mineral monzonite porphyry dykes, and intense argillic alteration of feldspars and shear zones.

Post-mineralization events include block faulting which tilted the strata near the close of Upper Triassic voleanism and uplift and erosion during the Tertiary and Quaternary periods. Although several parts of the deposit, in particular the upper portions of the Central Zone, are strongly oxidized as a result of weathering during this erosional period, the very limited amount of supergene copper mineralization formed reflects the very low low pyrite content of the deposit.

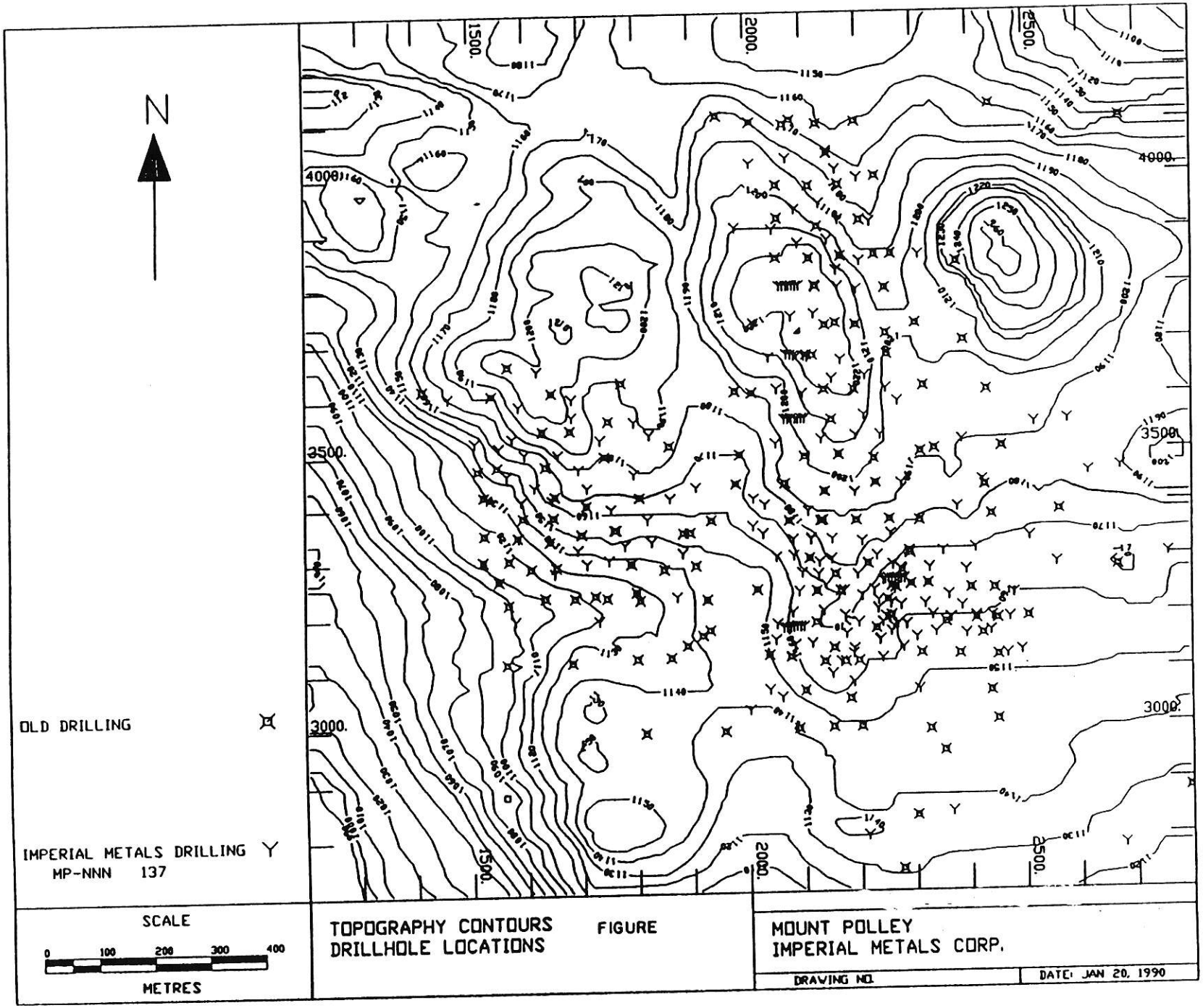
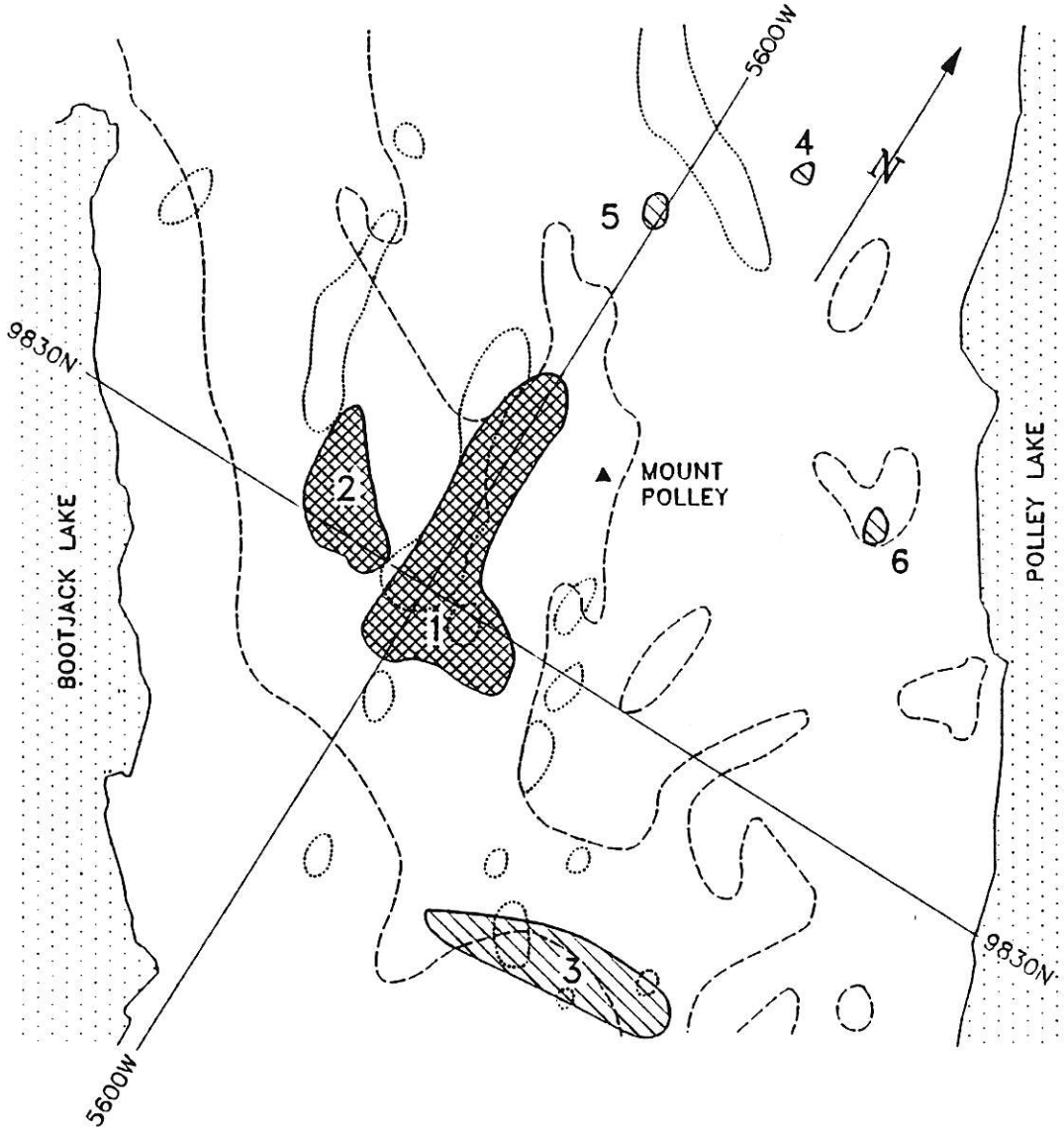

