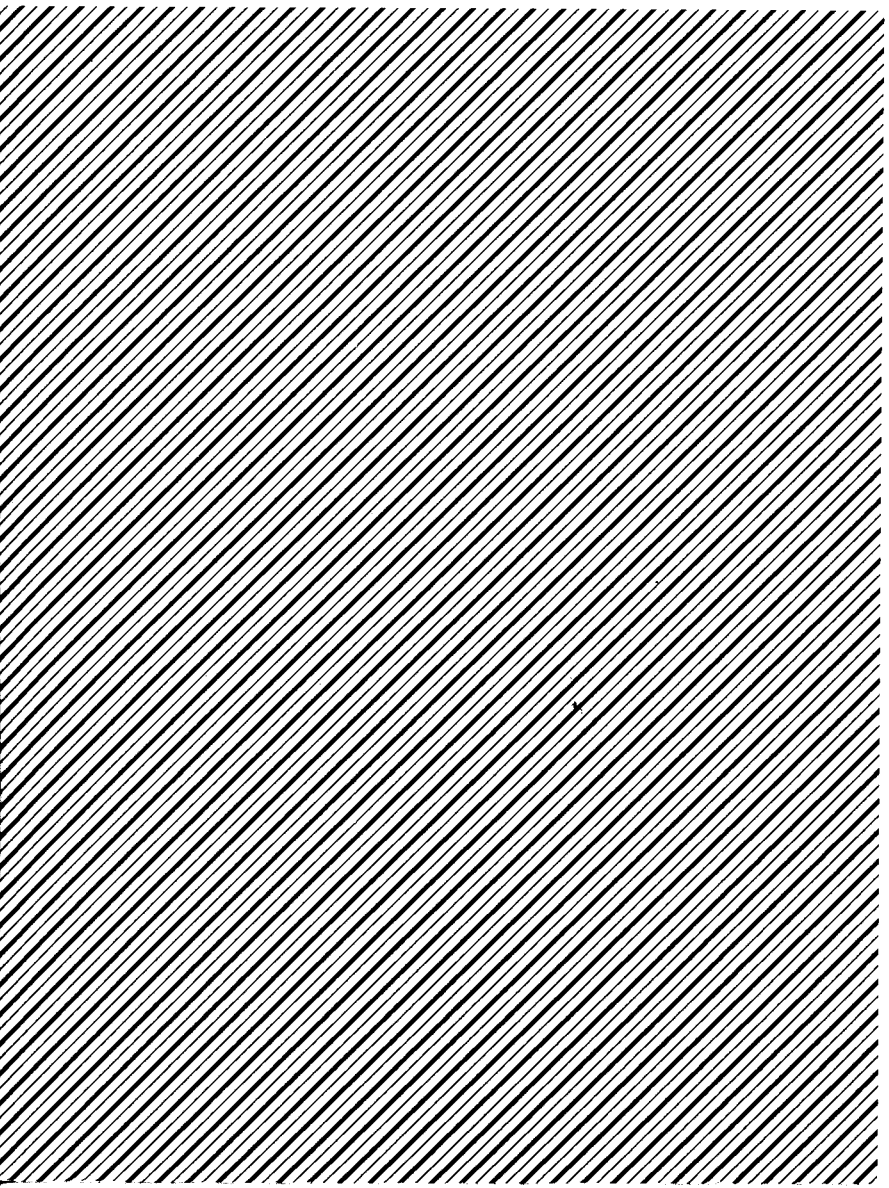
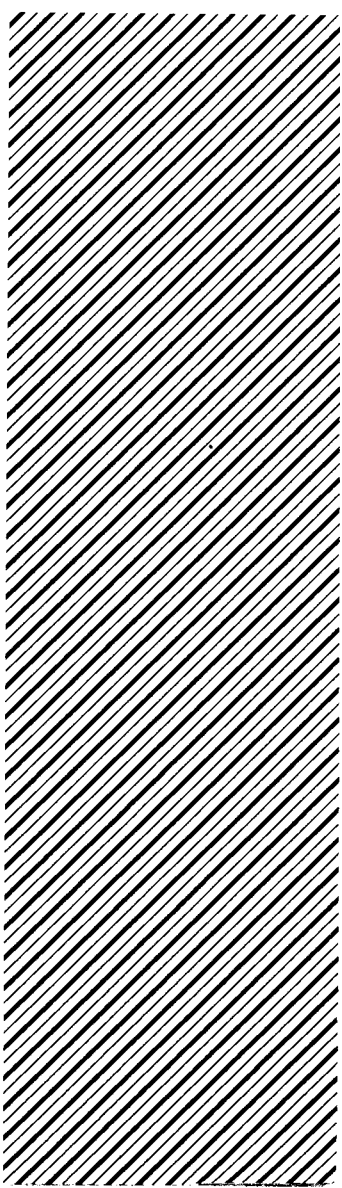
Province of
British Columbia
Ministry of
Energy, Mines and
Petroleum Resources

Mining in British Columbia

Volume I
Mine Production

1975
—
1980





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Mining in British Columbia

Volume I

Mine Production

By Mathew S. Hedley

1975

—

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Province of British Columbia
Ministry of
Energy, Mines and
Petroleum Resources

MINING IN BRITISH COLUMBIA (1975–1980)

FOREWORD

A continuing and relatively complete summary of mining activity was published as the Annual Report of the Minister of Mines, starting in 1874. A change in the form of presentation occurred, with a separation into two publications, in 1969. Much material was not made available in any form after 1974, and the record was consequently broken after 100 years. It is the intent of the present two-volume publication to repair this discontinuity, in order that the published record of activities at producing mines of all sorts is complete to the end of 1980.

The hiatus in the publishing of data was the result of changes in departmental functions and lack of appropriate personnel. The expanded Department, now the Ministry, is still in process of adopting a uniform series of annual publications once covered by a single volume.

In order that the reader who is intent on filling in the gaps in the record, once provided by a single annual report, may understand the development of events, a brief statement of the evolution of publications follows. The changes were in part brought about by the fact that the single volume had become too large and unwieldy.

An Annual Report of the Minister of Mines was published from 1874 to 1959, after which it was the Annual Report of the Minister of Mines and Petroleum Resources until 1979, when it became the Annual Report of the Ministry of Energy, Mines and Petroleum Resources.

The Annual Report of the Minister contained virtually all data and reportage of the mining industry from 1874 to 1968. In that span of time all statistics relating to metals, industrial minerals, placer gold, and coal; all descriptions of mines and mining activity; and a full report of the Chief Inspector of Mines were together in one annual volume.

In 1969, descriptive material was published separately in a single volume, referred to as Geology, Exploration and Mining in British Columbia (GEM). Descriptions of mines and production activity were eliminated in 1975, and Geology, Exploration and Mining was broken down into separate publications.

The annual report of the Chief Inspector of Mines was published in full until 1974. In succeeding years the report was drastically reduced in scope, with deletion of descriptions of fatal accidents and dangerous occurrences, certifications, etc.

The two-volume report, Mining in British Columbia (1975–80), is written to ensure that an unbroken published record of Ministry activity exists from 1874 to the end of 1980, in Annual Report of the Minister, in Geology, Exploration and Mining (GEM), and in the present report.

Volume I—Mine Production presents the location, a summary of activity, a brief description, and production statistics for essentially all active mines or properties in British Columbia that produced metals, non-metals, or coal in the period 1975–80.

Volume II—Report of the Chief Inspector presents the full activities of mines inspection, accidents, and safety practices in all types of mining. It provides an account of the work of the Inspection and Engineering Branch relating to all phases of mineral production, exclusive of conservation and reclamation.

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INTRODUCTION

The form of presentation of data relating to producing metal mines and properties has changed somewhat from past years. Prior to 1969, properties were listed according to Mineral Survey Districts and Mining Divisions. Starting in 1969, listing was by reference to latitude and longitude and by position according to the National Topographic System (NTS). This change was made because the Mineral Survey Districts no longer existed and their historical usefulness had vanished, and because map position is the only positive means of locating a mineral showing or property.

Because the present volume is the only six-year summary and because individual properties are listed in a slightly different manner, the following notes are intended to clear up uncertainties that may exist concerning the present format.

Individual mines and properties are listed alphabetically by Mining Divisions, which also are in alphabetical order. This is in accord with listing in the annual statistical tables.

Property locations are given precisely by latitude and longitude and the general geographic position by reference to an NTS map sheet, east or west half, at a scale of 1:50 000. Figure M-1, in pocket, graphically shows the locations of those properties which had an annual production of 1 000 tonnes or more, and the years in which such production was attained. Figure M-2, in pocket, shows the locations of all properties which are described in the text. The properties are numbered sequentially as they appear in the text.

References are to publications of the Ministry and of the Department of Mines, and to outstanding articles in publications readily available in libraries. The notation MI refers to the Mineral Inventory, a continuing record (Minfile) of data relating to mineral properties in the Province. It is the basic data file kept by the Ministry and was established in its present form, available to the public, in 1977.

Production figures were first compiled in metric units in 1975.

Metal production statistics are listed by year in Table M-1 at the end of the volume. The figures are the same as those published in Table 3-12 in the statistical section of each Annual Report of the Minister for the years 1975–80, and are included here for ready reference. The appropriate figures are also given under the description of each producing mine or property; this is done for added convenience to the reader.

In each year, 1975–80, production figures are shown in Table M-1 for several properties which are not otherwise mentioned. This means that such properties were not visited in that particular year by field officers of the Ministry, but that they made ore shipments, returns from which were available. In the six years, 50 such properties existed in the Slocan (*See* note under Slocan Shipping Mines, pp. 32 and 33) and about 40 elsewhere in the Province at large. These simply are ore sources, appearing one or more times in Table M-1, pages 53 to 75. They are not numbered.

METAL MINES

LYNX, MYRA, HW, PRICE (Fig. M-2, NTS 92, No. 1)

Alberni, M.D. Lat. 49°34′ Long. 125°35′ (92F/12E)

The Lynx mine is on the north side of Myra Creek and the Myra mine is on the south side, 1.5 kilometres west of the south end of Buttle Lake. The HW mine is near the Myra, and the Price mine is on the west side of Thelwood Creek, 1 kilometre southwest of the south end of Buttle Lake. Myra Creek is 88 kilometres by road from Campbell River.

The combined property is an extensive one, with many Crown-granted and recorded mineral claims. It was owned by Western Mines Limited until April 1981, when the name was changed to Westmin Resources Limited, 1103 Three Bentall Centre, 595 Burrard Street, Vancouver V7X 1C4.

The four mines are separate operations, but all ore was treated at a single concentrator adjacent to the Lynx mine. The Lynx mine started production in 1967, the Myra mine in 1972, and the Price and HW were under development in 1980. The concentrator had a capacity of about 1 000 tonnes per day; a separate circuit treated higher grade ore from the Myra mine. Tailings not used as backfill in cut-and-fill stopes were discharged deep into Buttle Lake. Mine water was discharged into settling ponds. Copper, and lead, and zinc concentrates were trucked to a ship-loading facility at Campbell River and shipped to various buyers.

The ore deposits consist of massive sulphides, including pyrite, chalcopyrite, sphalerite, and galena, occurring in volcanic rocks of the Sicker Group, rocks believed to have formed in a submarine environment. The massive sulphides are closely associated with rhyolitic volcanic rocks.

The Lynx, Myra, and Price mines are within a single structural-stratigraphic zone 400 to 500 metres thick, which has been traced over a strike length of 6 000 metres. The HW mine, under development in 1981, is at a stratigraphic level 100 metres lower.

In the mine area, rocks ranging from massive volcanic rock to breccias, tuffs, and clastic sediments have been affected by dynamothermal metamorphism. The Lynx, Myra, and Price mines are segments of a zone of rhyolite, other volcanic rocks, and ore. Large amounts of sericitic, siliceous, and pyritic rock occur beneath the orebodies. Schistosity (which may be folded) is localized primarily in sericitic altered rocks associated with the ore zones. The history of the zone is complex, as it contains rocks ranging from flows and breccias to fine-grained tuffs, all of which have undergone a probably long period of deformation and alteration.

Production from the Lynx mine was first from an open pit, but was entirely from underground by the end of 1975. The mine was developed from a shaft, extending from the No. 10 to the No. 16 level, and most ore was mined by cut-and-fill stoping. Mill tailings were used as backfill.

The Myra mine was developed by a decline driven from the portal at No. 11 level to No. 13 level. The workings were trackless and stoping was almost entirely by cut-and-fill, using mill tailings as backfill. Ore was stockpiled as normal or higher grade, and was trucked to the concentrator. Ventilation was by air drawn through an adit in the Price mine.

Complete statistics are not available, so it is not possible to give the tonnage from each mine for each year, but those tonnages were comparable in 1975 and 1977. In 1979, tonnage from the Lynx was more than twice that from the Myra.

The Price mine is a long-known mineral deposit that was developed as understanding of the geology was gained from the Lynx and Myra operations. It was partly developed in 1976 and 1977, was idle in 1978, and development resumed in 1979. The road from the Price No. 13 level was extended to the No. 9 level portal, which adit level was driven 448 metres; also, the road was extended to the portal of the Price No. 5 level. In 1980 the No. 5 level was driven 485 metres and No. 4 adit was driven 215 metres before work stopped for the winter.

The HW mine, 100 metres stratigraphically below the Myra ore zone, was discovered by a surface drill hole at a depth of 430 metres below Myra Creek valley. A shaft was collared and sunk 12 metres by the end of 1980. According to company sources, substantial reserves were indicated.

The camp, situated near the Lynx mine, was closed at the end of 1979 except for key operating and mill personnel. A number of the work force had for some years commuted from Campbell River, and, after the company purchased three buses in 1979, all hourly rated employees commuted from Campbell River and Courtenay each day.

References: *Minister of Mines, B.C.*, Ann. Rept., 1964, pp. 157–166; *CIM*, Bull., Dec. 1980, pp. 71–90; MI 92F-71, 72, 73.

Lynx and Myra Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	260 717	Copper concentrates, 7 892 t; lead concentrates 6 767 t; zinc concentrates, 30 597 t	642 837	35 977 151	2 707 398	3 459 337	18 090 898	70 372
1976	269 293	Copper concentrates, 8 830 t; lead concentrates, 7 093 t; zinc concentrates, 31 653 t	695 494	40 435 642	2 953 251	3 586 262	18 987 531	72 800
1977	269 068	Copper concentrates, 8 670 t; lead concentrates, 6 466 t; zinc concentrates, 31 247 t	632 075	34 909 727	2 856 881	3 356 196	18 607 822	72 139
1978	269 033	Copper concentrates, 11 485 t; lead concentrates, 6 463 t; zinc concentrates, 32 400 t	628 094	36 150 053	3 294 888	2 768 914	18 003 921	71 704
1979	266 877	Copper concentrates, 12 284 t; lead concentrates, 7 178 t; zinc concentrates, 34 069 t	802 688	37 990 999	3 595 016	3 137 575	18 933 570	79 887
1980	278 244	Copper concentrates, 6 997 t; lead concentrates 3 738 t; zinc concentrates, 32 642 t	444 126	20 453 988	1 880 636	1 568 857	17 918 936	76 262

ATLIN RUFFNER (Fig. M-2, NTS 104, No. 2)

Atlin M.D. Lat. 59°43.9′ Long. 133°31.2′ (104N/12E)

This old property is on Mount Vaughan, approximately 16 kilometres east of the Atlin Highway by road along Fourth of July Creek.

It was under investigation in 1975–76 by Atlin Silver Corporation; mine office, Atlin.

Silver-lead-zinc mineralization occurs as fissure fillings along cross-faults or dykes in granite. In the summer of 1975 a trailer camp was established and some stoping was done on the No. 2 vein system. A 50-tonne mill was partially built, and 137 tonnes of ore was shipped. The mill was completed in 1976, when 1 610 tonnes of ore was treated and 64 tonnes of concentrates was shipped.

Reference: MI 104N-11.

Atlin Ruffner Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	137	Crude ore	607	313 518	—	18 386	—	—
1976	1 610	Lead concentrates, 64 t	678	429 843	376	34 455	4 017	—

BOSS MOUNTAIN (Fig. M-2, NTS 93, No. 3)

Cariboo M.D. Lat. 52°06′ Long. 120°54′ (93A/2W)

This property of 90 mineral claims and fractions is on the eastern slope of Takomkane Mountain, 91 kilometres by road east from 100 Mile House and approximately 9 kilometres from the mine townsite at Hendrix Lake. It is owned by Boss Mountain Division of Noranda Mines, Limited; mine office, Hendrix Lake V0K 1R0.

The ore deposit lies within the Takomkane granodiorite batholith, near the younger Boss Mountain quartz monzonite stock. Molybdenite occurs in quartz-filled breccia zones and in quartz veins and stringer zones in subparallel swarms surrounding breccia pipes. It is thought that the brecciation was related to intrusion of the quartz monzonite stock.

Production began in 1965 at a nominal rate of 1 000 tonnes per day, and in the late 1970's was at a rate of about 2 100 tonnes per day.

Early production was entirely from underground, with methods adapted to circumstances, but in general by longhole drilling from sublevels and the use of scrapers and mucking machines. The mine was developed from an 1 800-metre adit and an internal shaft 270 metres deep.

By 1975 there was some concern regarding the life of the mine, and test work was done on a possible open pit. In 1976 underground reserves improved, and in 1977 an open pit was started, connected by raise to the mine workings. In 1978 about one-third of the production of 541 928 tonnes came from underground, and in 1979 a second pit was started. In 1980 nearly half the production came from underground, and a third open pit was started. In 1980 also, a new haulage road was begun, a primary crusher was installed for pit ore, and an autogenous grinding mill added to the concentrator. Test work on reclamation was done during 1975 to 1980.

References: *B.C. Ministry of Energy, Mines & Pet. Res.*, GEM, 1974, p. 234; MI 93A-1, 13 to 16.

Boss Mountain Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	545 496	Molybdenite concentrates, 1 927 t; containing 1 094 002 kg of molybdenum	—	—	—	—	—	—
1976	564 036	Molybdenite concentrates, 1 843 t containing 1 022 697 kg of molybdenum	—	—	—	—	—	—
1977	523 453	Molybdenite concentrates, 2 035 t containing 992 588 kg of molybdenum	—	—	—	—	—	—
1978	541 928	Molybdenite concentrates, 1 384 t containing 764 516 kg of molybdenum	—	—	—	—	—	—
1979	496 108	Molybdenite concentrates, 1 094 t containing 614 961 kg of molybdenum	—	—	—	—	—	—
1980	533 254	Molybdenite concentrates, 1 523 t containing 769 806 kg of molybdenum	—	—	—	—	—	—

GIBRALTAR (Fig. M-2, NTS 93, No. 4)

Cariboo M.D. Lat. 52°31′ Long. 122°17′ (93B/9W)

Approximately 19 kilometres north of McLeese Lake, on the western slopes of Granite Mountain and on Granite Creek.

Gibraltar Mines Ltd., Box 130, McLeese Lake, is a subsidiary, 72 per cent owned, of Placer Development Limited. The property comprises (1980) 326 mineral claims and leases.

The ore zone is a porphyry copper-molybdenum deposit. It occurs in a leucocratic phase of a Triassic pluton of variable compostion. The mine phase, which contains the ore zone, is a quartz diorite that has been altered and deformed.

The ore occurs in an elliptical zone measuring about 3.2 kilometres by 1.6 kilometres, parallel with an original igneous foliation dipping steeply southward. Mineralization took place within a complex history of deformation, which involved folding of mineralized foliations.

Ore minerals are chalcopyrite and molybdenite. The Gibraltar East and Pollyanna pits have well-defined zones containing supergene chalcocite.

Four orebodies are known, of which three, Gibraltar East, Granite Lake, and Pollyanna, have been mined by open pit. The Gibraltar West orebody was diamond drilled in 1980 with a view to future production.

The concentrator was designed for 30 000 tonnes per day and has an actual capacity of more than 41 000 tonnes per day. It has been in operation since 1972.

The Gibraltar East pit was developed first and was mined from 1972 to September 1974, when the Granite Lake pit was brought into production and was mined until September 1977. In 1977 production was begun in the Pollyanna pit and continued until mid-1980. All of this activity was what was termed Phase I operation.

Phase II mining in the Gibraltar East orebody started in July 1980, and preparation for Phase II mining in the Granite Lake pit began in 1980. Also in 1980, exploratory diamond drilling was done on the Pollyanna and Gibraltar West zones. Phases I and II operations were based on economic considerations. Initial plans were made to mine, first, ore of higher grade, to reduce capital indebtedness at as rapid a rate as possible in the early life of the operation.

Reclamation practiced through 1975–80, involved aerial seeding and fertilization, and planting coniferous seedlings.

References: *B.C. Ministry of Energy, Mines & Pet. Res.*, GEM, 1973, pp. 299–318; MI 93B-6, 7, 12, 13.

Gibraltar Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	10 388 118	Copper concentrates, 155 736 t; molybdenite concentrates, 470 t; containing 251 672 kg of molybdenum	—	5 391 611	41 165 032	—	—	—
1976	7 762 296	Copper concentrates, 101 722 t	—	3 343 168	26 142 438	—	—	—
1977	12 764 959	Copper concentrates, 144 317 t; molybdenite concentrates, 258 t, containing 137 202 kg of molybdenum	—	3 310 292	40 255 709	—	—	—
1978	5 135 655	Copper concentrates, 74 705 t; molybdenite concentrates, 238 t containing 119 174 kg of molybdenum	—	3 265 628	19 713 622	—	—	—
1979	10 446 035	Copper concentrates, 115 388 t; molybdenite concentrates; 752 t; molybdic trioxide, 25 t containing 408 676 kg of molybdenum	—	3 373 452	32 217 953	—	—	—
1980	12 644 000	Copper concentrates, 119 325 t; molybdenite concentrates, 17 t; molybdic oxide, 987 t containing 528 461 kg of molybdenum	—	4 639 395	32 672 960	—	—	—

MOSQUITO CREEK (Fig. M-2, NTS 93, No. 5)

Cariboo M.D. Lat 53°07′ Long. 121°36′ (93H/4E)

This property of 25 Crown-granted mineral claims is on the eastern flank of Island Mountain near the headwaters of Mosquito Creek. It is at an elevation of about 1 400 metres, about 4 kilometres from Wells.

It is owned by Mosquito Creek Gold Mining Company Limited, Box 6808, Calgary, Alberta.

The company was formed in 1971 by A. H. Jukes to explore long-known mineralization close to the former Island Mountain mine, particularly to explore what has been known in

mine parlance as the Rainbow-Baker contact, a site for gold-quartz veins and pyritic replacements in limestone.

As a result of initial exploration a shaft was sunk 157 metres in 1974 and underground development was done in 1975. In 1979 more lateral work was done, and some 1 000 tonnes of ore was mined and stockpiled. A concentrator, started in 1979, was completed early in 1980 and 11 419 tonnes of ore was milled.

Reference: MI 93H-10.

Mosquito Creek Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1980	11 419	Gold bullion	136 869	36 885	—	—	—	—

SULLIVAN (Fig. M-2, NTS 82, No. 6)

Fort Steele M.D. Lat. 49°43′ Long. 116°01′ (82F/9E; 82G/12W)

The Sullivan mine and concentrator are within the city limits of Kimberley. The mine is on Mark Creek, 3.2 kilometres north of city centre and the concentrator is 3.2 kilometres south of city centre. The owner is Cominco Ltd., 200 Granville Street, Vancouver V6C 2R2.

Geology

The Sullivan orebody, one of the largest base metal deposits in the world, is a lens-like body approximately 9 000 metres in diameter and 100 metres thick in its central part. It is tilted to the east. It is conformable with the transition zone between the sedimentary rocks of the Lower and Middle Aldridge Formation, and is believed to have formed in a small submarine basin.

The western part of the deposit lies directly above its conduit zone, the brecciated and altered footwall of the deposit. Linear, north-trending breccia zones, disseminated and vein sulphides, and extensive alteration to a dark, dense chert-like tourmaline-rich rock are conspicuous features of the altered footwall. Albite-chlorite-pyrite alteration, restricted to the western part of the deposit, occurs in crosscutting zones in the footwall tourmalinite, within the orebody itself, and in the hangingwall, up to 100 metres above the orebody.

The principal sulphides are pyrrhotite, sphalerite, galena, and pyrite. Chalcopyrite and arsenopyrite are minor constituents. Boulangerite is locally prominent, magnetite is fairly common, and small amounts of cassiterite occur widely but are commonest in the western part. In general, metal distribution patterns are directly related to nearness to zones of chaotic breccia; higher absolute values, and higher lead-zinc and silver-lead ratios, overlie the breccia zones. The western part of the deposit is more massive than the eastern part, which includes five distinct, conformable layers of generally well-laminated sulphides separated by clastic (silty) rocks. The sulphide layers thin to the east, away from a transition zone between the western and eastern parts of the orebody, and at the limits of the deposit are composed of iron sulphide bands.

Operations

Mining in the past was in open stopes, leaving substantial pillars. The stopes were later filled with surface gravels, caved waste, float material from the sink-float plant, and in some cases tailings to form seals. The mining of pillars became an increasingly important part of operations, and now much of the ore remaining in the mine is in pillars.

In areas of the mine which are close to surface, generally favourable ground conditions are encountered, although some roof support may be required locally in blocky ground. In some of the deeper areas of the mine, incompetent hangingwall rocks have created significant problems of ground support.

Subsidence has occurred over mined-out areas. Caves have formed and have in some instances been filled with gravel. An extensive program of ground surveillance was carried out during the years 1975 to 1980, to monitor the extent and progress of the subsidence.

Production of spontaneously heated ore (hot ore) has been a continuing problem for many years, and although latterly it has been better under control, procedures to minimize the heating of the ore and to contain the resultant sulphur dioxide remain a problem.

In 1975 a start was made on conversion to trackless mining with diesel-powered equipment, and this work was still in progress in 1980. Primary access was provided to some areas, and the air quality and flow were extensively monitored. As part of an overall upgrading of the mine ventilation system, two new ventilation shafts were started in 1980.

Ore production was mainly by longhole blasting, with recovery by slusher sublevels or trackless drawpoints beneath the ore blocks. In 1979 one pillar was mined with a method of sublevel caving, and several pillars were so mined in 1980. A few small open stopes were operated as well.

During the four-year period 1977–80 there was driven a yearly average of 4 300 metres of raises, 3 800 metres of drifts, and 1 100 metres of underground ore-outline diamond drilling. In 1977, five holes were diamond drilled from surface as part of an exploration program; one of these holes was drilled to 1 372 metres. An underground exploratory hole was started with a projected ultimate depth of 1 500 metres.

The Sullivan open-pit mine was reactivated in 1980, and from start of preparation in April until late November, approximately 300 000 tonnes of ore was mined. Small air-track drills worked on a 7.6-metre bench height and a 7.6-metre berm width. Stripping ratio in 1980 was 0.33 to 1.

At the concentrator, crushing capacity of 9 100 tonnes per day was increased in 1980 to crush the open-pit ore separately. Capacity of the open-pit circuit was 2 200 tonnes per day. Grinding capacity of 7 330 tonnes per day remained unchanged. A pilot plant for the flotation of cassiterite operated for a brief period in June and July.

Construction began in 1978 of a drainage water treatment plant designed to process 18 000 litres per minute to standards approved by the Pollution Control Branch. This plant was designed to remove dissolved metals from effluents from the mine, iron concentrates pond, and the siliceous tailings pond. It was put in operation in August 1979.

The total number of employees at the end of 1980 was 1 059, including operating, maintenance, and staff.

The most recent Cominco annual report, issued at the April 1980 Annual Meeting, listed the Sullivan mine reserves as 48 980 000 tonnes with a lead-zinc metal content of 10.4 per cent.

Reference: MI 82F/NE-52.

Sullivan Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	2 002 916	Lead concentrates, 91 131 t; zinc concentrates, 151 683 t; tin concentrates, 49 t containing 24 868 kg of tin	5 132	73 570 507	437 533	68 047 946	75 418 513	34 701
1976	2 124 886	Lead concentrates, 109 140 t; zinc concentrates, 125 t containing 66 183 kg of tin	—	84 586 817	—	77 065 578	77 435 404	—
1977	2 194 222	Lead concentrates, 106 264 t; zinc concentrates, 426 t containing 181 278 kg of tin	—	89 609 454	—	75 125 898	76 890 967	—
1978	2 107 869	Lead concentrates, 134 270 t; zinc concentrates, 119 716 t; tin concentrates, 561 t containing 236 339 kg of tin	—	114 039 181	—	88 863 212	64 417 720	—
1979	2 047 726	Lead concentrates, 142 223 t; zinc concentrates, 130 512 t; tin concentrates, 549 t containing 207 095 kg of tin	—	107 342 730	—	92 146 668	70 745 854	—
1980	2 132 416	Lead concentrates, 115 714 t; zinc concentrates, 94 518 t; tin concentrates, 335 t containing 113 056 kg of tin	—	86 394 417	—	76 095 523	51 804 218	—

RUTH VERMONT (Fig. M-2, NTS 82, No. 7)

Golden M.D. Lat. 50°57′ Long. 116°59′ (82K/15W)

This property is 40 kilometres southwest of Golden, on Vermont Creek, a tributary of Vowell Creek. It consisted in 1976 of 43 Crown-granted and recorded mineral claims.

It is owned by Consolidated Columbia River Mines Ltd., company office, 73 Water Street, Vancouver V6B 1A1.

The property is an old one and was acquired by the above company in 1965, when a considerable amount of work was done. A mill was later built, and production ensued for a time. Following closure, the mine was reopened in June to December of 1973. In January 1974 snowslides from both sides of the valley caused extensive damage. Reopened in 1975, with a concentrator capacity of 600 tonnes per day, the mine again closed in December 1976 from fear of snowslides. There has been no production since.

Mineralization is in numerous narrow veins crossing strata of the Horsethief Creek Group. A prominent band of limestone, 9 to 15 metres thick, known as the Ruth limestone, is replaced by sulphides in zones closely controlled by fracturing.

Mining in 1976 was on the 6000 level and ore was transferred to the 5750 level to be trammed to the concentrator. Stoping was also started on the Pine Tree vein.

Clean-up at the concentrator in 1978 and 1979 yielded 98 tonnes of lead and zinc concentrates.

References: *Minister of Mines, B.C.*, Ann. Rept., 1966, p. 230; MI 82K/NE-9.

Ruth Vermont Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	10 258	Lead concentrates, 356 t; zinc concentrates, 342 t	453	1 110 066	3 414	210 279	217 213	1 385
1976	60 752	Lead concentrates, 1 504 t; zinc concentrates, 2 244 t	2 830	5 025 312	14 435	949 099	1 276 240	9 003
1978	62	Clean-up; lead concentrates, 20 t; zinc concentrates, 42 t	—	75 083	384	13 600	21 901	166
1979	36	Clean-up; lead concentrates, 34 t; zinc concentrates, 2 t	26	20 964	—	3 981	5 459	—

BURNT BASIN (Fig. M-2, NTS 82, No. 8)

Greenwood M.D. Lat. 49°10.5′ Long. 118°07.5′ (82E/1E)

This old group of Crown-granted claims, including Burnt Basin, Halifax, and Eva Bell, lies west of No. 3 Highway, about 15 kilometres by road east of Christina Lake. It is owned by Donna Mines Ltd., 1105—64th Avenue, Delta, and work was under the direction in 1977 of Paulson Mines Ltd. of the same address.

A small crew shipped 786 tonnes of ore in 1975, and 573 tonnes in 1976 to the HB concentrator and to the Reeves MacDonald concentrator, respectively.

In 1977, three BQ holes were diamond drilled 182 metres on the Halifax and four BQ holes 175 metres on the Eva Bell.

Reference: MI 82E/SE-81, 99, 102, 169.

Burnt Basin Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	786	Lead concentrates, 25 t; zinc concentrates, 98 t	—	49 235	—	23 223	37 825	253
1976	573	Lead concentrates, 33 t; zinc concentrates, 56 t	—	35 209	—	18 714	27 897	142

HIGHLAND BELL (Fig. M-2, NTS 82, No. 9)

Greenwood M.D. Lat. 49°26′ Long. 119°04′ (82E/6E)

The mine is on the western slopes of Wallace Mountain; the lowest or 2900 haulage adit is about 2 kilometres from the office at Beaverdell. Other haulage adits are the 3650 and 3800 levels. The concentrator is on the flat below Beaverdell.

The owner is Teck Corporation; executive office, 1177 West Hastings Street, Vancouver; mine office, Beaverdell.

The orebodies are in a vein system in altered granodiorite, the alteration being most intense in the vein walls. There has been extensive block faulting, with production of many vein segments, creating problems in development and mining. The mine is one of the oldest in the district, having produced silver ore since 1916 almost without interruption. A 50-tonne mill was built in 1950.

From 1975 to 1977 mining consisted almost entirely of salvage work on pillars and in abandoned stopes. In 1978, exploration and development work was done under the Accelerated Mineral Development Program, and about a year and a half's additional reserve of ore was reported to have been established by this work. The concentrator treated an average of 34 450 tonnes per year from 1975 to 1979 and in 1980 the year's tonnage increased to 39 457 tonnes. Ore was trucked from mine portals to the mill, and concentrates were trucked to the Trail smelter. A yealy average of 37 employees was increased to 46 in 1980.

References: *Minister of Mines, B.C.*, Ann. Rept., 1949, pp. 145–148; MI 82E/SW-30, 72, 133.

Highland Bell Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	34 898	Lead concentrates, 704 t; zinc concentrates, 239 t; jig concentrates, 33 t	4 852	11 131 172	—	132 745	136 173	1 304
1976	34 447	Lead concentrates, 733 t; zinc concentrates, 299; jig concentrates, 103 t	5 536	11 583 379	—	147 978	186 168	1 219
1977	33 977	Lead concentrates, 572 t; zinc concentrates, 245 t; jig concentrates, 121 t	5 443	12 030 423	328	122 710	139 565	723
1978	35 280	Lead concentrates, 439 t; zinc concentrates, 403 t; jig concentrates, 121 t	4 012	11 333 062	865	105 933	139 279	977
1979	33 664	Lead concentrates, 388 t; zinc concentrates, 399 t; jig concentrates, 97 t	4 199	10 259 637	613	93 324	140 679	1 000
1980	39 457	Lead concentrates, 333 t; zinc concentrates, 386 t; jig concentrates, 98 t	3 359	10 757 821	389	93 278	145 325	1 080

DENERO GRANDE, JEWEL (Fig. M-2, NTS 82, No. 10)

Greenwood M.D. Lat. 49°09.5′ Long. 118°37′ (82E/2E)

This old property of 10 Crown-granted mineral claims is southeast of the southern end of Jewel Lake, 8 kilometres northeast of Greenwood. It is owned by W. E. McArthur of Greenwood, and work was done on it in 1975 by Colt Resources Ltd., 475 Howe Street, Vancouver.

In the claim area, an epithermal quartz vein containing gold and silver tellurides and galena cuts a granodiorite intrusion in contact with altered volcanic rocks and quartzites. In 1975, 80 metres of drifting was done on the 250 level, and 62 metres of sub-drifting. An emergency escapeway raise was driven to surface. Open stoping was done, with lower

grade sections of the vein left as pillars. A total of 1 859 tonnes of siliceous ore was shipped to the Trail smelter.

Work stopped in September pending economic studies.

Reference: MI 82E/SE-55.

Denero Grande, Jewel Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	1 859	Crude ore	17 698	108 643	—	4 912	2 122	—

PHOENIX (Fig. M-2, NTS 82, No. 11)

Greenwood M.D. Lat. 49°06′ Long. 118°36′ (82E/2E)

This property of some 200 Crown-granted and recorded mineral claims is at the now vanished town of Phoenix, approximately 5.5 kilometres east of Greenwood. The original mine workings were on the Old Ironsides and Knob Hill Crown-granted claims.

The Phoenix mine pit closed in August 1976, marking the end of an important era in British Columbia mining history. It was the third major Granby operation to close, finally; the other two were at Anyox and Copper Mountain.

At the time of closure in 1978 the Phoenix mining operation was owned by Granby Mining Corporation, which merged in 1979 to form Zapata Granby Corporation. The latter company was acquired by Noranda, and the name changed in 1980 to Zapata Canada Incorporated.

The original mineral discovery at Phoenix was made in 1891, when the Old Ironsides and Knob Hill were located, and development of these and nearby mineral claims soon started. The Granby smelter at Grand Forks was blown in in the fall of 1900 and ore was brought to it by the forerunner of the Canadian Pacific Railway from the Old Ironsides and Knob Hill mining companies, all with interlocking ownerships, soon to become The Granby Consolidated Mining, Smelting and Power Company Limited. The first ore shipments were at the rate of 700 tonnes per day, and increased to almost 4 500 tonnes per day on completion of a second rail connection by the Great Northern Railway in 1904. Production came first from the above-mentioned claims and later also from the Gold Drop, Snowshoe, Rawhide, and other claims, chiefly the Gold Drop.

The early underground workings were augmented by glory holes and open pits, and the combined operations were suspended in June, 1919, due to a strike in the Fernie coalfields and due to exhaustion of the orebodies under the then existing conditions. The property remained idle for many years until W. E. McArthur, Senior acquired much of the ground and mined relatively small bodies of higher than average grade, shipping to a small concentrator that he controlled, on the outskirts of Greenwood. This work was done in the late 1930's and early to mid 1940's.

In 1956 a reappraisal was made of the old mine with a view to open-pit mining, a 540-tonne-per-day concentrator was built close to the mine, and open-pit production started in 1959. Exploration being successful, the mill capacity was increased to 810 tonnes the following year. Continued exploration added to the reserves so that the capacity was raised in 1964 to 1 710 tonnes, and in 1972 to the final rated capacity of 2 485 tonnes per day.

In August, 1976 the Granby mining operation at Phoenix came to an end for the second and last time, although the mill continued to treat low-grade stockpiled ore. In 1977, 832 583 tonnes of stockpiled ore with a grade of 0.386 per cent copper was milled, leaving an estimated reserve of 115 000 tonnes grading 0.37 per cent copper. In 1978, a total of 237 801 tonnes of low-grade Phoenix ore was milled, together with 290 724 tonnes of ore from the Lone Star mine in northern Washington. All operations ceased on October 4, 1978, and all assets were sold at public auction on October 31, 1978.

At the close of operations, four spillways were constructed around the various water impoundments at the site, to accord with recommended guidelines. Some reclamation work, such as grading waste dumps, spreading topsoil, fertilizing, and seeding, continued into 1979.

The total production of the Granby company from Phoenix follows. Ore shipped to the smelter at Grand Forks from 1900 to 1919; ore concentrated in 1959 and subsequently.

1900–1919: 12 434 620 tonnes mined—Gross metal content:
Gold, 29 890 333 grams
Silver, 129 614 194 grams
Copper, 163 550 454 kilograms

1959–1978: 9 070 560 tonnes mined—Gross metal content in concentrates:
Gold, 7 258 879 grams
Silver, 52 579 405 grams
Copper, 71 587 498 kilograms

Reference: MI 82E/SE-20, 21.

Phoenix Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	985 875	Copper concentrates, 15 797 t	366 978	3 657 215	4 220 275	—	—	—
1976	965 845	Copper concentrates, 15 435 t	364 620	3 261 367	4 231 760	—	—	—
1977	832 583	Copper concentrates, 10 226 t	268 238	1 748 891	2 695 517	—	—	—
1978	237 801	Copper concentrates, 2 645 t	120 555	924 599	912 728	—	—	—

RIVERSIDE (Fig. M-2, NTS 82, No. 12)

Greenwood M.D. Lat. 49°06.7′ Long. 118°58.2′ (82E/2W)

The Riverside and other Crown-granted mineral claims are on the east bank of the Westkettle River, 16 kilometres north of the village of Rock Creek. They were held by lease in 1980 by Dee Lil Resources Ltd., Rock Creek; S. Kemaleddine, Manager.

The property was included in an adjoining recreational park, when the park boundaries were extended under an Order in Council. Subsequently, a conflict of interests existed when the Riverside adit was reopened and a total of 500 tonnes was mined and stockpiled. A shipment of 85 tonnes was made in 1979 and 8 tonnes in 1980.

In 1980 a small mill was assembled but was not in use. It has since been reported, by the owner of the claims, that the mill was vandalized and the equipment returned to the original owner.

A cease and desist order by the Chief Inspector was still in effect on this property at the end of 1980.

Reference: MI 82E/SE-114.

Riverside Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1979	85	Crude ore	93	16 889	—	460	591	—
1980	8	Crude ore	61	303	—	17	2	—

SKOMAC (Fig. M-2, NTS 82, No. 13)

Greenwood M.D. Lat. 49°03.5′ Long. 118°42′ (82E/2E)

Robert Mines Ltd.; K. Schindler, President.

This old property is just north of Boundary Falls, 5.5 kilometres south of Greenwood. A few carloads of ore was mined in 1904, and 670 tonnes was shipped in 1962–64 by Skomac Mines Ltd. The present company gained control in 1974 and shipped 434 tonnes of ore in 1975 and 548 tonnes in 1976.

The vein system dips northeastward, mainly in black argillite of the Skomac Formation, near a contact with intrusive grandiorite-diorite, from which numerous dykes and tongues cut the metasedimentary rocks.

In 1977, some geochemistry and geological mapping was done and seven holes totalling 245 metres were diamond drilled.

References: *Minister of Mines, B.C.*, Ann. Rept., 1964, p. 110; *B.C. Ministry of Energy, Mines & Pet. Res.*, Geological Fieldwork, 1976, Paper 1977-1, pp. 9, 10; MI 82E/SE-172, 173, 174, (Nonsuch, Last Chance, Republic).

Skomac Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	434	Crude ore	2 146	301 606	—	13 067	8 439	—
1976	548	Crude ore	1 327	221 355	—	16 122	8 651	—

AFTON (Fig. M-2, NTS 92, No. 14)

Kamloops M.D. Lat. 50°39.5′ Long. 120°30.5′ (92I/10E)

The Afton mine is alongside the Trans-Canada Highway, 13 kilometres west of Kamloops, at 640 metres elevation. Afton Mines Ltd., controlled by Teck Corporation since 1975, merged in 1981 with that corporation, 1199 West Hastings Street, Vancouver, V6E 2K5.

Copper mineralization has been known in this region for many years, and part of the Afton orebody is on a Crown-granted mineral claim located in 1904. The present Afton claims were located in 1949 and surface drilling was done in subsequent years. In 1971 C. F. Millar, for Afton Mines Ltd., drilled percussion holes that discovered the Afton porphyry copper orebody.

Decision for production was reached in 1975, and in 1976 plant construction and pit preparation were started. The open pit was in operation from April 1977, an 8 000-tonne-per-day concentrator started up in December 1977, and a smelter (a top blown rotary converter) was blown in in March 1978. Capacity operation was attained in March 1979.

The orebody is at the northwestern extremity of the Iron Mask batholith, a subvolcanic multiple intrusion ranging from diorite to syenite. Ore occurs in late-phase plutonic rocks, including latite porphyry and related breccias. Hypogene ore contains fine-grained bornite and chalcopyrite and blebs and veinlets of those minerals. Supergene ore extends to a depth of some 400 metres, and contains metallic copper and chalcocite. Company figures in 1976 gave, to an explored depth of 600 metres, a reserve of 30.84 million tonnes of open-pit ore grading 1.0 per cent copper with a 0.25 per cent copper cutoff. Most of this was supergene, enriched ore.

In 1980 the concentrator treated 7 500 tonnes per calendar day, and the smelter produced 22 510 tonnes of blister copper. Because of the presence of metallic copper, gravity treatment was employed in addition to flotation.

Water was pumped from Kamloops Lake and was partly reclaimed. Tailings were impounded at Hughes Lake. Pollution control and reclamation were planned from the start of operations.

References: *B.C. Ministry of Energy, Mines & Pet. Res.*, GEM, 1972, pp. 209–220; *CIM*, Porphyry Deposits of the Canadian Cordillera, 1976, pp. 376–387; MI 92I/NE-23.

Afton Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1977	122 340	.....	—	—	—	—	—	—
1978	2 456 757	Copper concentrates, 18 176 t; blister copper, 5 995 t	1 022 791	5 524 701	15 429 468	—	—	—
1979	2 822 850	Copper concentrates, 10 249 t; blister copper, 19 827 t	1 860 022	9 365 673	25 611 766	—	—	—
1980	2 739 799	Copper concentrates, 5 058 t; blister copper, 22 510 t	1 431 195	8 859 577	24 221 282	—	—	—

BETHLEHEM (Fig. M-2, NTS 92, No. 15)

Kamloops M.D. Lat. 50°29.5′ Long. 120°59′ (92I/7W)

The Bethlehem porphyry copper-molybdenum deposit is on the north side of the Highland Valley, 48 kilometres southeast of Ashcroft. It is the first such mine to be operated in the district, having been in production since December 1962.

It is owned by Bethlehem Copper Corporation, 1055 West Hastings Street, Vancouver; mine office, Box 520, Ashcroft (a subsidiary of Cominco Ltd. since February 1981).

Four orebodies have been mined by open pit: the East Jersey (mined prior to 1975), Jersey, Huestis, and Iona deposits. They are largely within the Bethlehem (younger) phase of the Guichon Creek granodiorite batholith at the irregular intrusive contact between these phases. Mineralization is located particularly in areas of explosion breccia and intrusive dacite porphyry dykes which are part of a north-trending dyke swarm 34 kilometres long. The Huestis zone contains very little breccia and few dykes; in it the ore is fracture controlled.

The Bethlehem orebodies exhibit zoning of metallic and non-metallic minerals. Peripheral zones of specularite and epidote, and intermediate zones of pyrite and white mica surround a central copper-rich core defined by relatively large amounts of bornite and secondary biotite.

The Jersey pit was developed later than the East Jersey, and when it was several hundred feet deep the Huestis pit was started in 1971. The Iona pit was developed in 1976. The Huestis pit was mined out in 1976, when the Jersey pit was redeveloped.

The Huestis pit was backfilled from 1977 to 1980. In 1980 the Jersey pit was being extended to the southeast, with the intention of merging it with the Iona pit.

Mining was by standard open-pit methods. The concentrator operated at a daily rate of about 1 800 tonnes. Molybdenum concentrate was produced by treatment of the copper concentrate, and in 1978 a new molybdenum circuit was added to the concentrator.

Copper concentrates were trucked to Clinton for rail shipment to Vancouver. Molybdenite concentrates were packed in drums of approximately 318 kilograms each and truck-hauled to Vancouver.

References: *CIM*, Porphyry Deposits of the Canadian Cordillera, 1976, pp. 105–119; MI 92I/SE-1, 2, 4, 6.

Bethlehem Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	5 864 500	Copper concentrates, 66 257 t	20 061	4 206 432	22 154 586	—	—	—
1976	6 763 838	Copper concentrates, 64 781 t	57 230	4 618 236	23 006 380	—	—	—
1977	5 554 855	Copper concentrates, 56 531 t	106 652	7 778 580	24 462 130	—	—	—
1978	6 490 726	Copper concentrates, 41 580 t; molybdenite concentrates, 269 t containing 133 777 kg of molybdenum	124 661	7 299 470	18 312 007	—	—	—
1979	6 525 449	Copper concentrates, 51 339 t; molybdenite concentrates, 592 t containing 306 286 kg of molybdenum	122 797	6 535 338	21 260 613	—	—	—
1980	6 281 765	Copper concentrates, 75 512 t; molybdenite concentrates, 173 t containing 93 299 kg of molybdenum	129 204	6 503 270	22 715 445	—	—	—

HIGHMONT (Fig. M-2, NTS 92, No. 16)

Kamloops M.D. Lat 50°26′ Long. 121°00′ (92I/6E, 7W)

This porphyry copper-molybdenum property of 202 mineral claims is in the Highland Valley, 42 kilometres southeast of Ashcroft. It is owned by Teck Corporation, 1199 West Hastings Street, Vancouver V6E 2K5.

Detailed examinations of this ground started in the late 1950's. In 1962 Torwest Resources (1962) Limited acquired the property and drilled 20 holes. Highmont Mining Corp. Ltd. was formed in 1966 and started extensive diamond and percussion drilling with encouraging results. Underground sampling was financed initially by Nippon Mining Company, who withdrew. In 1969 Teck Corporation entered into an agreement with Highmont that included the right to finance the property to production, and in 1979 absorbed the earlier company. Production started December 19, 1980 and reached full capacity of 25 000 tonnes per day three months later.