N
OLD DRILLING
IMPERIAL METALS DRILLING
MP-NNN 137
SCALE
0 100 200 300 400
METRES
TOPOGRAPHY CONTOURS
DRILLHOLE LOCATIONS
FIGURE
MOUNT POLLEY
IMPERIAL METALS CORP.
DRAWING NO.
DATE: JAN 20, 1990
1500.
2000.
2500.
3000.
3500.
4000.

FIGURE 4

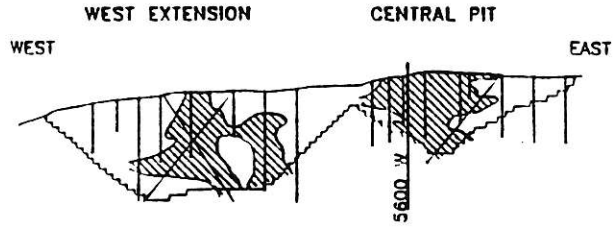
MOUNT POLLEY – COPPER GOLD DEPOSIT



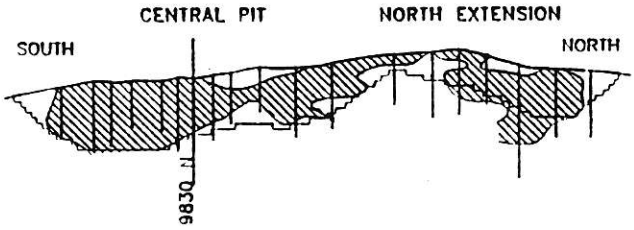
LEGEND:

- MINERALIZED ZONE (>0.30% Cu, >0.012 oz Au/t)
- 1 CENTRAL ZONE
- 2 WEST ZONE
- 3 SOUTH ZONE
- 4 ROAD ZONE
- 5 ZONE FIVE
- 6 ZONE SIX
- ORE RESERVES
- MAGNETIC HIGH
- Cu SOIL ANOMALY (>200 ppm)