Seven copper-molybdenum deposits are known on the property, most of which are in Skeena quartz diorite, a phase of the Guichon Creek batholith. The four largest deposits or orebodies are on either side of and near a west-trending composite dyke about 200 metres wide. The dyke is mainly quartz porphyry and contains local zones of tourmalinized breccia. Sulphide mineralization occurred after intrusion of the dyke, but chiefly prior to brecciation and continued until after intrusion of later aplite dykes. Zones dominated by bornite, by chalcopyrite, and by chalcopyrite plus pyrite are roughly parallel to the composite dyke. Hydrothermal alteration at Highmont is comparatively weak.

Production started in the largest, or No. 1, orebody, which had a reserve (1976) of 111 million tonnes of ore grading 0.287 per cent copper and 0.042 per cent molybdenum. The concentrator operated in December, but there was no recorded production in 1980.

References: *CIM*, Porphyry Deposits of the Canadian Cordillera, 1976, pp. 163–181; MI 92I/SE-13, 88, 152; 92I SW-36.

LORNEX (Fig. M-2, NTS 92, No. 17)

Kamloops M.D. Lat. 50°27′ Long. 121°03′ (92I/6E)

The Lornex porphyry copper-molybdenum deposit is in the Highland Valley, 42 kilometres southeast of Ashcroft. The property of about 500 mineral claims and fractions is on the south side of the valley between 1 300 and 1 525 metres in elevation. This is an extensive open-pit operation with a milling capacity of about 48 000 tonnes per day.

It is owned by Lornex Mining Corp. Ltd., 120 Adelaide Street West, Toronto M5H 1W5; mine office, Box 1500, Logan Lake V0K 1W0.

The Lornex ore zone is approximately 1 900 metres long and 500 metres wide, and is entirely within Skeena quartz diorite, a variety of the Bethlehem phase of the Guichon Creek batholith. The host rock is intruded by a pre-mineral quartz-porphyry dyke, most prominent in the southern part of the ore zone. The northwest boundary of the zone is the Lornex fault, a west-dipping regional structure.

Mineralization is fracture-controlled, and commonly occurs as fracture coatings or veins. The major sulphides are chalcopyrite, bornite, molybdenite, and pyrite. Sulphide minerals and hydrothermal alteration zones are distributed in a roughly concentric pattern, with a bornite core and surrounding chalcopyrite and molybdenite; pyrite is peripheral. Intensity of hydrothermal alteration, and sulphide content, increase with fracture density.

The Lornex orebody is believed to have formed at the intersection of regional structures where conjugate shears were formed.

Mining was by conventional open-pit methods, utilizing rotary drills, electric shovels, and diesel-electric trucks. Ore was trucked to a gyratory crusher, crushed and stockpiled. It was then reclaimed, milled, and a bulk flotation concentrate produced, which was further treated to produce a copper and a molybdenum concentrate. Tailings were conveyed by a 10 253-metre gravity pipeline to a valley tailings pond contained between three dams.

Ore reserves at the end of 1980 were reported as approximately 454 million tonnes grading 0.382 per cent copper and 0.0148 per cent molybdenum.

References: *B.C. Dept. of Mines & Pet. Res.*, GEM, 1970, pp. 354–369; CIM, Porphyry Deposits of the Canadian Cordillera, 1976, pp. 120–129; MI 92I/SW-45.

Lornex Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	11 696 413	Copper concentrates, 154 294 t; molybdenite concentrates, 2 608 t, containing 1 406 082 kg of molybdenum	7 745	130 042 545	50 239 447	—	—	—
1976	15 436 575	Copper concentrates, 204 020 t; molybdenite concentrates, 3 133 t containing 1 715 590 kg of molybdenum	26 851	17 316 751	68 313 748	—	—	—
1977	15 480 725	Copper concentrates, 204 448 t; molybdenite concentrates, 3 427 t containing 1 846 840 kg of molybdenum	12 597	19 209 555	66 156 450	—	—	—
1978	15 927 064	Copper concentrates, 208 799 t; molybdenite concentrates, 3 459 t containing 1 864 355 kg of molybdenum	—	17 486 200	63 114 028	—	—	—
1979	16 126 103	Copper concentrates, 194 829 t; molybdenite concentrates, 3 818 t containing 2 059 851 kg of molybdenum	—	16 562 009	60 858 558	—	—	—
1980	16 037 591	Copper concentrates, 203 271 t; molybdenite concentrates, 2 903 t; molybdic oxide, 1 118 t; ferro-molybdenum, 83 t containing 2 168 136 kg of molybdenum	—	18 372 886	63 431 872	—	—	—

OK (Fig. M-2, NTS 92, No. 18)

Kamloops M.D. Lat. 50°29′ Long. 121°06′ (92I/6E)

This old property of 124 mineral claims is in the Highland Valley, 40 kilometres south-southeast of Ashcroft. It is also known as the Alwin from a company that developed the mine but ceased milling in 1972.

It is owned by DeKalb Mining Corporation, 630 Sixth Avenue SW., Calgary T2P 0S8.

This is a vein deposit in Bethsaida granodiorite, a phase of the Guichon Creek batholith. The veins are sericitized shear zones, 1 to 10 metres wide, mineralized with chalcopyrite and bornite and minor primary chalcocite. Overall, six ore zones are contained in a band

150 by 4 500 metres long. The ore zones pinch, swell, and digitate, there are pre-ore porphyry dykes and postmineral faulting. The structural pattern is complex.

The mine is developed by declines and by a main haulage adit at 1 560 metres elevation.

Exploratory and development work was done in 1975 and later years, under different regimes. The mine produced 48 223 tonnes and concentration began in 1980, with full production anticipated at 18 000 tonnes per month.

References: *B.C. Dept. of Mines & Pet. Res.*, GEM, 1972, pp. 155–157; MI 92I/SW-10.

ERICKSON (Fig. M-2, NTS 104, No. 19)

Liard M.D. Lat. 59°13.5′ Long. 129°38.8′ (104P/4E)

This property of five mineral claims is 12 kilometres southeast of Cassiar. It is owned by Erickson Gold Mining Corporation, 203, 1209 East Fourth Street, North Vancouver V7J 1G8; mine office, Box 660, Cassiar.

Gold and silver values in the Jennie quartz vein are contained in metallic gold, pyrite, tetrahedrite, chalcopyrite, and small amounts of galena and sphalerite. The vein is from a few centimetres to 9 metres wide, with an average of 1 metre. Enclosing rocks are interbedded volcanic and sedimentary. A fine-grained dyke parallels the vein.

The mine went into production in April 1979, in which year approximately 29 000 tonnes of ore was milled.

In 1980, development of the mine proceeded, and 7 775 metres of surface diamond drilling was done. Work started on new surface shops, and expansion of the concentrator to a capacity of 250 tonnes per day.

Reference: MI 104P-29.

Erickson Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1979	28 896	Gold concentrates, 401 t	574 668	567 763	—	—	—	—
1980	28 804	Gold concentrates, 561 t	484 662	—	—	—	—	—

MAGNUM (Fig. M-2, NTS 94, No. 20)

Liard M.D. Lat. 58°31′ Long. 125°24′ (94K/11W)

At the headwaters of Delano Creek, 210 kilometres by road south and west of Fort Nelson. It is 56 kilometres by road south of Mile 401 on the Alaska Highway. The property was owned by Consolidated Churchill Copper Corporation Ltd., which company passed into the control of Teck Corporation in 1979, and no longer exists.

The ore deposit consists of quartz-ankerite veins in a steeply dipping zone, as much as 90 metres wide, of crumpled non-limy strata in a succession of limy Precambrian sedimentary rocks. The veins for the most part strike north 35 degrees east and dip steeply. As many as 10 veins follow the zone and a few others branch from it or occur with other orientations. The veins are as much as 7.6 metres wide. Postmineral diabase dykes follow the zone and are closely associated with the veins; in places a vein and parts of an ore shoot may be obliterated by a dyke. The relations between crumpling and alteration, shearing, faulting, vein formation, and dyke intrusion in the mineral zone are complex in detail and point to a long evolutionary process that was not a simple one.

The property was brought into production in April 1970. Operations were suspended on October 1, 1971 and resumed in January 1974 at a milling rate of 500 tonnes per day, with financing and management provided by Kam-Kotia Mines Ltd. of Toronto. Ore was mined

by shrinkage stoping and milled at the company's concentrator on the Racing River; the concentrates were trucked to Fort Nelson.

Operations ceased in March 1975, all mine entrances were sealed, and the concentrator and other buildings were put up for sale.

References: *B.C. Ministry of Energy, Mines & Pet. Res.*, GEM, 1971, pp. 81–89; MI 94K-3.

Magnum Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	—	Copper concentrates, 2 887 t	—	—	808 665	—	—	—

BRALORNE (Fig. M-2, NTS 92, No. 21)

Lillooet M.D. Lat. 50°46′ Long. 122°48′ (92J/15W)

This former gold-producing property of 133 mineral claims is on Cadwallader Creek, 112 kilometres by road from Lillooet via the Bridge River valley. It is owned by Bralorne Resources Limited, 205 Fifth Avenue SW., Calgary T2P 2V7.

Production ceased in September 1971. Since that time reappraisal and feasibility studies have been made, chiefly in 1974, when extensive exploration was done through No. 8 level and the Crown shaft.

In September 1980 surface and underground studies were begun by E & B Explorations Ltd. By year-end 4 572 metres of surface diamond drilling had been done, and a limited amount of underground drilling, sampling, and mapping had been accomplished. A crew of 15 was employed.

Small shipments were made of clean-up material from the old concentrator.

Reference: MI 92J-1, 2.

Bralorne Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1978	149	Clean-up	14 992	4 976	—	150	150	—
1980	6	Clean-up	404	124	—	7	7	—

ISLAND COPPER (Fig. M-2, NTS 92, No. 22)

Nanaimo M.D. Lat. 50°36′ Long. 127°28.3′ (92L/11W, 12E)

This porphyry copper-molybdenum mine is 16 kilometres south of Port Hardy on the north shore of Rupert Inlet.

It is owned by Utah Mines Ltd., a Canadian subsidiary of Utah International Inc. of San Francisco; mine office, Box 370, Port Hardy V0N 2P0; Vancouver office, 1050 West Pender Street V6E 3S7.

The orebody in plan is an elongated ellipse, subparallel to the regional trend. It occurs within rocks of the Bonanza Group, including coarse to fine andesitic to dacitic breccias and tuffs, dipping to the south. Intrusive into the volcanic rocks is an irregular dyke of quartz-feldspar porphyry dipping from 45 to 60 degrees to the north, almost at right angles to the dip of the Bonanza rocks. The orebody is draped about the dyke.

The ore zone is strongly fractured, the ore minerals chalcopyrite and molybdenite occurring in hair-like veinlets for the most part. About 75 per cent of the ore is in volcanic rocks,

and the remainder, on both sides of the dyke, is in marginal breccia. Most of the unbrecciated porphyry is not mineralized.

Contact metamorphism forms broad zones parallel to the dyke. Wallrock alteration of generally chlorite-sericite type is closely related to fracturing and brecciation.

Production began late in 1971 from the open pit, and in 1980 was at a rate of 40 000 tonnes of ore daily, with a stripping ratio of 3:1. In 1980 there were 18 benches in the pit, from 100 metres above sea level to 122 metres below. Copper concentrates were loaded from deep-sea docks to ocean going vessels. Molybdenite concentrates were shipped by barge to Vancouver.

From the start of operations, tailings from the concentrator have been discharged into Rupert Inlet. Effects upon the water, sea bottom, and all forms of sea life have been carefully monitored, and the data have been studied by many agencies and groups.

References: *CIM*, Porphyry Deposits of the Canadian Cordillera, 1976, pp. 206–218; MI 92L-158.

Island Copper Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	12 075 145	Copper concentrates, 201 322 t; molybdenite concentrates, 1 485 t containing 615 313 kg of molybdenum; rhenium shipments are confidential	1 705 595	8 996 170	47 514 467	—	—	—
1976	12 246 885	Copper concentrates, 213 588 t; molybdenite concentrates, 2 145 t containing 878 072 kg of molybdenum; rhenium shipments are confidential	1 416 959	9 983 690	48 956 470	—	—	—
1977	13 106 006	Copper concentrates, 202 558 t; molybdenite concentrates, 2 302 t containing 987 627 kg of molybdenum; rhenium shipments are confidential	1 496 459	9 699 222	46 749 860	—	—	—
1978	14 200 203	Copper concentrates, 218 515 t; molybdenite concentrates, 2 087 t containing 859 104 kg of molybdenum; rhenium shipments are confidential	1 345 360	10 402 740	50 653 152	—	—	—
1979	13 339 997	Copper concentrates, 218 490 t; molybdenite concentrates, 2 705 t containing 1 111 400 kg of molybdenum; rhenium shipments are confidential	1 684 627	10 994 861	50 254 743	—	—	—
1980	13 782 249	Copper concentrates, 219 405 t; molybdenite concentrates, 2 703 t containing 1 113 074 kg of molybdenum	1 747 704	13 456 484	50 033 433	—	—	—

TEXADA (Fig. M-2, NTS 92, No. 23)

Nanaimo M.D. Lat. 49°42′ Long. 124°32′ (92F/10E)

This mine is at Welcome Bay on the southwest coast of Texada Island, 12 kilometres by road south of Vananda. It was owned and operated by Texada Mines Ltd.

The orebodies are contact skarn deposits on the northern margin of the Gillies granodiorite stock. Several orebodies were known, with differing relationships to skarn, granodiorite porphyry, volcanic rocks, and limestone. A small amount was mined by open pit in 1975–76.

Mining by open pit began in early 1952 and ended in late 1964. The operation then went underground and continued by longhole mining at a rate of about 4 000 tonnes per day. Magnetic iron ore concentrates were shipped to Japan. Lesser amounts of copper concentrates were also produced.

In 1976 contracts for sale of iron and copper concentrates to Japan terminated, and short-term contracts for iron concentrates were not forthcoming. The concentrator was closed

on December 23, 1976, and all equipment, pipe, rail, and buildings were sold by public auction at the plant site, August 25, 1977.

Production, from 1952 to 1976 amounted to 10 329 379 tonnes of iron concentrates and 131 702 tonnes of copper concentrates.

References: *Minister of Mines, B.C.*, Ann. Rept., 1964, pp. 146–151; MI 92F-106, 258.

Texada Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	906 730	Iron concentrates, 296 250 t; copper concentrates, 7 426 t	45 597	1 385 359	1 635 716	—	—	—
1976	848 477	Iron concentrates, 368 412 t; copper concentrates, 6 394 t	33 687	1 337 149	1 332 202	—	—	—

GOLD BELT (Fig. M-2, NTS 82, No. 24)

Nelson M.D. Lat. 49°09.5′ Long. 117°07.4′ (82F/3E)

This former producer is in the Sheep Creek camp, 12 kilometres southeast of Salmo. The property of 39 Crown-granted mineral claims is owned by Gold Belt Mines Inc., 318 Homer Street, Vancouver V6B 2V3.

Gold-bearing quartz veins occur in Nugget quartzite within the Sheep Creek anticline.

In 1979 a crew of 16 rehabilitated the mine and did some developmental work. A total of 1 010 tonnes of ore was shipped to the Trail smelter.

Reference: MI 82F/SW-44, 56.

Gold Belt Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1979	1 010	Crude ore	9 860	21 275	681	7 564	3 927	—

HB (Fig. M-2, NTS 82, No. 25)

Nelson M.D. Lat. 49°09′ Long. 117°12′ (82F/3E)

The HB mine is on the north side of the valley of Sheep Creek, 10.5 kilometres by road southeast of Salmo. It is owned by Cominco Ltd.

Lead-zinc ore is localized within dolomitized Reeves limestone, as steeply dipping stringers and flat-lying breccia zones.

Ore production began at a concentrator capacity of 1 000 tonnes per day in 1955. Closed owing to low metal prices in October 1966, operations resumed in February 1973 and continued until the mine and plant closed permanently on August 17, 1978.

During the life of the mine, 6 627 528 tonnes of ore was produced, with an average grade of 0.93 per cent lead and 4.45 per cent zinc.

Reference: MI 82F/SW-4, 249.

HB Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	411 084	Lead concentrates, 4 950 t; zinc concentrates, 22 878 t	622	1 130 314	—	1 666 762	12 480 257	96 325
1976	374 163	Lead concentrates, 5 082 t; zinc concentrates, 23 106 t	684	937 071	274	2 036 925	12 798 512	104 523
1977	357 256	Lead concentrates, 4 831 t; zinc concentrates, 22 606 t	—	996 696	615	1 931 566	12 593 518	95 893
1978	200 888	Lead concentrates, 3 900 t; zinc concentrates, 15 264 t	—	827 713	—	1 451 180	8 381 566	67 298

MOTHER LODE and NUGGET (Fig M-2, NTS 82, No. 26)

Nelson M.D. Lat. 49°09.8′ Long. 117°06.8′ (82F/3E)

This property is in the Sheep Creek camp, 17 kilometres by road southeast of Salmo. It is owned by S. A. Endersby, 1124 Lee Street, White Rock.

Gold-bearing quartz veins occur in quartzites of the Quartzite Range Formation.

In 1975, 484 tonnes of ore and in 1980, 924 tonnes were shipped to Trail from the Mother Lode, Nugget, and Reno. All of this production is believed to have come from old dumps.

Reference: MI 82F/SW-40, 41.

Mother Lode and Nugget Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	484	Siliceous ore, dump clean-up	3 919	34 462	—	—	—	—
1980	435	Crude ore (Mother Lode)	4 429	7 123	—	696	1 026	—
1980	425	Crude ore (Nugget)	4 264	2 877	—	469	435	—

REEVES MacDONALD (Fig M-2, NTS 82, No. 27)

Nelson M.D. Lat. 49°01.5′ Long. 117°22′ (82F/3W)

This property of 71 Crown-granted mineral claims is on the Pend-d'Oreille River, 6 kilometres west of Nelway. It was owned and operated by Reeves MacDonald Mines Limited.

Lead-zinc ore occurs in the Reeves limestone. The main orebody, with a dip length of 300 metres, was developed as the Reeves mine on the north side of the river. A faulted section of the same zone was mined as the Annex mine on the south side of the river.

Operations started in 1948, and production of about 365 000 tonnes per year was attained in the 1960's. In 1971 the Reeves mine ceased production except for clean-up work, and the Annex continued to operate until March 1975.

Concentrates were shipped to the Trail smelter and to the smelter at Kellog, Idaho.

From 1948 to 1975, a total of 6 581 140 tonnes of ore was milled, with gross metal content in concentrates of 64 829 752 kilograms lead, 246 295 639 kilograms zinc, and 53 894 096 grams silver. It is of interest to note that of 763 314 tonnes of ore milled from

the Annex, the gross metal content in concentrates was 7 136 974 kilograms lead, 42 679 633 kilograms zinc, and 34 052 093 grams silver.

Reference: MI 82F/SW-219.

Reeves MacDonald Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	32 211	Lead concentrates, 273 t; zinc concentrates, 1 604 t	—	296 847	—	151 543	850 479	7 924

IDAHO (Fig. M-2, NTS 92, No. 28)

New Westminster M.D. Lat. 49°31′ Long. 121°18′ (92H/11W)

Extensive holdings, including eight Crown-granted claims, are on the west fork of Ladner Creek, about 30 kilometres northeast of Hope by road.

The property is owned by Carolin Mines Ltd., 475 Howe Street, Vancouver V6C 2B3; mine office, Box 1697, Hope V0X 1L0.

The Idaho orebody is on the east side of the Coquihalla serpentine belt, along which gold showings, some with spectacular local values, have been known for many years. The present mine is on the Idaho Crown-granted mineral claim, within siltstones of the Ladner Group, about 200 metres east of the faulted serpentine contact.

The mineralization is a hydrothermal replacement of graywacke and coarse silts, involving multistage introduction of material to produce quartz, plagioclase, carbonate, chlorite, pyrrhotite, arsenopyrite, and pyrite, and less magnetite, chalcopyrite, bornite, and gold. Mineralization was emplaced along an early reverse fault that occupies the disrupted limb of an overturned fold. The ore is in an irregular, steeply inclined body approximately 35 metres wide, 100 metres deep, and more than 300 metres long. The body may be termed a quartz-veined shattered zone. Reserves have been reported as 1.4 million tonnes, averaging 5.14 grams gold per tonne.

Development of the mine took place in 1978–80. Two adits and a connecting decline were driven: a main development level at 875 metres elevation and a main haulage level at 815 metres elevation. Track haulage is used on the lower level.

A concentrator, built near the main haulage portal, was designed to treat 1 500 tonnes of ore per day by flotation, to be followed by cyanidation of the concentrates and final production of bullion. Production began in December 1981.

References: *B.C. Ministry of Energy, Mines & Pet. Res.,* Geological Fieldwork, 1981, Paper 1982-1, pp. 87–101; MI 92H/NW-3, 7.

Idaho Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1978	8	Crude ore	10	43 389	—	6 284	135	—

CRAIGMONT (Fig. M-2, NTS 92, No. 29)

Nicola M.D. Lat. 50°12.5′ Long. 120°55.7′ (92I/2W)

The mine is 16 kilometres northwest of Merritt; a branch road leaves the highway at Lower Nicola. It is owned by Craigmont Mines Limited, Box 3000, Merritt V0K 2B0, of which company Placer Development is a major shareholder.

The Craigmont orebodies are pyrometasomatic copper deposits mainly in limy bedded rocks, lying within the thermal aureole of the southern end of the Guichon Creek batholith. Alteration of the rock is intense and varies somewhat with the original rock type. The ore is believed to be localized in sedimentary zones characterized by medium to coarse-grained clastic rocks. Bands of limestone are not characteristically mineralized.

The deposit can be termed a skarn because of the intensity of alteration and the presence of iron oxides, either magnetite or hematite, or both.

Mining was by a method of transverse sublevel caving. Ground support was by "shotcreting" and by ¾-inch reinforcing bars grouted into the holes.

Copper concentrates were shipped mainly to Japan. Magnetic iron concentrates were sold to the coal industry for use in heavy media separation.

Reclamation and pollution control were given continuing attention.

References: *B.C. Ministry of Energy, Mines & Pet. Res.*, GEM, 1974, pp. 127–130; MI 92I/SE-35.

Craigmont Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	1 774 731	Copper concentrates, 69 996 t; iron concentrates 41 145 t	26 997	—	20 564 778	—	—	—
1976	1 763 219	Copper concentrates, 74 310 t; iron concentrates, 32 564 t	7 838	—	21 107 071	—	—	—
1977	1 884 335	Copper concentrates, 63 193 t; iron concentrates, 36 246 t	—	—	17 659 393	—	—	—
1978	1 899 934	Copper concentrates, 93 082 t; iron concentrates 33 183 t; coarse iron, 2 513 t	—	—	26 290 618	—	—	—
1979	1 924 570	Copper concentrates, 56 631 t; iron concentrates 41 372 t; coarse iron, 3 156 t	—	—	16 188 137	—	—	—
1980	1 950 551	Copper concentrates, 38 649 t; iron concentrates 41 562 t; coarse iron, 2 649 t	13 312	—	10 794 185	—	—	—

BELL (Fig M-2, NTS 93, No. 30)

Omineca M.D. Lat. 55°00.51′ Long. 126°14′ (93M/1E; 93L/16E)

This porphyry copper deposit on two mineral leases and 98 claims is on Newman Peninsula in Babine Lake. Production began in October 1972.

It is owned by Noranda Mines, Limited and is operated as the Babine Division (prior to 1979 as the Bell Copper Division), Box 2000, Granisle V0J 1W0.

The Bell orebody is horseshoe-shaped in plan, dips steeply, and is 150 to 300 metres wide by 1 000 metres long. It follows and overlaps the western and northern edges of an Eocene biotite-feldspar porphyry plug, 800 metres long by 200 to 600 metres wide, which was emplaced along the Newman fault, intruding rocks of the Hazelton Group and Eocene rhyodacite. The ore is almost entirely in porphyry and volcanic rocks and is surrounded by a halo of hydrothermal alteration characterized by biotite in the central zone and by chlorite-carbonate peripherally.