100 0 100 200 300
METRES



SECTION 9830N



SECTION 5600W

FIGURE 5

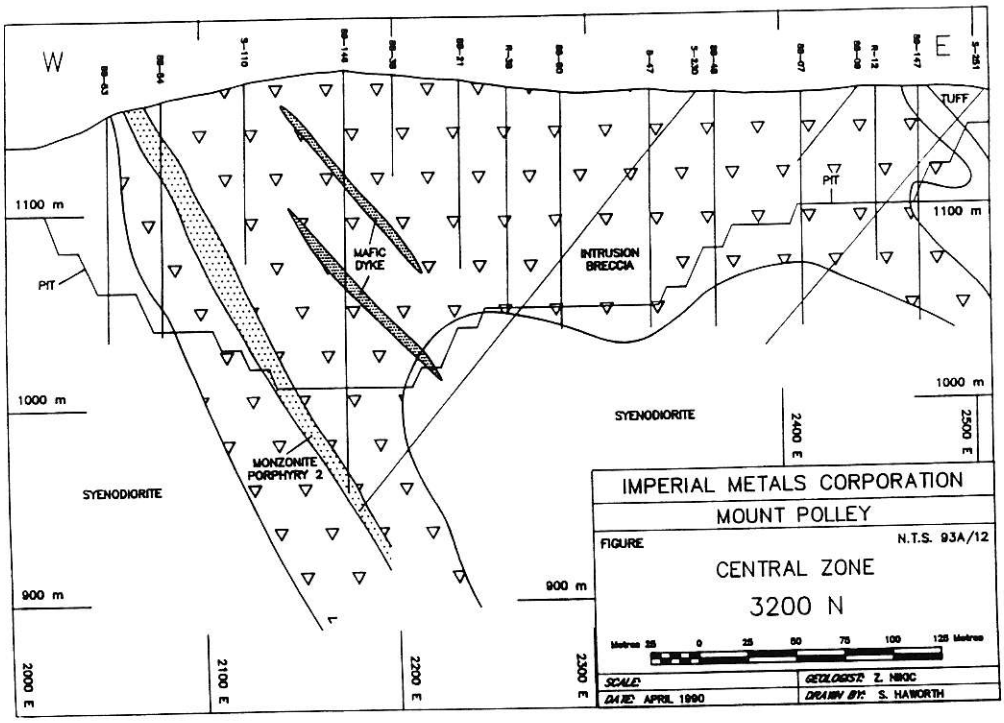


FIGURE 6

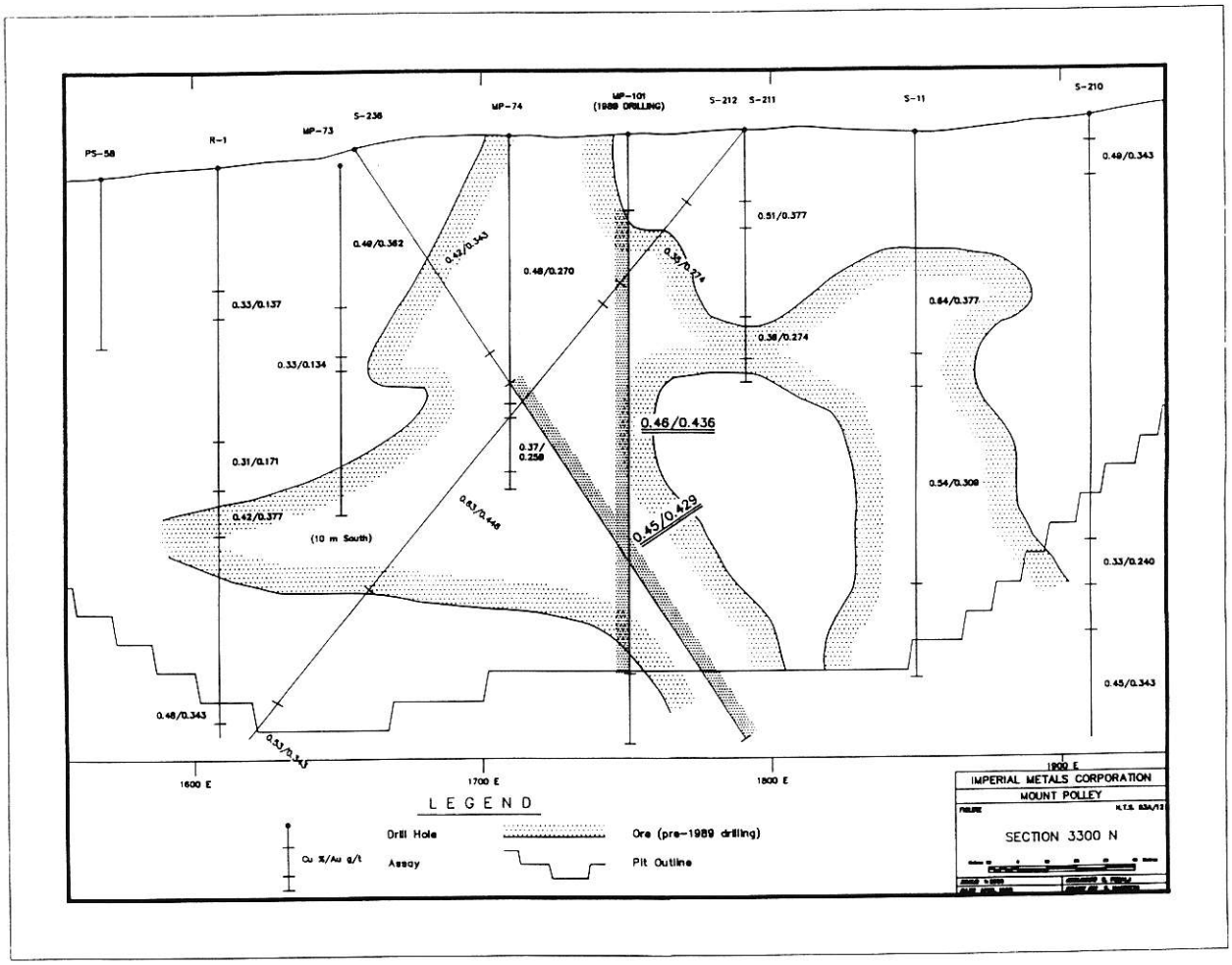


FIGURE 7

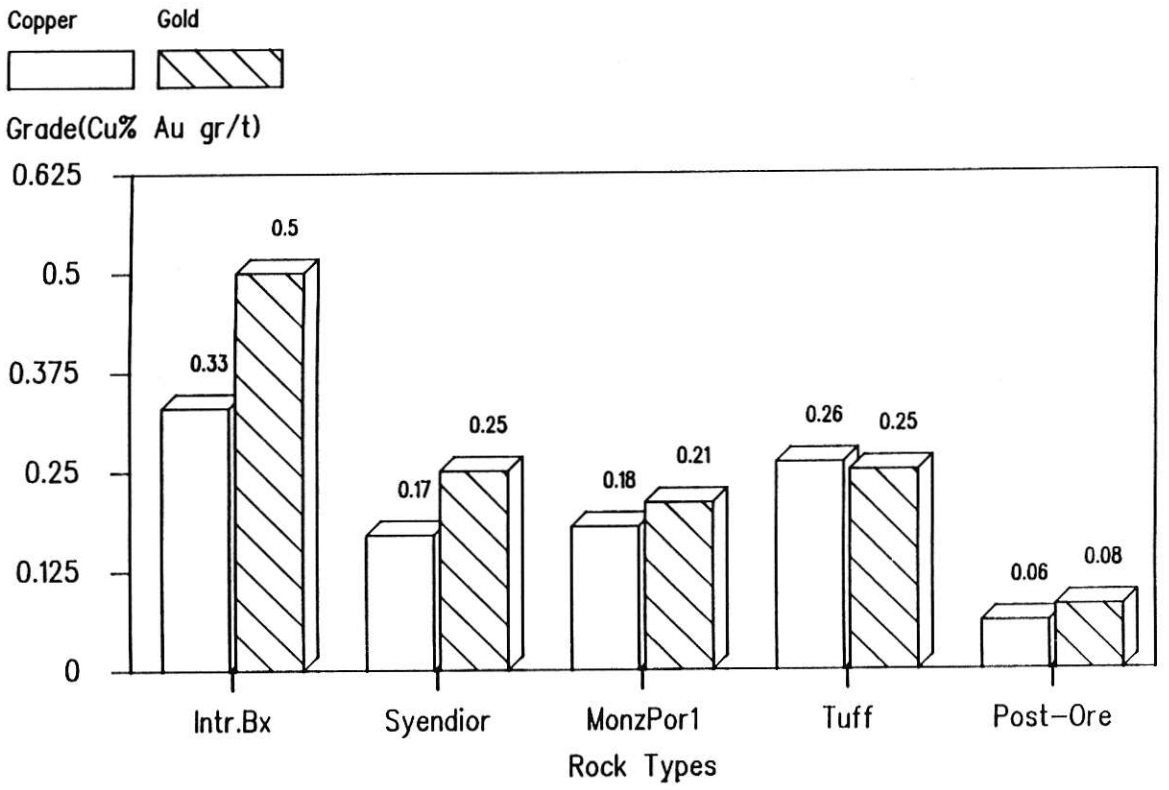

Mount Polley Grade of Various Rock Types
Copper
Gold
Grade(Cu% Au gr/t)
0.625
0.5
0.375
0.25
0.125
0
0.33
0.5
0.17
0.25
0.18
0.21
0.26
0.25
0.06
0.08
Intr.Bx
Syendior
MonzPor1
Tuff
Post-Ore
Rock Types