The chief copper mineral is chalcopyrite, but bornite is also present, and enrichment with chalcocite occured in the upper 50 to 70 metres of part of the orebody.

In 1979 a decision was made to increase the pit size to 760 metres by 915 metres, and 300 metres deep; and at the same time to increase the ore treated from 13 600 to 15 400 tonnes per day. This work was completed in 1980. Published ore reserves were, at the end of 1980, approximately 48.5 million tonnes grading 0.51 per cent copper.

Concentrates were loaded onto truck-trailer combinations, transported 3.2 kilometres by barge, then 63 kilometres to rail siding at Topley.

Reference: MI 93M-1.

Bell Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	4 335 049	Copper concentrates, 63 283 t	739 069	2 061 227	16 466 056	—	—	—
1976	1 925 246	Copper concentrates, 25 748 t	295 292	823 265	6 651 253	—	—	—
1977	4 409 135	Copper concentrates, 59 378 t	714 280	2 066 888	15 890 606	—	—	—
1978	4 470 070	Copper concentrates, 64 464 t	763 299	2 210 148	17 144 917	—	—	—
1979	5 073 909	Copper concentrates, 48 456 t	656 601	1 661 368	13 136 524	—	—	—
1980	5 011 943	Copper concentrates, 65 901 t	848 347	2 259 450	17 532 042	—	—	—

CHAPPELLE (Fig. M-2, NTS 94, No. 31)

Omineca M.D. Lat. 57°17′ Long. 127°06′ (94E/6E)

This property is 30 kilometres north of Thutade Lake, between the Toodoggone and Sturdee River valleys, between 1 500 and 1 735 metres elevation.

A large group of mineral claims was owned by Kennco Explorations, (Western) Limited. It was optioned by Conwest Exploration Company Limited in 1973, when a first crosscut was driven. It was optioned in 1974 by DuPont of Canada Exploration Limited, 1550 Alberni Street, Vancouver V6G 1A5, the present operator.

Seven quartz-vein systems, mostly occupying fault zones, have been identified in the mine area. The main vein zone contains two or more sub-parallel veins, in a width of 10 to 70 metres and a vertical depth of at least 150 metres. Individual veins in the zone range in width from 0.5 metre to greater than 9 metres. A variety of textures and crosscutting relationships indicate a complex history of mineralization.

Wallrocks are Takla andesite and dacite. Fine-grained minerals in the highly fractured quartz-vein systems include pyrite, sphalerite, galena, chalcopyrite, bornite, chalcocite with electrum, metallic gold, and acanthite and other silver-bearing minerals.

By 1980 an air strip was completed on the Sturdee River, 320 kilometres north of Smithers, and a road was built 15 kilometres to the mine site. Supplies were brought in by Hercules aircraft in 1980 and construction was completed of a camp, 100-tonne concentrator, power house, water supply, and tailings disposal system. In 1981, production began of dore bullion, flown out to Vancouver.

References: *B.C. Ministry of Energy, Mines & Pet. Res.*, GEM, 1971, pp. 65–70; 1973, pp. 459, 460; *B.C. Ministry of Energy, Mines & Pet. Res.*, Geological Fieldwork, 1981, Paper 1982-1, pp. 129, 130; MI 94E-26.

DUTHIE (Fig M-2, NTS 93, No. 32)

Omineca M.D. Lat. 54°46′ Long. 127°21′ (93L/14W)

This old mine is on the southwest slope of Hudson Bay Mountain, 20 kilometres by road west of Smithers.

The property is owned by Silver Standard Mines Ltd., 1199 West Hastings Street, Vancouver V6E 3V4.

Three steeply dipping shear zones occur in tuffs and andesite flow breccias. Locally ore of the zones is brecciated and consists of angular rock fragments cemented and partly replaced by sulphides. Ore minerals include sphalerite, galena, grey copper, and arsenopyrite.

In 1979 and 1980 Paul Kindrat of Smithers did some development work, and shipped nearly 300 tonnes of cobbed ore to the Trail smelter at the close of 1980.
Reference: MI 93L-88.

ENDAKO (Fig. M-2, NTS 93, No. 33)

Omineca M.D. Lat. 54°02′ Long. 125°07′ (93K/3E)

The Endako porphyry molybdenum deposit is at Endako, 190 kilometres west of Prince George, north of the east end of François Lake.

The property of about 350 mineral claims is owned and operated by Endako Mines Division of Placer Development Limited, 1030 West Georgia Street, Vancouver V6E 3A8.

The orebody is in Endako quartz monzonite, a part of the composite Topley intrusions of Jurassic age. The quartz monzonite is intruded by a variety of premineral dykes and by postmineral basalt dykes. The orebody is an irregularly elongated body 3 360 metres long by 370 metres wide. Molybdenite, pyrite, magnetite, and rare chalcopyrite are closely associated with quartz in veins and fracture fillings. Considered as a whole, the entire mineral zone is a stockwork.

Ore minerals occur in major quartz-molybdenite veins 15 centimetres to 1 metre wide, occurring as a series of subparallel and complementary sets, and in fine fracture fillings and veinlets in the form of stockworks. Hydrothermal alteration forms K-feldspar-bearing envelopes and sericite-bearing envelopes bordering veins and fractures. There has been pervasive kaolinization of the Endako quartz monzonite

Mining was by open pit. Concentrator capacity in 1980 was over 30 000 tonnes per day. Some of the molybdenite concentrates were marketed as such, and some were roasted to produce molybdic oxide and a smaller amount of ferromolybdenum. The proportion of the products varied with market conditions.

References: *CIM*, Porphyry Deposits of the Canadian Cordillera, 1976, pp. 444–454; MI 93K-6.

Endako Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	8 543 821	Molybdenite concentrates, 1 488 t; molybdenum trioxide, 7 975 t; ferromolybdenum, 117 t; total content, 5 564 104 kg of molybdenum	—	—	—	—	—	—
1976	8 520 235	Molybdenite concentrates, 1 098 t; molybdic trioxide, 9 771 t; ferromolybdenum, 288 t; total content, 6 766 374 kg of molybdenum	—	—	—	—	—	—
1977	9 084 501	Molybdenite concentrates, 24 t; molybdic trioxide, 12 651 t; ferromolybdenum, 228 t; total content, 7 694 235 kg of molybdenum	—	—	—	—	—	—
1978	10 656 643	Molybdic trioxide, 10 176 t; ferromolybdenum, 200 t; total content, 6 030 967 kg of molybdenum	—	—	—	—	—	—
1979	4 768 000	Molybdenite concentrates, 12 t; molybdic trioxide, 6 205 t; ferromolybdenum, 104 t; total content, 3 738 530 kg of molybdenum	—	—	—	—	—	—
1980	11 103 147	Molybdenum concentrates, 376 t; molybdic trioxide, 7 284 t; ferro-molybdenum, 163 t; total content, 4 651 559 kg of molybdenum	—	—	—	—	—	—

GRANISLE (Fig. M-2, NTS 93, No. 34)

Omineca M.D. Lat. 54°56.5′ Long. 126°09.5′ (93L/16E)

The Granisle porphyry copper deposit is on McDonald Island near the north end of Babine Lake, 16 kilometres north of Topley Landing. The property consists of 142 mineral claims.

It has been owned and operated since 1979 by Noranda Mines, Limited, Babine Division, Box 2000, Granisle V0J 1W0, and formerly by Granisle Copper Limited, a subsidiary of Granby.

The orebody is within a porphyry dyke of Eocene age with an earlier, elliptical plug of quartz diorite phase and a later biotite-feldspar porphyry phase. The later dyke phase is 120 to 200 metres wide, intrusive into Hazelton rocks of predominantly volcanic origin.

Copper mineralization is centred on the contact between early and late intrusive porphyry, and consists of chalcopyrite and bornite in quartz-filled fractures. Alteration shows a central biotitic zone enveloped by a quartz-sericite-carbonate-pyrite zone and an outer chloritic zone.

Mining was by standard open-pit methods. Concentrates were hauled by truck to rail siding at Topley. Concentrator capacity in 1980 was 12 700 tonnes per day. A small molybdenum concentrator was completed in late 1980, but no production was recorded from it.

References: *CIM*, Porphyry Deposits of the Canadian Cordillera, 1976, pp. 239–244; MI 93L-146.

Granisle Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	4 475 103	Copper concentrates, 55 294 t	552 140	4 982 701	17 034 399	—	—	—
1976	4 008 222	Copper concentrates, 45 482 t	408 227	4 549 902	14 672 658	—	—	—
1977	4 474 119	Copper concentrates, 49 724 t	559 761	5 990 904	17 404 635	—	—	—
1978	4 549 265	Copper concentrates, 47 366 t	467 571	4 819 410	14 851 373	—	—	—
1979	4 382 882	Copper concentrates, 50 205 t	497 624	5 338 725	17 326 860	—	—	—
1980	3 936 725	Copper concentrates, 39 869 t	387 083	4 075 675	13 258 799	—	—	—

SAM GOOSLY (Fig M-2, NTS 93, No. 35)

Omineca M.D. Lat. 54°11′ Long. 126°16′ (93L/1W)

This property of some 300 mineral claims is 40 kilometres southeast of Houston, and 6.5 kilometres east of Goosly Lake.

It was developed first by Kennco Explorations, (Western) Limited, and placed in production by Placer Development Limited, 1030 West Georgia Street, Vancouver V6E 3A8. The mining operation was conducted by Equity Silver Mines Limited, of which Placer owns a 70 per cent interest; mine office, Box 1450, Houston V0J 1Z0.

The ore zone is within a west-dipping dacitic volcanic pile of Mesozoic age. The Mesozoic rocks are intruded on the east by a Tertiary syenomonzonite stock. The base of the mine section is quartz pebble conglomerate, above which is a layer or tongue of dacite pyroclastic breccia. The ore occurs within the dacite breccia, in a shattered zone about 53 metres thick. Two principal ore zones are recognized. The Main or north zone is characterized by replacement blebs and masses of a relatively massive aggregate of pyrite, chalcopyrite, pyrrhotite, and tetrahedrite in the host rock. The South Tail zone is characterized by sulphide stringers, veins, and stockworks mineralized sparsely with chalcopyrite and tetrahedrite.

Construction began in April 1979 and a 5 000-tonne-per-day concentrator was in operation in October 1980. Mining was by open pits, one on the Main zone and one on the South Tail zone, the latter zone was to be mined first.

Returns from the first production of 600 000 tonnes were not available at the end of 1980.
References: *B.C. Ministry of Energy, Mines and Pet. Res.*, GEM, 1969, p. 150; 1970, p. 126; MI 93L-1.

SILVER STANDARD (Fig. M-2, NTS 93, No. 36)

Omineca M.D. Lat. 55°19′ Long. 127°37.5′ (93M/5E)

This property of eight Crown-granted mineral claims is on Mount Glen, 9 kilometres north of Hazelton. It is a former important producer.

It is owned by Silver Standard Mines Ltd., 1199 West Hastings Street, Vancouver V6E 3Y4.

Sixteen parallel quartz veins occur in (mainly) tuffaceous sandstone. Mineralization consists of galena, sphalerite, and tetrahedrite, with pyrite and arsenopyrite.

The mine was under lease to George Braun of Hazelton, who from 1975–79 made shipments of sorted ore to the Trail smelter.

Reference: MI 93M-49.

Silver Standard Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	133	Crude ore	218	189 386	—	4 352	4 523	—
1976	152	Crude ore	746	255 791	245	8 842	12 759	—
1977	148	Crude ore	560	236 725	484	11 541	14 681	—
1978	57	Crude ore	187	78 286	138	2 811	4 016	—
1979	93	Crude ore	233	114 243	—	5 348	5 627	—

SUNRISE (Fig M-2, NTS 93, No. 37)

Omineca M.D. Lat. 55°20.5′ Long. 127°27′ (93M/6W)

This group of six Crown-granted and 30 recorded claims is on the north side of Nine Mile Mountain, 16 kilometres northeast of Smithers.

It is owned by Sunrise Metals Corporation, 555 Howe Street, Vancouver. Work was done on the property in 1978–80 by M. Kryger, Box 2018, Smithers V0J 2N0.

Quartz veins occur in east-west fault fissures and in northeast crossfissures, forming a zone about 21 metres wide in altered granodiorite. Galena, jamesonite, sphalerite, and pyrite occur as stringers and blebs in the quartz veins.

A limited amount of surface trenching produced 40 tonnes of shipping ore in 1975 and 26 tonnes in 1978. In 1979 a portable mill was set up and 181 tonnes of ore was treated to produce 15 tonnes of concentrates. A 191-tonne shipment of ore was made in 1980.

References: *B.C. Ministry of Energy, Mines & Pet. Res.*, GEM, 1974, pp. 270, 271; MI 93M-43.

Sunrise Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	40	Crude ore	—	45 597	—	4 867	4 908	—
1978	26	Crude ore	—	19 377	—	1 642	2 356	—
1979	181	Silver concentrates, 15 t	—	22 985	—	2 790	2 374	—
1980	191	Crude ore	6 656	31 850	229	3 376	4 030	—

TETRA (Fig M-2, NTS 93, No. 38)

Omineca M.D. Lat. 55°01.9′ Long. 127°14.3′ (94M/3E)

This group of recorded mineral claims is in the canyon of Causqua Creek, 20 kilometres north of Smithers.

The property was owned by Virginia Silver Mines Ltd. in 1975–77. In 1980 the owner was listed as Armagh Mines Ltd., 205 Fifth Avenue SW., Calgary T2P 2V7.

A vein shear dipping about 15 degrees eastward is in folded volcanic sandstones of the Bowser Group. The vein varies from a series of thin veinlets that horsetail into the bedding to a body a metre or more wide. It consists of partially replaced wallrock with variable amounts of quartz, ankerite, and sulphides; the latter include sphalerite, galena, pyrite, tetrahedrite, arsenopyrite, and traces of bournonite, polybasite, and pyrargyrite.

In 1975 and 1976, Paul Kindrat of Smithers, under a leasing agreement, shipped a total of 249 tonnes of sorted ore to the Trail smelter. A small concentrator with a capacity of 70 tonnes per day was partly built in 1977 and was completed in 1980 but was not in production.

References: *Minister of Mines, B.C.,* Ann. Rept., 1968, pp. 124–126; MI 93M-21.

Tetra Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	60	Crude ore	84	212 185	—	2 612	—	—
1976	189	Crude ore	317	485 767	—	7 145	6 240	—

BRENDA (Fig M-2, NTS 92, No.39)

Osoyoos M.D. Lat. 49°53′ Long. 120°00.5′ (92H/16E)

The Brenda porphyry copper-molybdenum deposit is 22.5 kilometres west of Okanagan Lake at Peachland.

Extensive claim holdings are owned by Brenda Mines Ltd., Box 420, Peachland.

The orebody is within the Brenda Stock, a composite quartz diorite to granodiorite body of Jurassic age, which intrudes rocks of the Upper Triassic Nicola Group. It is cut by pre-ore and post-ore dykes of divergent compositions.

Mineralization is confined almost entirely to veins, most of which are quartz veins. Chalcopyrite and molybdenite are the principal sulphides, accompanied by minor and variable amounts of pyrite and magnetite and rarely other minerals. Grade is a function of density of fracturing and mineralogy of the veins. Alteration is generally confined to narrow envelopes bordering veins.

Conventional open-pit mining supplied the concentrator with about 27 000 tonnes of ore per day. The concentrator produced copper concentrate and molybdenite concentrate. A hot chloride leaching process reduced the levels of lead and copper impurities in the molybdenite concentrate. In 1975–77 molybdic oxide was also produced. Copper concentrates were trucked to rail terminus at Kelowna; molybdenite concentrates were trucked to Vancouver.

Reclamation and pollution control were a continuing concern of the company. Fresh water was collected during spring runoff and stored in a dam confining 1 233 hectare metres of fresh water. Mill water and pit-drainage water were reclaimed and recirculated.

Total diversion of MacDonald Creek was effected, and the headwaters of Peachland Creek were directed round the pit area. This was to ensure water acceptable to downstream users. Continuing studies were made of methods for providing ground cover on waste piles and disturbed ground.

Ore reserves at December 31, 1980 were 130 000 000 tonnes grading 0.146 per cent copper and 0.032 per cent molybdenum.

References: *CIM,* Porphyry Deposits of the Canadian Cordillera, 1976, pp. 186–194; MI 92H/NE-47.

Brenda Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	9 115 839	Copper concentrates, 52 314 t; molybdenite concentrates 6 511 t; molybdic oxide, 725 t; total content, 4 074 073 kg of molybdenum	125 718	7 872 511	15 101 190	—	—	—
1976	10 047 565	Copper concentrates, 51 854 t; molybdenite concentrates 6 514 t; molybdic oxide, 132 t; total content, 3 705 953 kg of molybdenum	123 697	7 891 360	14 652 834	—	—	—
1977	9 634 421	Copper concentrates, 54 837 t; molybdenite concentrates 6 792 t; molybdic oxide, 15 t; total content, 3 866 503 kg of molybdenum	102 080	8 017 576	16 133 570	—	—	—
1978	9 995 736	Copper concentrates, 46 880 t; molybdenite concentrates 5 820 t; containing 3 310 663 kg of molybdenum	111 629	7 140 191	45 072 630	—	—	—
1979	9 075 723	Copper concentrates, 36 672 t; molybdenite concentrates 4 496 t; containing 2 536 180 kg of molybdenum	101 289	5 727 844	10 626 562	—	—	—
1980	9 126 860	Copper concentrates, 32 390 t; molybdenite concentrates 3 330 t; containing 1 855 166 kg of molybdenum	77 494	4 816 579	9 152 418	—	—	—

DUSTY MAC (Fig. M-2, NTS 82, No. 40)

Osoyoos M.D. Lat. 49°21′ Long. 119°33′ (82E/5E)

This property is 1.6 kilometres east of the village of Okanagan Falls at the south end of Skaha Lake.

It is owned by Dusty Mac Mines Ltd., 355 Burrard Street, Vancouver V6C 2G8.

A gently dipping lens of quartz-filled breccia occurs in Eocene andesitic volcanic rocks. The breccia possibly formed in dilation zones in faults on which there was some later movement. Minor amounts of pyrite, chalcopyrite, metallic silver, and metallic gold are present.

Open-pit mining of the quartz breccia began in July 1975 and finished in February 1976, when the known reserves were exhausted. The orebody was essentially at surface, and the stripping ratio was about 1:1. Ore was custom milled at the Horn Silver Mine of Dankoe Mines Ltd., south of Keremeos.

References: *B.C. Ministry of Energy, Mines & Pet. Res.*, Bull. 61, Geology of the White Lake Basin, 1973, pp. 89–92; MI 82E/SW-78.

Dusty Mac Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	39 940	Gold-Silver concentrates	239 431	4 293 240	740	1 066	—	—
1976	53 335	Gold-silver concentrates, 626 t	364 336	6 210 336	1 692	1 053	—	—

HORN SILVER (Fig. M-2, NTS 82, No. 41)

Osoyoos M.D. Lat. 49°03.4′ Long. 119°41′ (82E/4E)

This property is on the western slope of Mount Richter, 20 kilometres south of Keremeos.

It is owned by Dankoe Mines Ltd., 1177 West Hastings Street, Vancouver V6E 2L6.

The ore zone is in a monzonite phase of the Kruger syenite. A shear zone about 24 metres wide dips 40 degrees to the south. Quartz lenses within the shear plunge at a low angle to the southwest. Mineralization includes galena, sphalerite, and chalcopyrite, and silver-bearing minerals.

The present company acquired the property in 1973 and did considerable development work. From July 1975 to July 1976, the concentrator treated ore from the Dusty Mac property at Okanagan Falls. Since the latter date production was steady at a production rate of 150 tonnes per day. Bulk flotation and jig concentrates were trucked to the Trail smelter.

References: *Minister of Mines, B.C.,* Ann. Rept., 1965, pp. 162, 163; MI 82E/SW-2.

Horn Silver Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	17 916	Silver concentrates, 792 t	11 010	8 120 682	5 013	18 058	25 102	—
1976	20 936	Silver concentrates, 661 t	20 292	6 988 937	4 127	17 657	22 143	—
1977	31 984	Bulk and jig concentrates, 1 168 t	24 260	8 917 790	4 170	23 759	27 993	—
1978	28 677	Bulk concentrates, 979 t; jig concentrates, 97 t	23 949	7 569 195	5 518	21 091	27 927	—
1979	25 536	Bulk concentrates, 872 t; jig concentrates, 132 t	18 755	6 084 336	4 789	17 244	24 299	—
1980	19 634	Bulk concentrates, 678 t	7 981	2 936 329	—	9 275	15 273	—

SUSIE (Fig. M-2, NTS 82, No. 42)

Osoyoos M.D. Lat. 49°13′ Long. 119°36′ (82E/4E)

This old property is 5 kilometres northwest of Oliver. Sparsely mineralized quartz veins in granite contain gold values and command a preferential smelter rate owing to the silica content.

In 1975–76, Harold Hemmerick, of Oliver, trucked 10 404 tonnes of ore to Trail.

Reference: MI 82E/SW-90.

Susie Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	7 365	Crude ore	43 782	779 752	3 080	25 434	11 974	—
1976	3 039	Crude ore	12 535	233 273	943	10 995	4 295	—

INGERBELLE, COPPER MOUNTAIN (Fig. M-2, NTS 92, No. 43)

Similkameen M.D. Lat. 49°20′ Long. 120°33′ (92H/7E)

This extensive property is 15 kilometres south of Princeton. The Copper Mountain mine is on the east side of the Similkameen River and the Ingerbelle mine is on the west side, adjacent to the highway.

The property is owned by Newmont Mines, Limited, Similkameen Division, 750 West Pender Street, Vancouver V6C 1K3; mine office, Box 520, Princeton V0X 1W0. The

Copper Mountain mine was formerly owned by Granby Mining Corporation, which company produced 31.5 million tonnes of ore from underground and glory holes and 1.9 million tonnes from open pits before closure in 1957. The Ingerbelle was brought into production by the present company in 1972.

All of the known copper deposits lie in a 1 100-metre by 4 300-metre belt of Nicola volcanic rocks, bounded on the south by the composite Copper Mountain stock and on the north by the Lost Horse intrusive complex. It is believed that the Copper Mountain intrusions, the mineralization associated with them, and the volcanic rocks, are all of Late Triassic age. Fluids producing alteration and mineralization came from the Lost Horse complex of porphyries and porphyry breccias.

Alteration is intense, involving early biotite, later pink feldspar, and chiefly at and near the Ingerbelle, scapolite. Mineralization, of chalcopyrite and bornite, is in fracture fillings and disseminations. Bornite is more common at Copper Mountain, where pegmatite veins occur up to 2.3 metres thick, containing potash feldspar, biotite and, in places striking masses of bornite. Bornite is rare at Ingerbelle, and intensity of fracturing, which is erratic, controls the grade of ore.

The Copper Mountain mine has been referred to as a porphyry copper deposit, and the Ingerbelle as a skarn deposit.

Mining was by open pit. The concentrator, with a capacity of 17 000 tonnes per day, is on the west, Ingerbelle side, of the river. Tailings were piped across the river to an impoundment area in a narrow dry valley. The Ingerbelle orebodies were limited, and, as mining progressed, preparations proceeded for production from Copper Mountain pits. Ingerbelle mine produced from August 1972 to 1981. Copper Mountain began producing in late 1980, and crushed ore was transported by conveyor on a bridge across the river.

References: *B.C. Ministry of Energy, Mines & Pet. Res.*, Bull. 59, Geology of Copper Mountain, British Columbia, 1972; *CIM*, Porphyry Deposits of the Canadian Cordillera, 1976, pp. 368–375; MI 92H/SE-1–11, 40.