FIGURE 8

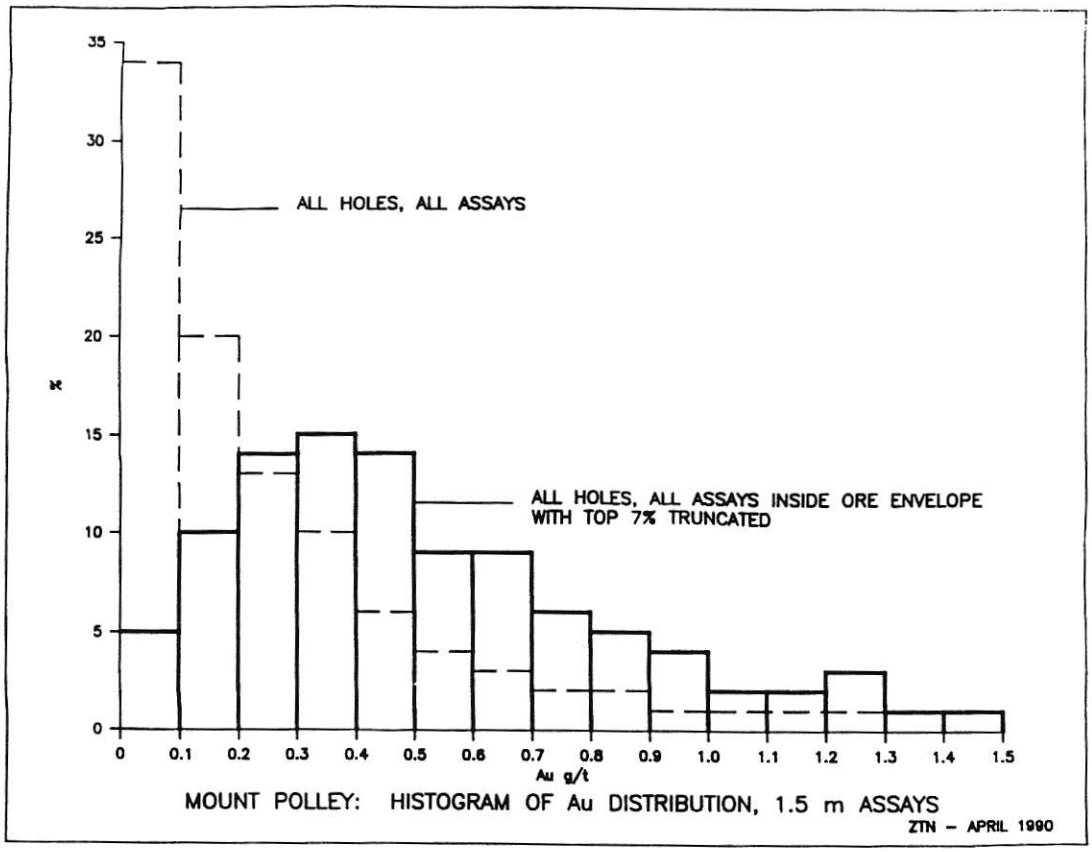


FIGURE 9

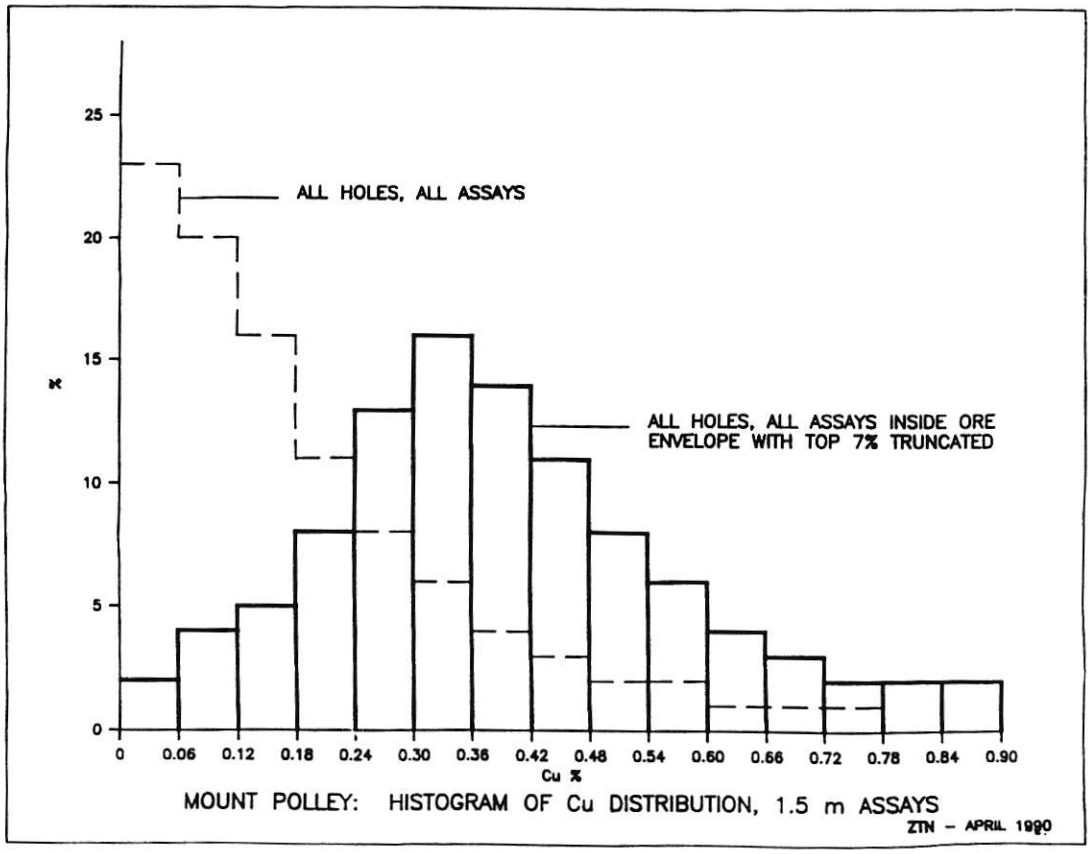


FIGURE 10

The entire length of each drill hole was sampled at 1.5 m intervals during Imperial's 1988 and 1989 drill programs. Histograms using the above assay data are given in Figures 8, 9 and 10 so as to illustrate the distribution of copper and gold.

MISC/RPTS/DG/90#1
May 18, 1990