Ingerbelle Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	3 693 900	Copper concentrates, 46 865 t	574 783	2 551 006	12 768 721	—	—	—
1976	6 355 874	Copper concentrates, 91 211 t	1 198 523	4 814 153	25 045 931	—	—	—
1977	7 135 737	Copper concentrates, 74 838 t	969 169	3 980 500	20 596 981	—	—	—
1978	6 779 045	Copper concentrates, 88 964 t	1 152 926	4 347 297	24 725 222	—	—	—
1979	6 898 844	Copper concentrates, 94 297 t	1 185 509	4 316 292	26 506 197	—	—	—
1980	6 612 035	Copper concentrates, 90 871 t	1 168 495	4 860 882	26 258 573	—	—	—

GOAT (Fig. M-2, NTS 104, No. 44)

Skeena M.D. Lat 56°10.5′ Long. 129°33.6′ (104A/4E)

This property is on Goat Ridge at the headwaters of Surprise Creek, 14 kilometres from the Stewart-Cassiar Highway, at a point 65 kilometres by road from Stewart.

It is controlled by Nor-Quest Resources Ltd., 102 Piper Crescent, Nanaimo V9S 3G3.

Three siderite and quartz veins cut andesitic agglomerates and intercalated siltstones of the Hazelton Group. Mineralization includes galena, sphalerite, tetrahedrite, pyrite, chalcopyrite, and minor arsenopyrite. Prior to 1975, development work had been done on four levels by earlier owners; in 1975 a small shipment of ore was made by Nordore Mining Co. Ltd., and ore was stockpiled in later years.

In 1979 a shipment of ore was made by the present company; in 1980 some ore was shipped, and some was milled in a 50-tonne concentrator beside the highway at Strohn Creek.

Reference: MI 104A-3.

Goat Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	16	Crude ore	—	15 925	—	67	352	—
1979	124	Crude ore	1 110	540 401	—	726	9 789	—
1980	1 865	Silver concentrates 30 t; crude or 1 462 t	3 412	945 075	153	3 278	32 397	—

GRANDUC (Fig. M-2, NTS 104, No. 45)

Skeena M.D. Lat. 56°13′ Long. 130°21′ (104B/1W)

The mine is on the northern edge of Leduc Glacier, draining to the west, and the concentrator is at the foot of Berendon Glacier, draining eastward to the Bowser River. The concentrator is 51 kilometres north of Stewart by road, and access thence to the mine is by a tunnel 16.5 kilometres long, driven beneath a summit of the Coast Range.

The property was owned by Granduc Mines, Limited and was leased in 1965 jointly by Newmont and Asarco, and operations were conducted by Granduc Operating Company until 1977, when work continued under Granduc Operating Division of Newmont Mines Limited. First production of concentrates was in November 1970. Operations were suspended in mid-1978, and in May 1979 control of the property was gained by Esso Minerals Canada. Production resumed in October 1980 by Canada Wide Mines Limited, a wholly owned subsidiary of Esso; mine office, Box 190, Stewart V0T 1W0.

The orebodies are in a 60-metre-thick sedimentary unit dipping steeply west between a limestone member above and andesite below. The rocks of the ore zone are mostly fine grained and thin bedded, and are crossfolded, crumpled, and sheared with production of compositionally banded, quartz-rich biotite and sericite rocks. The several orebodies are "stringer lodes" containing disseminations, specks, streaks, and masses of chalcopyrite, pyrrhotite, magnetite, and minor pyrite. The entire ore horizon has been referred to as a shear zone with a complex history of dragfolding and of intrusion by andesitic porphyry dykes.

The mine was developed first by a 3250 haulage adit from surface above Leduc Glacier, and by an internal shaft to the 2600 (792-metre elevation) level, which became the main haulage level to the concentrator, 16.5 kilometres from the shaft. Above the 2600 level all workings were trackless, forming a series of ramps and sublevels. In later years a sublevel method of mining was employed.

Following the mine closure in 1978, winter snow load caused a major collapse of roof and floors of the concentrator. Restoration work on surface was completed in December 1979, and restoration work underground proceeded. Milling was resumed at a reduced rate in November 1980, and about 80 000 tonnes of ore was milled. There is no record of 1980 metal production.

Reference: MI 104B-21.

Granduc Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	1 499 585	Copper concentrates, 56 813 t	162 606	9 604 482	16 222 977	—	—	—
1976	1 315 905	Copper concentrates, 54 894 t	154 800	10 373 566	15 569 210	—	—	—
1977	1 252 362	Copper concentrates, 46 575 t	130 011	8 631 953	13 262 755	—	—	—
1978	741 648	Copper concentrates, 52 268 t	160 460	9 056 914	14 780 100	—	—	—

PREMIER (Fig. M-2, NTS 104, No. 46)

Skeena M.D. Lat 56°03.5′ Long. 130°00.1′ (104B/1E)

The old Premier mine, on an extensive property, is 19 kilometres north of Stewart.

It is owned by British Silbak Premier Mines Ltd., 1055 West Hastings Street, Vancouver V6E 2E6.

The Premier orebodies are in schistose, intercalated volcanic agglomerates, tuffs, and porphyries cut by several varieties of dyke rocks. Ore is in lenses of silicified and pyritized country rock, and is localized along northwest and northeast fracture zones, particularly at contacts between fragmental volcanics and feldspar porphyries. Ore minerals include sphalerite, galena, chalcopyrite, silver-bearing sulphides, and electrum. Some of the early-mined ore was of bonanza grade.

In 1976–79, Spring Investments Limited, Box 340, Stewart, investigated the potential of the property, chiefly by geological mapping and diamond drilling. Small shipments were made of ore and mill clean-up.

References: *Minister of Mines, B.C.*, Ann. Rept., 1964, pp. 21, 22; MI 104B-54.

Premier Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1976	73	Crude ore	2 115	62 984	—	1 903	2 541	—
1977	42	Clean-up	1 490	38 091	262	7 629	6 091	—
1978	245	Clean-up; lead concentrates, 58 t; ore, 187 t	9 144	312 212	98	17 915	15 035	—
1979	105	Clean-up; lead concentrates, 36 t; ore, 69 t	2 242	13 122	445	9 937	8 146	—

TASU (Fig. M-2, NTS 103, No. 47)

Skeena M.D. Lat. 52°45.5′ Long. 132°03′ (103C/16E)

This property of more than 100 mineral claims is on the south side of Tasu Sound, Moresby Island. It is reached by float plane from Sandspit.

It is owned by Wesfrob Mines Limited, 1113 West Pender Street, Vancouver, a division of Falconbridge Nickel Mines Limited.

The ore zone is in a folded and tilted panel of stratified rocks surrounded and underlain in part by the north end of San Christoval batholith. The stratified rocks are the upper part of the volcanic Karmutsen Formation and the overlying Kunga Formation. A laccolith of diorite porphyry lies chiefly between the two formations. The batholith has produced skarnification of all these rocks. Magnetite and chalcopyrite ore, and associated skarn, occur for the most part in Kunga limestones and diorite porphyry, and in limited amounts in Karmutsen volcanic rocks. Most of the ore is in a stratiform zone about 63 metres thick, replacing massive Kunga limestone and diorite porphyry. Many post-ore dykes cut the ore zone.

Production began in 1967. Mining was by open pit until mid-1977, since which time it has been by underground longhole drilling and trackless haulage. The concentrator was designed to treat magnetite ore to produce a concentrate of sinter feed; and to treat magnetite-chalcopyrite ore to produce a finely ground magnetic concentrate as pellet feed, and a copper concentrate after removal of the magnetite.

References: *Minister of Mines, B.C.,* Ann. Rept., 1974, pp. 320, 321; *B.C. Ministry of Energy, Mines & Pet. Res.,* Bull. 54, pp. 83–89; MI 103B-C-5, 7, 56.

Tasu Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	1 622 385	Iron concentrates, 946 719 t; copper concentrates, 7 934 t	42 238	1 720 991	1 499 933	—	—	—
1976	1 572 524	Iron concentrates, 837 813 t; copper concentrates, 11 641 t	59 002	2 406 781	2 265 207	—	—	—
1977	1 020 886	Iron concentrates, 384 309 t; copper concentrates, 11 660 t	1 817	80 671	5 080 107	—	—	—
1978	889 933	Iron concentrates, 554 414 t; copper concentrates, 5 989 t	28 397	1 198 647	1 175 609	—	—	—
1979	1 009 247	Iron concentrates, 589 642 t; copper concentrates, 18 739 t	92 159	3 529 716	3 861 563	—	—	—
1980	996 422	Iron concentrates, 581 637 t; copper concentrates, 10 689 t	51 694	2 206 506	2 225 590	—	—	—

Slocan M.D. (82F)

SLOCAN SHIPPING MINES

In addition to the properties described in these pages there were, in the six years 1975 to 1980, 50 others from which production was recorded but other details were lacking. All these properties are in the Slocan Mining Division, and all but three or four in what has been recognized for years as the "Slocan Mining Camp", tributary to Sandon, New Denver, Silverton, Slocan village, and Kaslo. They are listed in the following table, with appropriate years of production.

Most shipments were small, and were made to the Trail smelter, but a little ore was treated by custom concentrators: Ottawa near Slocan village, Silvana (formerly Carnegie or Silmonac) at Sandon, and David (formerly Yale) at Ainsworth. Custom ore was in some instances bought on the basis of mill-feed assay. The production figures may be found in Table M-1 in the back of the present volume.

These properties are mentioned because they provide a measure of activity in the camp, whether by individuals, small groups, or company endeavour. It should be understood that most of the shipments made were of sorted ore, and in no sense represent mining grade of vein matter. Some represent recovery from dumps, and many were of known remnants of ore that were shipped to take advantage of advanced metal prices. In some instances, there is no knowledge of which vein was involved, or which specific mineral claim. Clean-up activity (salvage) at the Bluebell and other concentrators does not merit inclusion in the following list.

SLOCAN SHIPPING MINES

ANTOINE, 1975
ARKANSAS, 1976
AU, 1979
BLUEBIRD, 1978, 1979, 1980
BOSUN, 1976
CAPELLO, 1980
CHIEF, 1976, 1977
COLONIAL, CHICAGO, 1978, 1979
CORINTH, 1978
EASTMONT, 1975
EMERALD HILL, 1979
ENTERPRISE, 1975, 1976, 1977
FISHER MAIDEN, 1979
FOURTH OF JULY, 1979
GALENA FARM, 1975, 1977
GLADSTONE, 1976, 1979
HALL, 1980
HECLA, 1975, 1980
HERCULES, 1977
JESSE, 1975, 1976
KALISPEL, 1975
LAKEVIEW, 1979, 1980
LEO, 1976
LITTLE TIM, 1975, 1978
LUCKY BOY, 1976
LUCKY SPOT, 1976
LUCKY THOUGHT, 1977
McALLISTER, 1980
MAMMOTH, 1978
MEMPHIS, 1979
MERCURY, 1980
METEOR, 1980

SLOCAN SHIPPING MINES—*Continued*

MILLIE MACK, 1979
MOLLY HUGHES, 1979
MONARCH, 1980
MOOSE, 1976, 1977
MORNING STAR, 1975, 1979
NOONDAY, 1980
PUCK, 1980
QUEEN BESS, 1978
RITCH-MITCH, 1980
SHANNON, 1975
SILVER MAIDEN, 1979
SNOWSTORM, 1980
SPOKANE, 1979
VICTOR, 1975, 1976, 1977, 1979
WASHINGTON, 1975
WESTMONT, 1980
WHITEWATER, 1975, 1976, 1977, 1980
WONDERFUL, 1979

ARLINGTON (Fig. M-2, NTS 82, No. 48)

Slocan M.D. Lat. 49°47.4′ Long. 117°21.6′ (82F/14W)

This property of 18 Crown-granted and recorded mineral claims is on Springer Creek, 11 kilometres east of Slocan Village.

It is owned by Arlington Silver Mines Ltd., Slocan, and was leased by Slocan interests who mined in 1975 and 1979–80.

The ore is in breccia veins in Nelson granite, within a lode which is as wide as 20 metres. Mineralization is of dry ore type, with much quartz. In 1978 the lower adit or A level was rehabilitated for 90 per cent of its length. Shipments to the Ottawa concentrator were 152 tonnes in 1978 and 1 037 tonnes in 1979.

Reference: MI 82F/NW-152

Arlington Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	120	Crude ore	—	44 384	—	6 679	8 317	—
1976	21	Lead concentrates salvaged from dump	62	170 258	—	6 680	4 185	—
1978	152	Lead concentrates, 17 t; dump clean-up	—	84 569	—	5 946	3 647	—
1979	1 037	Lead concentrates, 32 t; zinc concentrates, 17 t	588	117 300	53	15 724	12 967	46

HEWITT (Fig. M-2, NTS 82, No. 49)

Slocan M.D. Lat. 49°56′ Long. 117°18′ (82F/14W)

This old property of 26 Crown-granted mineral claims and fractions is on the south side of Silverton Creek, 4.8 kilometres east-southeast of Silverton. It is owned by Dungannon Explorations Ltd. and Sabina Industries Ltd., both of Toronto.

Mineralized pods and lenses occur in a broad shear zone crossing Slocan sedimentary rocks.

In 1976–80 Frank Pho of New Denver performed a variety of work, including shaft sinking 35 metres from No. 1300 level (No. 10 East adit) to No. 1400 level, and drifting and raising on No. 1400. Sublevel drifting was done, and a winze was sunk from No. 1390 level to No. 1460, a distance of 22 metres. Stoping was done in 1978 and 1979, and stopes were drawn in 1980. Shipments were made to the concentrator at Sandon, owned, since June 1977, by Silvana Division of Dickenson Mines Limited, 855 tonnes.

Ore was sold to Silvana, as follows:

1977, 400 tonnes assaying: silver, 248.8 grams per tonne; lead, 2 per cent; zinc, 5 per cent

1978, 2 800 tonnes assaying: silver, 297.6 grams per tonne; lead, 2.6 per cent; zinc, 6.6 per cent

1980, 2 000 tonnes assaying: silver, 559.8 grams per tonne; lead, 2.9 per cent; zinc, 7.2 per cent

Reference: MI 82F/NW-65

Hewitt Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1976	855	Lead concentrates, 41 t; zinc concentrates, 89 t	—	325 493	—	24 039	47 632	332

LAST CHANCE (Fig. M-2, NTS 82, No. 50)

Slocan M.D. Lat. 49°59.8′ Long. 117°12′ (82F/14E)

This property of nine Crown-granted mineral claims is on Keen Creek, a tributary of Kaslo River.

Mineralization is in a shear zone near an irregular contact between feldspar porphyry and Slocan sedimentary rocks.

Owned by Keen Creek Developments Ltd. of Kaslo, it was leased to David Minerals Ltd. In 1979 the latter company did 61 metres of trackless drifting and mined a small stope. Production of 997 tonnes of ore was shipped to the latter company's concentrator at Ainsworth. Gross content in concentrate: gold, 717 grams; silver, 51.862 grams; lead, 9 492 kilograms; zinc, 103 331 kilograms; copper, 238 kilograms; and cadmium, 976 kilograms.

Reference: MI 82F/NW-20.

LUCKY THOUGHT (Fig. M-2, NTS 82, No. 51)

Slocan M.D. Lat. 49°56.3′ Long. 117°18′ (82F/14W)

This property is on the south side of Silverton Creek, 9 kilometres by road east of Silverton. It consists of the NB mineral claim, a relocation by Sydney Berisoff of the Lucky Thought claim, which had lapsed.

Mineralization is in a quartz-carbonate vein within slaty Slocan sedimentary rocks, in a shear zone which is subparallel to the Hewitt-Van Roi lode.

In the four years, 1976–79, Mr. Berisoff and two others sank a small shaft on the vein to a depth of 15.2 metres, and an 18 per cent decline another 10 metres, above which some stoping was done. Some ore from this work was shipped to Trail, some to the Ottawa concentrator, and some to the Silvana concentrator at Sandon.

Reference: MI 82F/NW-63.

Lucky Thought Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1977	327	Crude ore	—	329 630	144	25 407	28 819	191

OTTAWA (Fig. M-2, NTS 82, No. 52)

Slocan M.D. Lat. 49°47.5′ Long. 117°24′ (82F/14W)

This property, of 16 Crown-granted mineral claims, is on Springer Creek, 9 kilometres east of Slocan village. The mine was an old producer.

It is owned by Slocan Development Corporation Limited, 1177 West Hastings Street, Vancouver V6E 2L6. An old concentrator of limited capacity is owned by Selman Resources Ltd. of Kamloops.

Quartz veins in a broad sheared and brecciated zone in coarse porphyritic Nelson granite contain galena and sphalerite as well as metallic silver, argentite, and tetrahedrite.

In 1976-77-78, the mine was leased to C. Thickett of Slocan village and shipments were made to the concentrator. In 1979-80 the mine was leased to Memphis Mines Ltd. through Mr. Thickett. Sixty-nine tonnes of ore was shipped to Trail in 1979 and 596 tonnes in 1980.

Reference: MI 82F/NW-155

Ottawa Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	12	Crude ore	—	105 532	—	82	35	—
1976	1 348	Silver concentrates, 13 t; crude ore, 11 t	18	999 402	226	1 623	1 169	—
1977	1 304	Silver concentrates, 8 t; crude ore, 112 t	33	1 325 579	196	557	344	—
1978	496	Silver concentrates, 7 t; crude ore, 42 t	—	1 372 047	234	647	335	—
1979	69	Crude ore	—	673 764	—	—	—	—
1980	596	Crude ore	—	994 689	—	—	—	—

PANAMA, SILVER GLANCE (Fig. M-2, NTS 82, No. 53)

Slocan M.D. Lat. 50°03.6′ Long. 117°12.5′ (82K/3E)

This property is on the slope of London Ridge at 2 040 metres elevation, 6.4 kilometres by steep road from Fish Lake on the Kaslo-New Denver road.

It is owned by United Hearne Resources Ltd., 1199 West Hastings Street, Vancouver V6E 2K5.

A narrow quartz vein in Slocan sedimentary rocks was investigated by the company, making shipments of ore in 1975, 1976 and 1979. The mine was leased in 1980 by W. F. Petrie of Merritt.

Reference: MI 82K/SW-28, 55.

Panama, Silver Glance Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	379	Crude ore	—	360 546	—	1 438	1 187	—
1976	184	Crude ore	63	162 451	—	919	736	—
1979	850	Crude ore	342	757 121	—	4 196	—	—
1980	826	Crude ore	409	904 800	809	2 889	621	—

SCRANTON (Fig. M-2, NTS 82, No. 54)

Slocan M.D. Lat. 49°47.3′ Long. 117°03.6′ (82F/14E)

This property of eight Crown-granted claims is on Pontiac Creek, a southern tributary of Woodbury Creek, 13 kilometres from Woodbury Creek mouth on Kootenay Lake.

Owned in 1975 by Silver Star Mines Ltd., it was bought in mid-1977 by David Minerals Ltd., 475 Howe Street, Vancouver V6C 2B3.

Quartz and quartz-carbonate veins occur within granodiorite of the Nelson batholith, in a fault structure dipping steeply to the southeast. The zone has been traced on the surface for more than 2 kilometres. Seven sections of vein had work done on them previously, with an average width of about 0.75 metre. Mineralization is disseminated or massive galena, sphalerite, and pyrite.

Ore was produced in 1975 to 1979, part of the time under contract by Hem Mines Ltd., and was hauled to the David Minerals' concentrator, formerly owned by Yale Lead & Zinc Company, 2 kilometres south of Ainsworth. Production stopped in February 1980, and a more intensive development of the mine was started.

Reference: MI 82F/NW-112.

Scranton Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	1 611	Lead concentrates, 99 t; zinc concentrates, 114 t	4 821	214 828	—	76 844	64 622	1 338
1976	4 767	Lead concentrates, 295 t; zinc concentrates, 348 t; crude ore, 73 t	25 162	573 944	77	223 705	196 361	4 041
1977	6 869	Lead concentrates, 259 t; zinc concentrates, 287 t	29 019	468 660	35	182 843	171 209	3 740
1978	114	Lead concentrates, 56 t; zinc concentrates, 58 t	5 381	109 669	—	41 112	32 651	681
1979	3 120	Lead concentrates, 53 t; zinc concentrates, 259 t	3 348	117 670	1 012	37 256	131 535	1 563

SILMONAC (Fig. M-2, NTS 82, No. 55)

Slocan M.D. Lat. 49°58′ Long. 117°15′ (82F/14W)

The concentrator is 1 kilometre below Sandon. The property of 62 Crown-granted mineral claims and fractions extends up the hillside along Tributary Creek, to the ridge summit.

The mine was purchased in 1977 by Dickenson Mines Limited of Toronto, and has since been operated by its Silvana Division: Silvana Mines Inc., New Denver. What is essentially the same property was once owned and operated by Carnegie Mining Corporation Limited, largely to explore the region of the Ruth Hope and Silversmith vein systems. A 150-tonne concentrator was built, and had operated, since 1958, on a custom basis until purchased by Silvana. Violamac Mines Limited acquired the property, and in 1966 merged to form Kam Kotia Mines Ltd., which company mined on a joint venture basis with Burkam Mines Ltd. until 1974, and then under its own direction. In June 1977, the present company acquired the property and the concentrator. The former operation gave the name Silmonac to the mine, and, as some of the workings of which lie beneath the Minniehaha mineral claim, that name has been applied also.

The ore is in a complex, rather flatly dipping vein system in Slocan sedimentary rocks locally intruded by quartz diorite sills and dykes.

The mine was first developed from a crosscut driven from the old Ruth No. 5 level, by the 4000 level, and by the 4625 level. In 1975 and later, trackless mining was employed.

Mining was complicated by low dips of the ore shoots and weak ground. The concentrator operated at about 16 000 tonnes per year and in 1980 treated 29 820 tonnes of ore.
Reference: MI 82F/NW-50.

Silmonac Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	10 928	Lead concentrates, 982 t; zinc concentrates, 757 t	—	6 228 905	—	591 365	471 192	2 940
1976	16 694	Lead concentrates, 1 412 t; zinc concentrates, 1 240 t	—	7 408 703	—	836 172	743 490	4 643
1977	15 996	Lead concentrates, 1 873 t; zinc concentrates, 1 014 t	—	9 163 815	—	1 102 548	712 759	3 995
1978	15 967	Lead concentrates, 1 460 t; zinc concentrates, 972 t	—	7 579 024	—	883 758	638 881	3 724
1979	19 625	Lead concentrates, 1 500 t; zinc concentrates, 1 323 t	—	9 021 470	—	912 566	813 375	4 961
1980	29 820	Lead concentrates, 1 362 t; zinc concentrates, 1 223 t	—	7 687 934	—	791 327	726 989	4 410

UTICA (Fig. M-2, NTS 82, No. 56)

Slocan M.D. Lat. 49°58.5′ Long. 117°07.7′ (82F/14E)

This old property of 17 Crown-granted mineral claims is on Keen Creek, a branch of Kaslo River, 31 kilometres by road from Kaslo.

Formerly owned by Utica Resources Ltd., it was purchased in August 1980 by David Minerals Ltd., 475 Howe Street, Vancouver V6C 2B3.

Veins of calcite, siderite, and quartz in Slocan sediments are mineralized with galena and sphalerite. Silver values are associated with sphalerite as well as galena.

In 1980, ore, chiefly from mine dumps, was hauled to the David Minerals' concentrator at Ainsworth.

Reference: MI 82F/NW-86.

Utica Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1980	9 525	Lead concentrates 403 t; zinc concentrates 150 t; crude ore 12 t	804	1 056 989	—	28 755	141 958	577

BLUE BIRD (Fig. M-2, NTS 82, No. 57)

Trail Creek M.D. Lat. 49°04′ Long. 117°48′ (82F/4W)

A large group of claims on Trail Creek, 2 kilometres by road south of Rossland is owned by Ross Island Mining Co. Ltd., 1030 West Georgia Street, Vancouver V6E 3C2. Within that group the Bluebird, Copper Queen, and Mayflower Crown-granted mineral claims were leased by Standonray Mines Ltd., 2086 St. Paul Street, Rossland.

An easterly striking quartz vein in volcanic rocks of the Mount Roberts Formation is mineralized with sphalerite, galena, pyrite, and arsenopyrite.

In 1975 open stoping was done in higher grade sections of the mine, and low-grade sections were left as pillars; some of the ore was treated in a small concentrator at the main

portal. In 1976, 474 tonnes of ore was shipped to the smelter. In 1977, about 2 000 tonnes was shipped, but the concentrator was not used.

Reference: MI 82F/SW-145, 146.

Bluebird Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	1 358	Crude ore; silver concentrates, 91 t	2 809	1 173 005	—	46 333	51 846	—
1976	474	Crude ore	696	307 772	—	13 205	15 378	—
1977	2 081	Crude ore	1 454	586 758	—	29 709	35 135	—
1978	130	Lead concrentrates, 54 t; zinc concentrates, 76 t	560	280 860	—	13 755	29 385	—

BLUE JACK and CALLAGHAN (Fig. M-2, NTS 92, No. 58)

Vancouver M.D. Lat. 50°04′ Long. 123°08′ (92J/3E)

The property of 194 mineral claims (in 1977) is north of Brandywine Falls, 40 kilometres north of Squamish.

It was owned by Van Silver Mines Ltd., 409 Granville Mall, Vancouver V6C 1T5, which company went into receivership December 29, 1977.

Veins and quartz-carbonate stringers are mineralized with galena, sphalerite, chalcopyrite, and pyrite; metallic gold and tetrahedrite are present in some places. Country rocks are metamorphosed volcanic and sedimentary rocks, intruded by Coast granodiorite and quartz diorite.

In 1976 work on the Silver Tunnel zone on the Sunny Cave claim included driving five crosscuts. A concentrator building was erected and some equipment was installed. In 1977, the 100-tonne-per-day concentrator was completed, and ore from the Silver Tunnel, Main Showing pit, and Tedi open pit totalling 8 067 tonnes was milled.

Reference: MI 92J/W-1, 3

Blue Jack Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1977	8 067	Silver concentrates	1 381	157 468	1 290	6 764	9 857	—

BRITANNIA (Fig. M-2, NTS 92, No. 59)

Vancouver M.D. Lat. 49°36′ Long. 123°08′ (92G/11E)

The Britannia mine is on the east side of Howe Sound at Britannia Beach, 65 kilometres north of Vancouver. It was owned by Anaconda Britannia Mines, a division of Anaconda Canada Limited, until the mine, and part of the extensive property, was sold on October 29, 1979, to Copper Beach Estates Ltd. Anaconda Canada retained 299 Crown-granted mineral claims covering 5 582 hectares.

The Britannia ore zone lies within an extensive shear zone in a roof pendant in Coast Intrusion rocks. Orebodies are localized in mainly volcanic rocks, in response to variations in structure within the main Britannia shear.

The Britannia is one of the oldest copper mines in the area. A concentrator was put into operation in 1905 and closure came on November 1, 1974. The mine was developed through a vertical range of 1 900 metres (from the outcrop of ore to a shaft sump at the

6 300 level). Several separate sections or mines were developed, but all were parts of a single operation and delivered ore to the concentrator through the same main haulage level.

In 1975, dismantling and removal of underground equipment was completed. Sale of mine, mill, and shop equipment and supply inventory was by public auction on August 13 and 14, 1975, and removal of material by the purchasers was substantially complete by the end of the year.

Following closure of the mine, the copper precipitation plant at the beach remained in operation. Mine waters draining from surface gloryholes and underground workings were passed through a plant in which dissolved copper was precipitated on scrap iron. The volume of mine waters ranged from 3 000 litres per minute in January to 40 000 litres per minute in June. Because of danger of flooding the townsite, a permanent hydrostatic bulkhead was placed inside the 4100 main haulage adit to control the flow of water. This was in place and monitored in 1979.

During the life of the operation, from first production in 1905 to 1977, the date of the last record of precipitated copper, the Britannia mine had milled 47 402 173 tonnes of ore, with gross metal content in concentrates of: gold, 15 336 324 grams; silver, 180 845 128 grams; copper, 516 959 750 kilograms; lead, 15 563 003 kilograms; zinc, 125 290 669 kilograms; and cadmium, 444 804 kilograms. (The copper figure includes copper contained in precipitates.) Copper concentrates solely were produced until 1933–36, when zinc concentrates also were produced. Zinc concentrates were again produced in 1947 and for the remaining life of the mine.

References: *B.C. Ministry of Energy, Mines & Pet. Res.*, GEM, 1970, pp. 233–246; MI 82G/NW-3, 36.

Britannia Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	—	Copper concentrates, 30 t; copper precipitates, 211 t	043	4 043	72 740	—	—	—
1976	292	Copper precipitate	—	—	90 124	—	—	—
1977	236	Copper precipitate clean-up	—	7 465	56 555	—	—	—

WARMAN (Fig. M-2, NTS 92, No. 60)

Vancouver M.D. Lat. 50°08′ Long. 123°06′ (92J/3E)

This property of more than 100 mineral claims is 11 kilometres north of Brandywine Falls on the east side of Callaghan Creek, 55 kilometres by road north of Squamish.

It is owned by Northair Mines Ltd., 625 Howe Street, Vancouver V6C 2T6; mine office, Box 2029, Squamish V0N 3G0. this is a comparatively new discovery, made by amateur prospectors in 1970. Development work proceeded at once. The concentrator of King Resources Ltd. west of Revelstoke was installed in 1975, and production began in 1976.

A quartz-carbonate vein zone containing galena, sphalerite, chalcopyrite, and pyrite strikes northwestward and dips steeply. It is emplaced in a series of foliated volcanic rocks including dacite, rhyodacite, and feldspar crystal tuff that form a roof pendant in granodioritic rocks of the Coast Intrustions.

Three separate zones are known, in order of discovery, as the Discovery, Manifold, and Warman, the latter found by diamond drilling in 1973. It is presumed that these are segments of a single vein system, known to be cut by many north-trending faults and by post-mineral basic dykes. There is variation throughout the length of the entire zone in terms of ore minerals, metal content, and gold-silver ratios.

Ore was mined by cut-and-fill stoping, and by shrinkage in small stopes where walls were competent. The concentrator is at the 3200 level and the main haulage adit is the 2800

(853 metres) level. The highest level is at 1 067 metres. Production includes lead concentrate, zinc concentrate, and dore bars.

References: *B.C. Ministry of Energy, Mines & Pet. Res.*, GEM, 1974, pp. 200–202; MI 92J/W-12.

Warman Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1975	526	High-grade ore, test shipments	12.690	12.379	1 485	1 185	5 504	—
1976	47 553	Lead concentrates, 876 t; zinc concentrates, 846 t; dross bars	620.131	3 864.112	—	340 681	411 021	1 782
1977	84 366	Lead concentrates, 2 489 t; zinc concentrates, 2 347 t; dore bars	1 234 043	10 341 094	—	1 217 824	1 265 112	1 354
1978	93 397	Lead concentrates, 2 782 t; zinc concentrates, 2 161 t; dore bars	1 069 386	5 708 023	100 930	1 140 032	1 464 364	—
1979	88 309	Lead concentrates, 1 712 t; zinc concentrates, 1 587 t; dore bars	954 534	1 926 052	94 186	724 866	1 106 137	—
1980	71 124	Lead concentrates, 1 779 t; zinc concentrates, 2 246 t; dore bars	564 131	1 894 138	97 203	871 219	1 246 617	—

CHAPUT (Fig. M-2, NTS 82, No. 61)

Vernon M.D. Lat. 50°16′ Long. 118°57′ (82L/7W)

This property of 24 Chaput located claims is on Bessette Creek, 2 kilometres northeast of Lumby. It is owned by Wallace and Edward Chaput of Lumby.

A quartz vein in metamorphosed rocks of Carboniferous age is mineralized with galena, sphalerite, chalcopyrite, pyrite, pyrrhotite, and some argentite.

Intermittent activities by United Mineral Services Ltd. in 1976 and 1978–80 resulted in milling 454 tonnes of ore in 1976 to produce 41 tonnes of lead concentrate. A small mill, built in previous years, is reported to have treated custom ore in addition.

Reference: MI 82L/SE-6.

Chaput Production

Year	Ore Produced *tonnes*	Products Shipped	Gross Metal Content					
			Gold *g*	Silver *g*	Copper *kg*	Lead *kg*	Zinc *kg*	Cadmium *kg*
1976	454	Lead concentrates, 41 t	156	206 057	654	12 746	5 485	—

NON-METALLIC MINES AND QUARRIES

ASBESTOS

CASSIAR (Fig. M-2, NTS 104, No. 62)

Liard M.D. Lat. 59°19.6′ Long. 129°49.4′ (104P/5W)

The mine is approximately 4.8 kilometres north of Cassiar townsite, on Mount McDame, between 1 680 and 2 130 metres elevation. Cassiar is 140 kilometres by road from Watson Lake, Yukon Territory.

The property of 69 mineral claims and fractions was owned by Cassiar Asbestos Corporation Limited until June 1980, when the company's name was changed to Cassiar Resources Limited. In late 1980, the latter company was acquired by Brinco Limited and became the Cassiar Division of Brinco Mining Limited, 1655 West Hastings Street, Vancouver, B.C. V6E 3V3.

The Cassiar asbestos orebody is in a sill-like mass of serpentinite intrusive into Devonian-Mississippian sedimentary rocks. The orebody strikes approximately north and dips 30 degrees to 40 degrees to the east. Numerous veinlets of chrysotile asbestos occur in light to dark green serpentine. Magnetite is fairly abundant, occurring in microscopic veinlets and larger veins. Other associated minerals include picrolite, magnesite, nemalite, brucite, tremolite, and antigorite. Approximate surface dimensions of the orebody are 230 by 460 metres (1979).

Mining has been done in a large open pit that has greatly changed the surface outline of Mount McDame. A double benching technique was employed, leaving, in waste, 27-metre benches (two lifts) and 15-metre catchments and, in ore, 18-metre benches and 11.5-metre catchments. The method has been to take a series of 46 to 76-metre slices (referred to as "phases") off the hangingwall in order to expose the orebody. In 1980, mining of ore was in Phase 8 and the lowest part of the pit was at about 1 680-metre elevation.

In 1979–80, an adit, at an elevation of 1 568 metres, was extended to a total length of 973 metres, diamond-drill stations were cut, and a total of 8 132 metres of diamond drilling was done to explore the deeper outlines of the orebody.

Ore from the pit was trucked to the primary crusher at the pit rim and conveyed by a new tramline (August 1975) almost 0.9 kilometre long, with a drop of 649 metres, to the new primary concentrator (August 1975). Approximately 30 per cent of the waste rock was screened off, and the concentrated ore was taken to the 150-tonnes-per-hour mill, where it was repeatedly crushed and screened, and asbestos fibre was drawn off by suction.

In past years the bagged fibre was hauled by truck to Whitehorse or Fort Nelson, but following completion of the Cassiar-Stewart road it was hauled to Stewart and shipped thence from a deep-sea dock.

Production: 1975–80: 506 878 tonnes of asbestos.

Reference: MI 104P-5.

BARITE

Mountain Minerals Limited, Box 700, Lethbridge, Alta. V1J 3Z6, produced from three sources south of Golden, barite that was shipped to the company's processing plant at Lethbridge:

(1) TOBY CREEK (Fig. M-2, NTS 82, No. 63)

Golden M.D. Lat. 50°20.5′ Long. 116°25.7′ (82K/8W)

At the junction of Toby Creek and Jumbo Creek, 40 kilometres from Invermere—A gravity separation plant recovered barite from tailings piles of the former Mineral King lead-zinc mine.

Reference: MI 82K/SE-1.

(2) BRISCO (Fig. M-2, NTS 82, No. 64)

Golden M.D. Lat. 50°49.9′ Long. 116°19.6′ (82K/16W)

A fault zone averaging 12 metres wide in dolomite was originally quarried, but in the period 1975–80 it was mined by underground stoping.

Reference: MI 82K/NE-13.

(3) PARSON (Fig. M-2, NTS 82, No. 65)

Golden M.D. Lat. 51°01.3′ Long. 116°39′ (82N/2E)

Two sub-parallel fissure veins, about 100 metres apart and dipping 55 degrees west, are in Lower Cambrian sedimentary rocks. A small quarry operated in 1975–76; later, barite was produced from underground stoping.

Reference: MI 82N-2.

Production figures are not available.

BUILDING STONE

The following two quarrying operations are the only ones specifically mentioned. Small amounts of stone were produced for short periods from a number of localities in the province, but for local use and on such a desultory basis that no purpose is served by describing them in this 6-year summary. Uses included ballast, riprap, granules, stucco dash, and where colours were desirable, for building facings.

Pleasingly coloured durable stone that is also fissile, to permit dressing without expensive equipment, is to be found in many highly metamorphosed terranes. Such stone has been found along the east side of Okanagan Lake, in the West Kootenay, and elsewhere. It includes platy quartzite, quartz-mica schist, gneiss, etc., and may support a "cottage industry" type of operation for facing stone, flagstones for patio and garden, and other uses. There have been several small quarries in such rocks.

PITT RIVER QUARRY (Fig. M-2, NTS 92, No. 66)

New Westminster M.D. Lat. 49°17.4′ Long. 122°39.3′ (92G/7E)

On Sheridan Hill on the east bank of Pitt River, 6 kilometres north of Pitt Meadows.

The registered owner of the land was Pitt Polder Ltd. and the operator and owner of the plant was Dillingham Corporation of Canada Ltd., 20 Brooksbank Avenue, North Vancouver, B.C. V7J 2B8.

The quarry produced quartz-diorite riprap and armour rock. Undersized material was crushed and screened to produce other marketable products. Most products were shipped by scow on the Pitt River.

The operation was intermittent, depending on demand, with a crew of about eight.

Reference: MI 92G/SE-7.

WATTS POINT QUARRY (Fig. M-2, NTS 92, No. 67)

Vancouver M.D. Lat. 49°39.2′ Long. 123°12.4′ (92G/11E)

The quarry is on the east shore of Howe Sound, 5 kilometres south of Squamish.

It was owned by CR Aggregates Sales Ltd., Box 1608, Squamish. The company went into receivership in 1979, and there was only caretaking activity in 1980.

The quarry was started in dacite rock, with the initial intention of producing high quality crushed rock for the asphalt and concrete industries, but rock was also supplied for railway ballast and other uses.

Highly fractured dacite was mined by ripping with bulldozers on a system of bench mining. Pit-run rock was crushed and screened and conveyors extended from the plant to barges and to a railway spur. From 250 000 to 600 000 tonnes was produced yearly from 1975 to late 1979.

Reference: MI 92G/NW-38.

CLAY AND SHALE

CLAYBURN INDUSTRIES LTD. (Fig. M-2, NTS 92, No. 68, 69)

New Westminster M.D.	Lat. 49°03.2′	Long. 122°17.3′	(92G/1W)
New Westminster M.D.	Lat. 49°03.5′	Long. 122°11.7′	(92G/1E)

Workings are on the southwest end of Sumas Mountain near Kilgard, 80 kilometres east of Vancouver; plant is at Abbotsford; company address, Box 160, Abbotsford V2S 5C1.

Shales of Eocene age were mined by open pit. A fireclay seam in a shallow basin at the base of the Eocene was mined from underground.

Two open pits were worked on a bench system with bench heights of 7 metres. Underground mining was by room-and-pillar method.

The mine production was fireclay, brickclay, shale, and sandstone. The plant produced face and refractory bricks; sandstone and shale were crushed and shipped as cement additive. On the average, about 10 men were employed at the mine.

References: *B.C. Ministry of Energy, Mines & Pet. Res.*, 1952, Bull. 30, Clay and Shale Deposits of British Columbia; MI 92G/SE-4, 5, 31.

HANEY BRICK AND TILE LIMITED (Fig. M-2, NTS 92, No. 70)

New Westminster M.D.	Lat. 49°12.6′	Long. 122°35.9′	(92G/2E)

Company office, Box 38, Maple Ridge V2X 7E9.

Clay was quarried from a pit adjacent to the plant on the east edge of Haney. The plant manufactured drain tile, structural tile, facebrick, common brick, flue lining, and flower pots.

Reference: MI 92G/SE-6.

DIATOMITE

CROWNITE INDUSTRIAL MINERALS LIMITED (Fig. M-2, NTS 93, No. 71)

Cariboo, M.D.	Lat. 52°57.6′	Long. 122°32.2′	(93B/15E)

Company office, Box 4159, Quesnel.

An open-pit in diatomaceous earth is 2.4 kilometres southwest of West Quesnel. This is a part of the most extensive deposits known to occur in British Columbia. Diatomite formed in what is believed to have been a series of lakes, at or near the same location, which were formed by blockage of the Fraser River in Tertiary time. The deposits are believed to be Upper Miocene in age. As a result of slumping and faulting the deposits are now in discontinuous blocks at different elevations, on the west side of the Fraser River from Alexandria, 38 kilometres south of Quesnel, to the big bend 13 kilometres north of Quesnel.

Pit operation was straightforward. Diatomaceous earth was loaded into trucks for transport to the plant near the confluence of Quesnel and Fraser Rivers. The earth was dried in

a rotary kiln, pulverized, screened, sized by air elutriation, pelleted as required, and bagged for marketing.

A red, "burnt" shale near the plant was mined, treated in the same plant, and sold for numerous purposes, one of which was for making pozzolanic cement.

Diatomite production, 1975–80: 17 074 tonnes.

Reference: MI 93B-23.

GYPSUM

WINDERMERE QUARRY (Fig. M-2, NTS 82, No. 72)

Golden, M.D. Lat. 50°30′ Long. 115°54′ (82J/5W, 12W)

The quarry, on a property of 41 Crown-granted mineral claims, is on the north fork of Windermere Creek, 12.9 kilometres east of Invermere. The secondary crushing, screening, and loading plant is beside the railway at Wilmer.

The property is owned by Westroc Industries Limited, 2650 Lakeshore Highway, Mississauga, Ontario; since 1976 it has been operated by that company.

The gypsum is of sedimentary origin, occurring as part of the Mid-Devonian sequence of dominantly calcareous rocks.

The gypsum was mined by open-pit methods, using a two-bench system. Broken ore was loaded in the pit into a portable crushing and screening unit, thence conveyed to a 365-tonne loading bin. From the bin it was hauled by large trucks over a private road, approximately 18 kilometres to the plant at Wilmer, where the gypsum was further crushed and screened and sized. The final product, from 7.5 centimetres to dust, was shipped by rail and truck to Calgary.

In the period 1975–80, 3 886 351 tonnes of gypsum was produced.

References: *B.C. Ministry of Energy, Mines & Pet. Res.*, 1954, Bull. 35; MI 82J/NW-6.

FALKLAND QUARRY (Fig. M-2, NTS 82, NO. 73)

Kamloops, M.D. Lat. 50°30.5′ Long. 119°33′ (82L/12E)

The former gypsum quarrying operation at Falkland, between Kamloops and Vernon, was held under lease by Canada Cement Lafarge Ltd., 1051 Main Street, Vancouver; mine office, RR 2, Kamloops.

Between 1976 and 1980 a contractor broke gypsum rock in one of the existing seven small quarries, 4 kilometres from Falkland village. Intermittently, as needed, this material was trucked to the company's cement plant, 18 kilometres east of Kamloops.

Reference: MI 82L/NW-1.

JADE

NEPHRO JADE LTD. (Fig. M-2, NTS 104, No. 74)

Liard M.D. Lat. 58°17′ Long. 128°40′ (104I/7E)

This company, 3540 West 41st Avenue, Vancouver, held JADE 1 to 6 mineral claims, and also placer mining leases to cover occurrences of jade. The base camp and scene of activity was at the north end of Provencher Lake, about 84 kilometres east of the south end of Dease Lake.

In 1976 drilling and sampling were done on outcrops of jade in situ, and on 140 jade boulders lying in talus. An average crew of six men was employed for three months, and

approximately 125 tonnes of selected jade boulders was taken to Dease Lake to be transported to Vancouver.
Reference: MI 104I-65.

FAR NORTH JADE LTD. (Fig. M-2, NTS 93, No. 75)

Omineca M.D. Lat. 55°51.7′ Long. 125°51.3′ (93N/13W)

This company, also at the above address, held 34 recorded claims on the northwest slope of Mount Ogden, south of Omineca River.
Five men in a two-month period in 1976 diamond drilled 152 short holes in 87 jade masses. Approximately 73 tonnes of jade was prepared for shipment to Vancouver.
Reference: MI 93N-165.

CONTINENTAL JADE LTD. (Fig. M-2, NTS 93, No. 76)

Omineca M.D. Lat. 55°50′ Long. 125°46′ (93N/13W)

This company, 1696 West First Avenue, Vancouver, held four recorded claims on the southern slope of Mount Ogden. In a four-month period in 1967, 10 men mined 99 tonnes of raw jade and shipped 81 tonnes to Vancouver. A diamond saw was employed. Most personnel and supplies were transported by helicopter.
Reference: MI 93N-156, 157.

LIMESTONE

Limestone was produced from nine quarries for a number of uses. Four quarries, representing a large part of provincial production, were on the northern tip of Texada Island. A fifth major quarry was at Cobble Hill, north of Victoria.
Production figures given in Table 3-7E in the Annual Report of the Minister are not complete, inasmuch as the rock mined by an owner for use in its own cement plant is not shown in that table, but only rock that is used for purposes other than owners' cement manufacture.

VANANDA QUARRY (Fig. M-2, NTS 92, No. 77)

Nanaimo M.D. Lat. 49°45′ Long. 124°31.9′ (92F/15E)

On the north side of Texada Island, 2 kilometres southeast of Vananda.
Owned by Lafarge Canada Limited; operated by Canada Cement Lafarge Ltd., 1057 Main Street, Vancouver V6A 2V9.
Limestone was quarried, crushed, screened, and shipped to the company's plant at Richmond.
In 1975–80 approximately 5 700 000 tonnes was produced by a crew of 24 to 37.
Reference: MI 92F-396.

IMPERIAL QUARRY (Fig. M-2, NTS 92, No. 78)

Nanaimo M.D. Lat. 49°44.4′ Long. 124°31.7′ (92F/10E)

On the north end of Texada Island, 3.2 kilometres southeast of Vananda.
Owned and operated by Imperial Limestone Company Limited, 5427 Ohio Avenue South, Seattle, Washington 98134.

Limestone was quarried and trucked 1.2 kilometres to a crushing plant at Spratt Bay. The products included limestone, stucco dash, glass grit, and fine white sand, which were shipped by barge to Vancouver and Seattle.

In 1975–80 approximately 1 200 000 tonnes was produced, with an average crew of 15.

Reference: MI 92F-394.

IDEAL QUARRY (Fig. M-2, NTS 92, No. 79)

Nanaimo M.D. Lat. 49°42.9′ Long. 124°33.8′ (92F/10E)

On the north end of Texada Island, 4 kilometres south of Vananda.

Owned and operated by Ideal Basic Industries, Rock Products Division, 1200 West Pender Street, Vancouver V6E 2S9.

Limestone was quarried and truck hauled to a processing plant at Westside, following closure of the old plant at Marble Bay.

In 1975–80 approximately 7 460 000 tonnes was produced with a crew of up to 51 men.

Reference: MI 92F-395.

DOMTAR QUARRY (Fig. M-2, NTS 92, No. 80)

Nanaimo M.D. Lat. 49°47.2′ Long. 124°37.1′ (92F/15E)

On the north end of Texada Island, 1 kilometre south of Blubber Bay.

Owned and operated by Domtar Chemicals Limited (Lime Division), 470 Granville Street, Vancouver.

In 1975–80 approximately 4 172 000 tonnes was quarried, sized, and shipped by barge to the company's plant in Tacoma.

Reference: MI 92F-397.

COBBLE HILL QUARRY (Fig. M-2, NTS 92, No. 81)

Victoria M.D. Lat. 48°40.6′ Long. 123°37.4′ (92B/12E)

At the southwest corner of Cobble Hill, 3 kilometres southwest of Cobble Hill Station.

Owned by British Columbia Cement Company Limited, RR 1, Mill Bay.

Most of the production was trucked on a private road to the company's cement plant at Bamberton.

In 1975–80 total production of the quarry amounted to approximately 4 000 000 tonnes.

Late in 1980 it was decided to close the quarry permanently.

Reference: MI 92B/NW and 92B/SW-17, 18.

HARPER RANCH QUARRY (Fig. M-2, NTS 92, No. 82)

Kamloops M.D. Lat. 50°40.3′ Long. 120°03.9′ (92I/9E)

On the north side of the South Thompson River, 17 kilometres east of Kamloops. The quarry is 1 kilometre north of the cement plant.

Owned by Canada Cement Lafarge Ltd., 1051 Main Street, Vancouver; operated, under contract, by Plateau Construction Limited, Kamloops, with a crew of six.

In 1975–80 total production of the quarry was approximately 1 580 000 tonnes.

Reference: MI 92I/NE-1.

PAVILION LAKE QUARRY (Fig. M-2, NTS 92, No. 83)

Kamloops M.D. Lat. 50°49′ Long. 121°39′ (92I/13E)

Near the eastern entrance to Marble Canyon, 35 kilometres west of the Cariboo highway, within the boundaries of Pavilion Indian Reserves 3 and 4.

Land owned by the Pavilion Indian Band, was operated by Steel Brothers Canada Limited, Richmond; local office, Cache Creek. This company owned the machinery and calcining plant.

High calcium limestone of chemical grade was crushed, sized, and the minus 5 plus 1 centimetre product was fired in an oil-fired rotary kiln for calcining. The resultant calcium oxide was put in storage bins for sale, but could be crushed and rescreened to meet customer specification. The majority of the 18 to 21 employees were natives living in the near vicinity.

PTARMIGAN CREEK QUARRY (Fig. M-2, NTS 93, No. 84)

Cariboo M.D. Lat. 53°41.1′ Long. 120°54′ (93H/11E)

On the east bank of Ptarmigan Creek, near Urling station on the Canadian National Railway, approximately 128 kilometres east of Prince George as the crow flies.

A band of Lower Cambrian limestone is on ground owned by the Canadian National Railway Company. The band, 30 metres in thickness, was quarried and treated in a crushing, screening, and washing plant. Washed and sized crushed limestone was shipped to Prince George pulp mills. Riprap and crushed limestone for ballast were also shipped by rail.

Reference: MI 93H-17.

DAHL LAKE QUARRY (Fig. M-2, NTS 93, No. 85)

Cariboo M.D. Lat. 53°47.5′ Long. 123°17′ (93G/14W)

At the northeast corner of Dahl Lake, 35 kilometres southwest of Prince George. On District Lot 3474, owned by Northrock Industries Ltd., 3905—18th Avenue, Prince George.

Limestone was quarried, and treated in a crushing, screening, and washing plant, by five men in the summer of 1979.

Reference: MI 93G-32.

MARL

CHEAM MARL PRODUCTS LIMITED (Fig. M-2, NTS 92, No. 86)

New Westminster M.D. Lat. 49°11.5′ Long. 121°44.8′ (92H/4E)

Address, 13 Fletcher Street, Chilliwack.

A deposit of marl, 2 to 3 metres thick, is mined from the bed of the former Cheam Lake, near Popkum. The marl was deposited in the lake bed in postglacial times and has been exposed since the lake was drained in 1952. Marl was mined by dragline after about a metre of clayey overburden was removed, and trucked to an asphalt drainage pad for air drying. The dried marl was sold as agricultural lime.

About 82 000 tonnes was produced in the 1975–80 period.

Reference: MI 92H/SW-106.

SILICA

BUSE LAKE QUARRY (Fig. M-2, NTS 92, No. 87)

Kamloops M.D. Lat. 50°37.3′ Long. 120°01.5′ (92I/9E)

The quarry is at Buse Lake, 11 kilometres south of the cement plant, which is on the north bank of South Thompson River, approximately 17.5 kilometres east of Kamloops.

It is owned by Canada Cement Lafarge Ltd., 1051 Main Street, Vancouver. In 1975–80 it was operated under contract by Plateau Construction Limited.

The quarry is in a volcanic tuff of Miocene age and the product is used as a cement additive. Rock is blasted and hauled to the company's Harper Ranch quarry, where it is crushed before haulage to the cement plant.

The quarry is operated by three men as often as is necessary to produce about 27 000 tonnes per year.

Reference: MI 92I/NE-123.

HUNT SILICA (Fig. M-2, NTS 82, No. 88)

Golden M.D. Lat. 51°12.6′ Long. 116°51.8′ (82N/2W)

The property is on the western slope of the Rocky Mountains on the south bank of Horse Creek, and is 3.2 kilometres from the highway, 12.9 kilometres southeast of Golden.

It is owned by C. Warren Hunt, 1119 Sydenham Road SW., Calgary and is operated by The Hanna Nickel Company, Box 85, Riddle, Oregon 97469 for their plant at Wenatchee, Washington.

The quarry is of recent development. It is in Wonah quartzite with a high silica content. Broken rock is trucked to a crushing and washing plant and the product shipped by rail.

The output in 1980 was approximately 2 000 tonnes.

Reference: MI 82N-43.

FS SILICA (Fig. M-2, NTS 82, No. 89)

Kamloops M.D. Lat. 50°48.8′ Long. 119°49.8′ (82L/13E)

A new quarry on a quartz vein on Niskonlith Creek, near Chase, was owned by Interior Stone and Marble Ltd., Box 2070, Kamloops.

Work in 1980 consisted of stripping the vein and construction of a crushing plant. Some silica was blasted and crushed at the end of the year, and trucked to the railway at Chase.

Reference: MI 82L/NW-31.

PACIFIC SILICA (Fig. M-2, NTS 82, No. 90)

Osoyoos M.D. Lat. 49°11.6′ Long. 119°33.4′ (82E/4E)

On the highway, 1 kilometre north of Oliver is the old Gypo Crown-granted mineral claim, owned for many years by Cominco.

In 1978–80 a small crew of Pacific Silica Products, Box 863, Osoyoos processed the dumps of former operations, and salvaged silica remnants in former mined areas.

Reference: MI 82E/SW-84.

MOBERLY SILICA (Fig. M-2, NTS 82, No. 91)

Golden M.D. Lat. 51°22′ Long. 116°57.9′ (82N/7W)

On Mount Moberly near Hospital Creek, nine kilometres north of Golden.

Owned by Mountain Minerals Limited, 529 Sixth Street South, Lethbridge, Alberta T1J 3Z6.

Silica sand was produced from friable sections of Wonah quartzite. It was a new operation, not in full production in 1980. Sand was trucked to a dry crushing and screening plant beside the highway, 14.5 kilometres from Golden, from which the products were shipped to markets by rail and truck. The plant was capable of processing 300 000 tonnes per year.
Reference: MI 82N-1.

MOUNT ROSE SILICA (Fig. M-2, NTS 82, No. 92)

Vernon M.D. Lat. 50°26.6′ Long. 119°16.9′ (82L/6W)

The property is on Mount Rose, 6 kilometres west of Armstrong.

It is owned and operated by Mount Rose Mining Co. Ltd., Vernon.

A quarry was started on a quartz vein in a quartz-diorite intrusion in phyllite. In 1975 approximately 800 tonnes was blasted from a 4.5 to 6-metre high face for transportation to a crushing and screening plant at the end of the access road. In succeeding years it appears that small tonnages of hand-picked material was shipped for metallurgical use.
Reference: MI 82L/SW-66.

COAL MINES

BYRON CREEK COLLIERIES LIMITED (Fig. M-2, NTS 82, No. 93)

Fort Steele M.D. Lat. 49°30′ Long. 114°40′ (82G/10E)

On Coal Mountain, extending approximately 5 kilometres south of the old townsite of Corbin. Lots 6997 and 6999 (private coal land).

Byron Creek Collieries Limited, Box 270, Blairmore, Alberta is a wholly owned subsidiary of Esso Minerals Canada.

Kootenay Formation coal seams occur in complex multiple synclines controlled by folded reverse faults and imbricate slices. There are at least two mineable seams which are deformed and thickened.

Thick lenses of coal were mined from mid-1974 to 1980 by open-pit mining. Coal was trucked to a cleaning plant at Corbin, erected in 1974, and clean coal was trucked 20 kilometres north to the railway at McGillivray. In 1977 a start was made to build a rail extension to Corbin, and a new cleaning plant was erected with a capacity of 320 tonnes per hour; a conveyor was built from the plant to the load-out area.

Production in 1975–80 was 3 225 788 tonnes of clean thermal coal.

Reference: MI 82G/NW-51.

COLEMAN COLLIERIES LTD. (Tent Mountain) (Fig. M-2, NTS 82, No. 94)

Fort Steele M.D. Lat. 49°33′ Long. 114°42.5′ (82G/10E)

This company, 715, Fifth Avenue SW., Calgary T2P 2X7 operates a mine on Tent Mountain, partly in Alberta and partly in British Columbia. It is 20 kilometres by road in Alberta, from Highway 3 at Crowsnest Pass. Coal Licences 21 and 22.

There appear to be five significant coal seams in the Kootenay Formation, but thrust faulting makes correlation difficult. The seams dip steeply.

Open-pit mining on Tent Mountain has been done for about 30 years, chiefly on the Alberta side of the provincial boundary, but also on the British Columbia side at elevations as high as 2 195 metres, wherever a seam extended into British Columbia.

Production from 1975 was first from No. 3 pit and later from No. 5 pit, which was completed in 1980. Raw coal was trucked to the preparation plant at Coleman, Alberta.

Production in 1975–80 was 1 463 558 tonnes of clean metallurgical coal.

FORDING COAL LIMITED (Fig. M-2, NTS 82, No. 95)

Fort Steele M.D. Lat. 50°11.4′ Long. 114°52.5′ (82J/2W)

The plant site is in the upper Fording River valley, 68 kilometres north of Sparwood, and the mines are on both sides of the valley. A railway spur line reaches the preparation plant.

In 1977, Fording Coal Limited merged with CanPac Minerals to form the present company, 60 per cent owned by Canadian Pacific Investments and 40 per cent by Cominco Ltd. It is managed by Cominco; mine office, Box 150, Elko, V0B 1H0.

The coal seams are in the Kootenay Formation in two north-trending synclines on either side of the Erickson fault which follows the Fording River valley. No. 4 or B seam is the thickest on the property, with a mean thickness of 10.7 metres and in places 18 metres. Total mean thickness of mineable seams is approximately 55 metres in the Greenhills area and 50 metres in the Clode Creek area. There are at least 10 seams of appreciable thickness.

The plant site is at 1 675-metre elevation and workings are as high as 2 135 metres. Production was by open-pit mining, although development of a hydraulic underground mine on Eagle Mountain east of the valley, started in 1975 and was reactivated in 1980.

The largest producer was the Clode pit, on the east side of the valley. It was a truck-shovel operation. The other major source of coal was the Greenhills pit on the west side of the valley. It was mined by dragline shovel and to a limited extent by truck-shovel method. Small production came from the Turnbull pit on Mount Turnbull. In 1980, production was listed from the Taylor and Blackwood pits. The Taylor pit was developed in 1978.

A good deal of exploration drilling was done in 1975 and 1976 within a 3.5-kilometre radius of the preparation plant, to ensure continuing productivity. At the same time, improvements at the plant site were carried out.

Production in 1975–80 was 16 512 356 tonnes of clean metallurgical coal.

Reference: MI 82J/SW and SE-11.

KAISER RESOURCES LTD. (Sparwood and Michel) (Fig. M-2, NTS 82, No. 96)

Fort Steele M.D. Lat. 49°45′ Long. 114°49.5′ (82G/10W, 15W)

In January 1981, the name of this company was changed to B.C. Coal Ltd., 1500 West Georgia Street, Vancouver V6B 2Z8. British Columbia Resources Investment Corporation acquired control of Kaiser Resources Ltd., and formed the present company, 66 per cent owned by British Columbia Resources and 33 per cent by Mitsubishi Corporation and other Japanese interests.

B.C. Coal Ltd. owns extensive freehold and Crown coal properties on the Elk River and on Michel Creek and Flathead and Fording Rivers, lying chiefly in the Fernie coal basin. All of the coal is within the Kootenay Formation, which contains up to 10 coal seams with an aggregate thickness in excess of 45 metres.

In the period 1975–80, virtually all coal production was from the Balmer No. 10 seam, 13 to 15 metres thick, near the base of the Kootenay Formation. Exploration was undertaken at the Greenhills project, on the southern part of a mountainous ridge between the Elk and Fording Rivers, and in 1980 the Greenhills property was being prepared for production.

Northeast of Sparwood, on Harmer Ridge, the Harmer open-pit operations are in a deformed thrust plate on the west limb of a syncline; the westerly extent of the pits is governed by the West Harmer fault. Two underground mines are on Michel Creek. The Balmer North mine is on the east limb of the same syncline, where dips are about 20 degrees. The Hydraulic mine is on the west limb of the syncline, below Sparwood Ridge, where dips are about 35 to 45 degrees.

The main activity was at Harmer Ridge, where as many as eight open pits have been worked, and the coal conveyed to a cleaning plant through a tunnel under the ridge. In 1979 an underground mine was worked on the Baldy No. 7 seam, but it was later decided that further mining of that seam would be from an extension of the present open-pit operation.

Underground mining was continuous at the Balmer North mine. At the Hydraulic mine, Panel 6 was developed and production started from it in 1978. Panel 5 of the Hydraulic mine was worked out in 1980.

The Elkview preparation plant north of Sparwood treated raw coal delivered by conveyor tunnel from the Harmer mine, and by truck from the underground mines. In 1980, improvements and extensions were made to the plant, from which coal was loaded directly to railway cars for transport to the company-owned deep-sea loading facility at Roberts Bank.

The tipple and screening plant at Michel, which for years had treated coal from that vicinity, was demolished in 1980. The Michel coke plant was in operation through 1975–80.

Total production from surface and underground mining in 1975–80 was 34 251 237 tonnes of clean metallurgical coal. Of this total, approximately 6 per cent was thermal coal.

Reference: MI 82G/NW-47, 50.

BULKLEY VALLEY COLLIERIES LIMITED (Telkwa) (Fig. M-2, NTS 93, No. 97)

Omineca M.D. Lat. 54°38′ Long. 127°07′ (93L/11E)

This company holds property on Goathorn Creek, 11 kilometres southwest of Telkwa.

Beds of probable Hazelton age dip for the most part at a moderate angle to the northeast, but there is some folding, and some dips are as steep as 45 degrees. Faults are common.

Coal for local markets has been mined from adits and small pits. Most of the production in 1975-80 was mined underground. Coal sold to local markets in the 6-year period amounted to 1 320 tonnes.

Reference: MI 93L-152 to 156.

Table M-1—Metal Production, 1975

Property or Mine	Location of Mine	Owner or Agent	Ore Shipped or Treated	Product Shipped	Gross Metal Content					
					Gold	Silver	Copper	Lead	Zinc	Cadmium
			t		kg	kg	kg	kg	kg	kg
Alberni Mining Division										
Lynx and Myra	Buttle Lake	Western Mines Ltd.	260 717	Copper concentrates, 7 892 t; lead concentrates, 6 767 t; zinc concentrates, 30 597 t	642.837	35 977.151	2 707 398	3 459 337	18 090 898	70 372
Musketeer	Tofino	New Musketeer Gold Mine Ltd.	7	Crude ore	.435	.280	4			
Privateer	Zeballos	New Privateer Gold Mines Ltd.	7	Crude ore	.467	.373				
Atlin Mining Division										
Atlin-Ruffner	Atlin	Atlin Silver Corp.	137	Crude ore	.607	313.518		18 386		
Cariboo Mining Division										
Boss Mountain mine	Big Timothy Mountain	Noranda Mines Ltd. (Boss Mountain Div.)	545 496	Molybdenite concentrates, 1 927 t; containing 1 094 002 kg of molybdenum						
Gibraltar mine	McLeese Lake	Gibraltar Mines Ltd.	10 388 118	Copper concentrates, 155 736 t; molybdenite concentrates, 470 t; containing 251 672 kg of molybdenum		5 391.611	41 165 032			
Clinton Mining Division										
Nil										
Fort Steele Mining Division										
Dardenelle, Mother Lode	Wild Horse River	Magnum Enterprises Ltd.	43	Crude ore	1.061	2.805		2 110	65	
Sullivan mine	Kimberley	Cominco Ltd.	2 002 916	Lead concentrates, 91 131 t; zinc concentrates, 151 683 t; tin concentrates, 49 t, containing 24 868 kg of tin	5.132	73 570.507	437 533	68 047 946	75 418 513	34 701
Golden Mining Division										
Ruth Vermont	Spillimacheen	Consolidated Columbia River Mines Ltd.	10 258	Lead concentrates, 356 t; zinc concentrates, 342 t	.453	1 110.066	3 414	210 279	217 213	1 385

Table M-1—Metal Production, 1975—Continued

Property or Mine	Location of Mine	Owner or Agent	Ore Shipped or Treated	Product Shipped	Gross Metal Content					
					Gold	Silver	Copper	Lead	Zinc	Cadmium
			t		kg	kg	kg	kg	kg	kg
Greenwood Mining Division										
Burnt Basin	Paulson	Alvija Mines Ltd.	786	Lead concentrates, 25 t; zinc concentrates, 98 t		49.235		23 223	37 825	253
Denero Grande, Jewel	Greenwood	Colt Resources Ltd.	1 859	Crude ore	17.698	108.643		4 912	2 122	
Highland Bell mine	Beaverdell	Teck Corporation Ltd.	34 898	Lead concentrates, 704 t; zinc concentrates, 239 t; jig concentrates, 33 t	4.852	11 131.172		132 745	136 173	1 304
Phoenix mine	Greenwood	Granby Mining Corp., Phoenix Copper Div.	985 875	Copper concentrates, 15 797 t	366.978	3 657.215	4 220 275			
Marshall	Greenwood	San Jacinto Explorations Ltd.	176	Crude ore	3.266	3.017		176	176	
Skomac	Greenwood	Robert Mines Ltd.	434	Crude ore	2.146	301.606		13 067	8 439	
Kamloops Mining Division										
Bethlehem	Highland Valley	Bethlehem Copper Corp.	5 864 500	Copper concentrates, 66 257 t	20.061	4 206.432	22 154 586			
Lornex mine	Highland Valley	Lornex Mining Corp. Ltd.	11 696 413	Copper concentrates, 154 294 t; molybdenite concentrates, 2 608 t, containing 1 406 082 kg of molybdenum	7.745	130 042.545	50 239 447			
Lucky Coon	Adams Plateau	K. Viney Contracting Co. Ltd.	424	Crude ore; lead concentrates, 25 t	.439	.316		69 705	7 416	3 708
Liard Mining Division										
Magnum mine	Delano Creek	Consolidated Churchill Copper Corp. Ltd.[1]		Copper concentrates, 2 887 t			808 665			
Lillooet Mining Division										
Nil										
Nanaimo Mining Division										
Island Copper mine	Rupert Inlet	Utah Mines Ltd.	12 075 145	Copper concentrates, 201 322 t; molybdenite concentrates, 1 485 t, containing 615 313 kg of molybdenum; rhenium shipments are confidential	1 705.595	8 996.170	47 514 467			
Texada mine	Texada Island	Texada Mines Ltd.	906 730	Iron concentrates, 296 250 t; copper concentrates, 7 426 t	45.597	1 385.359	1 635 716			
Nelson Mining Division										
Annex	Nelway	Reeves MacDonald Mines Ltd.	32 211	Lead concentrates, 273 t; zinc concentrates, 1 604 t		296.847		151 543	850 479	7 924
H.B.	Salmo	Cominco Ltd.	411 084	Lead concentrates, 4 950 t; zinc concentrates, 22 878 t	.622	1 130.314		1 666 762	12 480 257	96 325
Mother Lode	Salmo	Nugget Mines Ltd.	484	Siliceous ore, dump clean-up	3.919	34.462				

[1] No report received, quantities estimated.

New Westminster Mining Division										
Nil										
Nicola Mining Division										
Craigmont mine	Merritt	Craigmont Mines Ltd.	1 774 731	Copper concenrates, 69 996 t; iron concentrates, 41 145 t	26.997		20 564 778			
Omineca Mining Division										
Bell mine (Newman)	Babine Lake	Noranda Mines Ltd. (Bell Copper Div.)	4 335 049	Copper concentrates, 63 283 t	739.069	2 061.227	16 466 056			
Endako mine	Endako	Canex Placer Ltd. (Endako Mines Div.)	8 543 821	Molybdenite concentrates, 1 488 t; molybdenum trioxide, 7 975 t; ferromolybdenum, 117 t; total content, 5 564 104 kg of molybdenum						
Granisle mine	Babine Lake	Granisle Copper Ltd.	4 475 103	Copper concentrates, 55 294 t	552.140	4 982.701	17 034 399			
Pinchi Lake mine	Pinchi Lake	Cominco Ltd.	(2)	Mercury						
Silver Standard mine	Hazelton	George Braun, New Hazelton	133	Crude ore	.218	189.386		4 352	4 523	
Sunrise	Hazelton	Sunrise Silver Mines Ltd.	40	Crude ore		45.597		4 867	4 908	
Tetra (Moricetown Silver)	Smithers	Paul Kindrat, Smithers	60	Crude ore	.084	212.185		2 612		
Osoyoos Mining Division										
Brenda mine	Brenda Lake	Brenda Mines Ltd.	9 115 839	Copper concentrates, 52 314 t; molybdenite concentrates, 6 511 t; molybdic oxide, 725 t; total content, 4 074 073 kg of molybdenum	125.718	7 872.511	15 101 190			
Dusty Mac	Okanagan Falls	Dusty Mac Mines Ltd.	39 940	Gold-silver	239.431	4 293.240	740	1 066		
Horn Silver mine	Keremeos	Dankoe Mines Ltd.	17 916	Silver concentrates, 792 t	11.010	8 120.682	5 013	18 058	25 102	
Susie	Oliver	Hem Mines Ltd.	7 365	Crude ore	43.762	779.752	3 080	25 434	11 974	
Revelstoke Mining Division										
Henry	Trout Lake	A. Chilton, Nakusp	32	Crude ore		55.177		1 660	255	
Similkameen Mining Division										
Similkameen mine (Ingerbelle)	Princeton	Similkameen Mining Co. Ltd.	3 693 900	Copper concentrates, 46 865 t	574.783	2 551.006	12 768 721			

Table M-1—Metal Production, 1975—Continued

Property or Mine	Location of Mine	Owner or Agent	Ore Shipped or Treated	Product Shipped	Gross Metal Content					
					Gold	Silver	Copper	Lead	Zinc	Cadmium
			t		kg	kg	kg	kg	kg	kg
Skeena Mining Division										
Babe	Port Clements, Q.C.I.	E. Specogna, Nanaimo	6	Crude ore	.902	.529				
Goat	Surprise Creek, Stewart	Nordore Mining Co. Ltd.	16	Crude ore		15.925		67	352	
Granduc mine	Stewart	Granduc Operating Co.	1 499 585	Copper concentrates, 56 813 t	162.606	9 604.482	16 222 977			
Tasu mine	Tasu Sound	Wesfrob Mines Ltd.	1 622 385	Iron concentrates, 946 719 t; copper concentrates, 7 934 t	42.238	1 720.991	1 499 933			
View Fraction	Stewart	N. Benkovich, Stewart	136	Crude ore	6.322	150.781	1 020	6 919	6 493	
Slocan Mining Division										
Antoine	McGrugan Creek	W. Turley, Kaslo	144	Crude ore		92.127		5 191	13 217	
Arlington	Slocan	W. Storegaard and R. Salisbury, Slocan	120	Crude ore		44.384		6 679	8 317	
Bluebell	Riondell	D. Pearce, Nelson	Salvage	Lead concentrates, 21 t; zinc concentrates, 32 t		53.902		11 957	14 648	101
Eastmont	Enterprise Creek	G. B. Bandeen, New Denver	62	Crude ore		39.470		2 654	4 012	
Enterprise	Enterprise Creek	Malamute Holdings Ltd. and T. Mazur, Calgary	263	Crude ore	.093	139.715		7 495	29 616	
Galena Farm	Silverton	R. Mills and W. Mengler, Silverton	25	Crude ore		3.235		272	7 645	
Hecla	Silverton	R. Mills and W. Mengler, Silverton	12	Crude ore		55.301		2 651	1 106	
Jackson Basin	West side Arrow Lake	Fostall Mines Ltd.	57	Crude ore		6.376		2 284	17 245	
Jesse	Silverton	W. Mengler, Silverton	2	Crude ore		4.323	11			
Kalispell	Enterprise Creek	P. Leontowicz	36	Dump clean-up		3.763		323	143	
Little Tim	Slocan City	D. Nebor, Slocan, and W. Turley, Kaslo	21	Crude ore		60.869		1 699	1 152	
Morning Star	Slocan City	Louis de Kock	36	Crude ore	.435	1.400				
Ottawa	Springer Creek	C. Thickett, Slocan City	12	Crude ore		105.532		82	35	
Panama, Silver Glana	New Denver	United Hearne Resources Ltd.	379	Crude ore		360.546		1 438	1 187	
Scranton	Kaslo	Star Syndicate	1 611	Lead concentrates, 99 t; zinc concentrates, 114 t	4.821	214.828		76 844	64 622	1 338
Shannon	Slocan Lake	A. F. Strebchuk, Hills	20	Crude ore	.629	11.228		2 332	2 685	
Silmonac (Minniehaha)	Slocan Lake	Kam-Kotia and Burkam Joint Venture	10 928	Lead concentrates, 982 t; zinc concentrates, 757 t		6 228.905		591 365	471 192	2 940
Victor	New Denver	E. Perepolkin and N. Wolinski, Sandon	29	Crude ore from stockpile		34.555		2 540	2 680	
White Water	Retallack	P. Leontowicz and D. Bialkoski, New Denver	75	Crude ore, dump clean-up	.109	96.233		8 755	19 214	

[2] Confidential.
[3] Shipped to Danko Mines Ltd. for milling.

Trail Creek Mining Division										
Blue Bird	Rossland	Standonray Mines Ltd.	1 358	Crude ore; silver concentrates, 91 t	2.809	1 173.005		46 333	51 846	
Midnight	Rossland	Sand Mines Ltd.	313	Crude ore	4.417	8.336				
Vancouver Mining Division										
Britannia mine	Howe Sound	Anaconda Canada Ltd.		Copper concentrates, 30 t; copper precipitates, 211 t	.043	4.043	72 740			
Warman (Northair)	Callaghan Creek	Northair Mines Ltd.	526	High grade ore, test shipments	12.690	12.379	1 485	1 185	5 504	
Vernon Mining Division										
Nil										
Victoria Mining Division										
Sunro mine	River Jordan	Jordan River Mines Ltd.		Copper concentrates, 213 t; from stockpile	.902	9.331	53 735			

Table M-1—Metal Production, 1976

Property or Mine	Location of Mine	Owner or Agent	Ore Shipped or Treated	Product Shipped	Gross Metal Content					
					Gold	Silver	Copper	Lead	Zinc	Cadmium
			t		kg	kg	kg	kg	kg	kg
Alberni Mining Division										
Lynx and Myra	Buttle Lake	Western Mines Ltd.	269 293	Copper concentrates, 8 830 t; lead concentrates, 7 093 t; zinc concentrates, 31 653 t	695.494	40 435.642	2 953 251	3 586 262	18 987 531	72 800
Atlin Mining Division										
Atlin-Ruffner	Atlin	Atlin Silver Corp.	1 610	Lead concentrates, 64 t	.678	429.843	376	34 455	4 017	.....
Cariboo Mining Division										
Boss Mountain Mine	Big Timothy Mountain	Noranda Mines Ltd. (Boss Mountain Division)	564 036	Molybdenite concentrates, 1 843 t containing 1 022 697 kg of molybdenum	.....	.....	.....	.....	.....	.....
Gibraltar Mine	McLeese Lake	Gibraltar Mines Ltd.	7 672 296[1]	Copper concentrates, 101 772 t	.....	3 343.168	26 142 438	.....	.....	.....
Clinton Mining Division										
Nil	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fort Steele Mining Division										
Sullivan Mine	Kimberley	Cominco Ltd.	2 124 886	Lead concentrates, 109 140 t; zinc concentrates, 151 636 t; tin concentrates, 125 t containing 66 183 kg of tin	.....	84 586.817	.....	77 065 578	77 435 404	.....
Golden Mining Division										
Ruth Vermont	Spillimacheen	Consolidated Columbia River Mines Ltd.	60 725[2]	Lead concentrates, 1 504 t; zinc concentrates, 2 244 t	2.830	5 025.312	14 435	949 099	1 276 240	9 003
Greenwood Mining Division										
Burnt Basin	Paulson	Donna Mines Ltd. and Alvija Mines Ltd.	573	Lead concentrates, 33 t; zinc concentrates, 56 t	.....	35.209	.....	18 714	27 897	142
Highland Bell Mine	Beaverdell	Teck Corporation Ltd.	34 447	Lead concentrates, 733 t; zinc concentrates, 299 t; jig concentrates, 103 t	5.536	11 583.379	.....	147 978	186 168	1 219
Phoenix Mine	Greenwood	Granby Mining Corp., Phoenix Copper Division	965 845	Copper concentrates, 15 435 t	364.620	3 261.367	4 231 760	.....	.....	.....
Skomac	Greenwood	Robert Mines Ltd.	548	Crude ore	1.327	221.355	.....	16 122	8 651	.....
Kamloops Mining Division										
Bethlehem	Highland Valley	Bethlehem Copper Corp.	6 763 838	Copper concentrates, 64 781 t	57.230	4 618.236	23 006 380	.....	.....	.....
Lornex Mine	Highland Valley	Lornex Mining Corp. Ltd.	15 436 575	Copper concentrates, 204 020 t; molybdenite concentrates, 3 133 t, containing 1 715 590 kg of molybdenum	26.851	17 316.751	68 313 748	.....	.....	.....
Spar 1 and Spar 2	Adams Plateau	Panex Mining Ltd.	181	Crude ore	.062	91.567	291	5 667	2 438	.....

Liard Mining Division										
Nil										
Lillooet Mining Division										
Nil										
Nanaimo Mining Division										
Island Copper Mine	Rupert Inlet	Utah Mines Ltd.	12 246 885	Copper concentrates, 213 588 t; molybdenite concentrates, 2 145 t, containing 878 072 kg of molybdenum; rhenium shipments are confidential	1 416.959	9 983.690	48 956 470			
Texada Mine	Texada Island	Texada Mines Ltd.	848 477	Iron concentrates, 368 412 t; copper concentrates, 6 394 t	33.687	1 337.149	1 332 202			
Nelson Mining Division										
HB	Salmo	Cominco Ltd.	374 163	Lead concentrates, 5 082 t; zinc concentrates, 23 106 t	.684	937.071	274	2 036 925	12 796 512	104 523
Mohawk No. 1	Salmo	J. Eimer, Creston	40	Crude ore		4.945		1 030	30	12
New Westminster Mining Division										
Nil										
Nicola Mining Division										
Craigmont Mine	Merritt	Craigmont Mines Ltd.	1 763 219	Copper concentrates, 74 310 t; iron concentrates, 32 564 t	7.838		21 107 071			
Omineca Mining Division										
Bell Mine (Newman)	Babine Lake	Noranda Mines Ltd. (Bell Copper Division)	1 925 246	Copper concentrates, 25 748 t	295.292	823.265	6 651 253			
Endako Mine	Endako	Canex Placer Ltd. (Endako Mines Division)	8 520 235	Molybdenite concentrates, 1 098 t; molybdic tri-oxide, 9 771; ferro-molybdenum, 288 t; total content 6 766 374 kg of molybdenum						
Granisle Mine	Babine Lake	Granisle Copper Ltd.	4 008 222	Copper concentrates, 45 482 t	408.227	4 549.902	14 672 658			
Silver Standard Mine	Hazelton	George Braun, New Hazelton	152	Crude ore	.746	255.791	245	8 842	12 759	
Tetra (Moricetown Silver)	Smithers	Paul Kindrat, Smithers	189	Crude ore	.317	485.767		7 145	6 240	
Osoyoos Mining Division										
Brenda Mine	Brenda Lake	Brenda Mines Ltd.	10 047 565	Copper concentrates, 51 854 t; molybdenite concentrates, 6 514 t; molybdic oxide, 132 t; total content, 3 705 953 kg of molybdenum	123.697	7 891.360	14 562 834			
Dusty Mac	Okanagan Falls	Dusty Mac Mines Ltd.	53 335	Gold-silver concentrates, 636 t	364.336	6 210.336	1 692	1 053		
Hill	Osoyoos	D. C. Baxter, West Vancouver	3	Crude ore	.031	.029		3	3	
Horn Silver Mine	Keremeos	Dankoe Mines Ltd.	20 936	Silver concentrates, 661 t	20.292	6 988.937	4 127	17 657	22 143	
Susie	Oliver	Hem Mines Ltd.	3 039	Crude ore	12.535	233.273	943	10 995	4 295	

[1] Includes 172 356 t from Cuisson Lake Mine.
[2] Estimated.

Table M-1—Metal Production, 1976—Continued

Property or Mine	Location of Mine	Owner or Agent	Ore Shipped or Treated	Product Shipped	Gross Metal Content					
					Gold	Silver	Copper	Lead	Zinc	Cadmium
Revelstoke Mining Division			t		kg	kg	kg	kg	kg	kg
Lucky Boy	Trout Lake	A. Marlow, Ferguson	24	Crude ore		17.884	49	1 675	1 887	
Similkameen Mining Division										
Similkameen Mine (Ingerbelle)	Princeton	Newmont Mines Ltd. (Similkameen Division)	6 355 874	Copper concentrates, 91 211 t	1 198.523	4 814.153	25 045 931			
Skeena Mining Division										
Granduc Mine	Stewart	Newmont Mines Ltd. (Granduc Operating Division)	1 315 905	Copper concentrates, 54 894 t	154.800	10 373.566	15 569 210			
Oxedental and Terminus	Stewart	N. Benkovich, Stewart	39	Crude ore	.425	32.106	120	2 628	2 164	
Silbak Premier	Premier	Spring Investments Ltd.	73	Crude ore	2.115	62.984		1 903	2 541	
Tasu	Tasu Sound	Wesfrob Mines Ltd.	1 572 524	Iron concentrates, 837 813 t; copper concentrates, 11 641 t	59.002	2 406.781	2 265 207			
Slocan Mining Division										
Arkansas	Ainsworth	D. Bialkoski, Slocan	39	Crude ore		4.541		1 127	4 079	
Arlington	Slocan	Selmon Resources Ltd.	21	Lead concentrates salvaged from dump	.062	170.258		6 680	4 185	
Bluebell	Riondell	D. Pearce, Nelson	119	Salvaged zinc concentrates and tailings		18.475		6 099	20 471	
Bosun	New Denver	A. E. Avison, Kamloops	13	Crude ore		8.958		546	1 959	
Chief	Mt. Rupple	N. Block, Nelson	3	Crude ore	.018	16.773	9	167	7	
Enterprise	Enterprise Creek	T. Mazar, Calgary	28	Crude ore		15.676		541	826	
Gladstone	New Denver	W. Turley, Kaslo	9	Crude ore		41.056		3 493	1 933	
Hewitt	Silverton	F. Pho, New Denver	855	Lead concentrates, 41 t; zinc concentrates, 89 t		325.493		24 039	47 632	332
Jesse	Silverton	R. Leighton, Sorrento	24	Crude ore		6.127		188	70	
Leo No. 1 and No. 2 Fraction	New Denver	E.M.U. Enterprises	3	Crude ore		3.390		79	51	
Lucky Boy	Kaslo	L. Garland, Kaslo	2	Crude ore		11.353		1 942	94	
Lucky Spot	Silverton	J. Nesbitt and S. Berisoff, Silverton	44	Crude ore		141.674		11 059	8 458	
Moose	Silverton	D. Pengally, Silverton	9	Crude ore		16.111		3 553	1 352	
Ottawa	Springer Creek	C. Thickett, Slocan	1 348	Silver concentrates, 13 t; crude ore, 11 t	.018	999.402	226	1 623	1 169	
Panama, Silver Glance	New Denver	United Hearne Resources Ltd.	184	Crude ore	.063	162.451		919	736	
Scranton	Kaslo	Star Syndicate	4 767	Lead concentrates, 295 t; zinc concentrates, 348 t; crude ore, 73 t	25.162	573.944	77	223 705	196 361	4 041

Slocan Mining Division —Continued										
Silmonac (Minnichaha)	Slocan Lake	Kam-Kotia and Burkam Joint Venture	16 694	Lead concentrates, 1 412 t; zinc concentrates, 1 240 t		7 408.703		836 172	743 490	4 643
Victor	New Denver	E. Pederson, New Denver	16	Crude ore	.171	63.699		10 691	358	
White Water	Retallick	P. Leonowicz and D. Bialkoski, New Denver	43	Crude ore	.062	54.535		4 846	11 190	
Trail Creek Mining Division										
Blue Bird	Rossland	Standonray Mines Ltd.	474	Crude ore	.696	307.772		13 205	15 378	
Midnight	Rossland	Sand Mines Ltd.	509	Crude ore	12.939	11.850	425	1 305	583	
Vancouver Mining Division										
Britannia Mine	Howe Sound	Anaconda Canada Ltd.	292	Copper precipitate			90 124			
Warman (Northair)	Callaghan Creek	Northair Mines Ltd.	47 553	Lead concentrates, 876 t; zinc concentrates, 846 t; dross bars[3]	620.131	3 864.112		340 681	411 021	1 782
Vernon Mining Division										
Chaput	Lumby	Saddle Mountain Resources	454	Lead concentrates, 41 t	.156	206.057	654	12 746	5 485	
Kingfisher	Mabel Lake	Union Oil Co. of Canada Ltd.	12	Crude ore		.187		830	1 157	
Victoria Mining Division										
Nil										

[3] Gold and silver bullion recovered from the treatment of base metals.

Table M-1—Metal Production, 1977

Property or Mine	Location of Mine	Owner or Agent	Ore Shipped or Treated	Product Shipped	Gross Metal Content					
					Gold	Silver	Copper	Lead	Zinc	Cadmium
			t		g	g	kg	kg	kg	kg
Alberni Mining Division										
Lynx and Myra	Buttle Lake	Western Mines Ltd.	269 068	Copper concentrates, 8 670 t; Lead concentrates, 6 466 t; zinc concentrates, 31 247 t	632 075	34 909 727	2 856 881	3 356 196	18 607 822	72 139
Atlin Mining Division										
Nil										
Cariboo Mining Division										
Boss Mountain	Big Timothy Mountain	Noranda Mines Ltd. (Boss Mountain Division)	523 453	Molybdenite concentrates, 2 035 t containing 992 588 kg of molybdenum						
Gibraltar	McLeese Lake	Gibraltar Mines Ltd.	12 764 959	Copper concentrates, 144 317 t; molybdenite concentrates, 258 t, containing 137 202 kg of molybdenum		3 310 292	40 255 709			
Clinton Mining Division										
Nil										
Fort Steele Mining Division										
Sullivan	Kimberley	Cominco Ltd.	2 194 222	Lead concentrates, 106 264 t; zinc concentrates, 149 339 t; tin concentrates, 426 t containing 181 278 kg of tin		89 609 454		75 125 898	76 890 967	
Golden Mining Division										
Nil										
Greenwood Mining Division										
Highland Bell	Beaverdell	Teck Corporation Ltd.	33 977	Lead concentrates, 572 t; zinc concentrates, 245 t; jig concentrates, 121 t	5 443	12 030 423	328	122 710	139 565	723
Midway	Midway	David N. Moore, Midway	55	Crude ore	37	10 940				
Phoenix	Greenwood	Granby Mining Corp., (Phoenix Copper Div.)	832 583	Copper concentrates, 10 226 t	268 238	1 748 891	2 695 517			
Kamloops Mining Division										
Afton[1]	Kamloops	Afton Mines Ltd.	122 340							
Bethlehem	Highland Valley	Bethlehem Copper Corp.	5 554 855	Copper concentrates, 56 531 t	106 652	7 778 580	24 462 130			
Lornex	Highland Valley	Lornex Mining Corp. Ltd.	15 480 725	Copper concentrates, 204 448 t; molybdenite concentrates, 3 427 t containing 1 846 840 kg of molybdenum	12 597	19 209 555	66 156 450			
Lucky Coon	Adams Plateau	Interpacific Sales Ltd.	496[2]	Lead concentrates, 89 t; zinc concentrates, 77 t	274	228 669		62 033	41 367	114
Liard Mining Division										
Nil										

Lillooet Mining Division										
Nil										
Nanaimo Mining Division										
Island Copper	Rupert Inlet	Utah Mines Ltd.	13 106 006	Copper concentrates, 202 558 t; molybdenite concentrates, 2 302 t containing 987 627 kg of molybdenum; rhenium shipments are confidential	1 496 459	9 699 222	46 749 860			
Nelson Mining Division										
HB	Salmo	Cominco Ltd.	357 256	Lead concentrates, 4 813 t; zinc concentrates, 22 606 t		996 696	615	1 931 566	12 593 518	95 893
Silver Dollar	Salmo	W. E. Tambling, Squamish	182	Crude ore	1 275	45 193	170	1 577	1 274	
New Westminster Mining Division										
Nil										
Nicola Mining Division										
Craigmont	Merritt	Craigmont Mines Ltd.	1 884 335	Copper concentrates, 63 193 t; iron concentrates, 39 246 t			17 659 393			
Omineca Mining Division										
Bell (Newman)	Babine Lake	Noranda Mines Ltd. (Bell Copper Div.)	4 409 135	Copper concentrates, 59 378 t	714 280	2 066 888	15 890 606			
Endako	Endako	Canex Placer Ltd. (Endako Mines Div.)	9 084 501	Molybdenite concentrates, 24 t; molybdic tri-oxide, 12 651 t; ferro-molybdenum, 228 t; total content 7 691 235 kg of molybdenum						
Granisle	Babine Lake	Granisle Copper Ltd.	4 474 119	Copper concentrates, 49 724 t	559 761	5 990 904	17 404 635			
Silver Standard	Hazelton	George Braun, Hazelton	148	Crude ore	560	236 725	484	11 541	15 681	
Osoyoos Mining Division										
Brenda	Brenda Lake	Brenda Mines Ltd.	9 634 421	Copper concentrates, 54 837 t; molybdenite concentrates, 6 792 t; molybdic oxide, 15 t; total content 3 866 503 kg of molybdenum	102 080	8 017 576	16 133 570			
Horn Silver	Keremeos	Dankoe Mines Ltd.	31 984	Bulk and jig concentrates, 1 168 t	24 260	8 917 790	4 170	23 759	27 993	
Revelstoke Mining Division										
Nil										
Similkameen Mining Division										
Similkameen (Ingerbelle)	Princeton	Newmont Mines Ltd. (Similkameen Div.)	7 135 737	Copper concentrates, 74 838 t	969 169	3 980 500	20 596 981			

[1] Commenced production December, 1977.
[2] Estimated.

Table M-1—Metal Production, 1977—Continued

Property or Mine	Location of Mine	Owner or Agent	Ore Shipped or Treated	Product Shipped	Gross Metal Content					
					Gold	Silver	Copper	Lead	Zinc	Cadmium
			t		g	g	kg	kg	kg	kg
Skeena Mining Division										
Granduc	Stewart	Newmont Mines Ltd. (Granduc Operating Division)	1 252 362	Copper concentrates, 46 575 t	130 011	8 631 953	13 262 755			
Premier	Stewart	Nick Benkovich, Stewart	42	Clean-up	1 490	38 091	262	7 629	6 091	
Tasu	Tasu Sound	Wesfrob Mines Ltd.	1 020 886	Iron concentrates, 384 309 t; copper concentrates, 11 660 t	1 817	80 671	5 080 107			
Slocan Mining Division										
Bluebell	Riondell	D. Pearce, Nelson	238	Salvaged lead concentrates, 51 t; zinc concentrates, 187 t		39 221		18 024	112 717	
Chief	Mt. Ruppel	N. Block, Nelson	3	Crude ore	9	7 167		121	8	
Enterprise	Enterprise Creek	T. Mazur, Calgary	89	Crude ore	21	64 228	54	2 225	3 025	
Galena Farm	Silverton	Selmon Resources Ltd.	33	Clean-up; lead concentrates, 9 t; zinc concentrates, 24 t	47	117 445		6 216	13 025	94
Lucky Thought	Silverton	S. Berisoff, Silverton	327	Crude ore		329 630	144	25 407	28 819	191
Moose	Silverton	D. Pengelly, Silverton	45	Crude ore		143 229		24 053	4 982	
Ottawa	Springer Creek	C. Thickett, Slocan	1 304	Silver concentrates, 8 t; crude ore, 112 t	33	1 325 579	196	557	344	
Scranton	Kaslo	Star Syndicate and Hem Mines Ltd.	6 869	Lead concentrates, 259 t; zinc concentrates, 287 t	29 019	468 660	35	182 843	171 209	3 740
Silmonac (Minniehaha)	Slocan Lake	Silvana Mines Ltd. (formerly Kam-Kotia-Burkam Joint Venture)	15 996	Lead concentrates, 1 873 t; zinc concentrates, 1 041 t		9 163 815		1 102 548	712 759	3 995
Victor (Violamac)	New Denver	E. Pederson, New Denver	15	Crude ore	311	57 136	34	92	298	
Whitewater	Retallick	P. Leontowicz and L. Fried, New Denver	11	Crude ore		15 552	45	1 831	3 069	
Trail Creek Mining Division										
Bluebird	Rossland	Standonray Mines Ltd.	2 081	Crude ore	1 454	586 758		29 709	35 135	
I.X.L.	Rossland	J. A. Ruelle and L. G. McLellan	43	High-grade ore	1 584	1 664	51	127	42	
Vancouver Mining Division										
Astra—Cambria, Blue Jack	Alta Lake	Van Silver Mines Ltd.	8 067	Silver concentrates, 97 t	1 381	157 468	1 290	6 764	9 857	
Britannia	Howe Sound	Anaconda Canada Ltd. and D. Pearce, Nelson	236	Copper precipitate clean-up		7 465	56 555			
Warman (Northair)	Callaghan Creek	Northair Mines Ltd.	84 366	Lead concentrates, 2 489 t; zinc concentrates 2 347 t; dore bars	1 234 043	10 341 094		1 217 824	1 265 112	1 354
Vernon Mning Division										
Nil										
Victorla Mining Divislon										
Nil										

Table M-1—Metal Production, 1978

Property or Mine	Location of Mine	Owner or Agent	Ore Shipped or Treated	Product Shipped	Gross Metal Content					
					Gold	Silver	Copper	Lead	Zinc	Cadmium
Alberni Mining Division										
Lynx and Myra	Buttle Lake	Western Mines Ltd.	269 033	Copper concentrates, 11 485 t; lead concentrates, 6 463 t; zinc concentrates, 32 400 t	628 094	36 150 053	3 294 888	2 768 914	18 003 921	71 704
Atlin Mining Division										
Nil										
Cariboo Mining Division										
Boss Mountain	Big Timothy Mountain	Noranda Mines Ltd. (Boss Mountain Div.)	541 928	Molybdenite concentrates, 1 384 t containing 764 516 kg of molybdenum						
Gibraltar	McLeese Lake	Gibraltar Mines Ltd.	5 135 655	Copper concentrates, 74 705 t; molybdenite concentrates, 238 t containing 119 174 kg of molybdenum		3 265 628	19 713 622			
Clinton Mining Division										
Nil										
Fort Steele Mining Division										
Sullivan	Kimberley	Cominco Ltd.	2 107 869	Lead concentrates, 134 270 t; zinc concentrates, 119 716 t; tin concentrates, 561 t containing 236 339 kg of tin		114 039 181		88 863 212	64 417 720	
Golden Mining Division										
Ruth Vermont	Spillimacheen	Ruth Vermont Mines Ltd.	62	Clean-up; lead concentrates, 20 t; zinc concentrates, 42 t		75 083	384	13 600	21 901	166
Greenwood Mining Division										
Highland Bell	Beaverdell	Teck Corporation Ltd.	35 280	Lead concentrates, 439 t; zinc concentrates, 403 t; jig concentrates, 121 t	4 012	11 333 062	865	105 933	139 279	977
Phoenix	Greenwood	Granby Mining Corp. (Phoenix Copper Div.)	237 801	Copper concentrates, 2 645 t	120 555	924 599	912 728			
Kamloops Mining Division										
Afton	Kamloops	Afton Mines Ltd.	2 456 757	Copper concentrates, 18 176 t; blister copper, 5 995 t	1 022 791	5 524 701	15 429 468			
Bethlehem	Highland Valley	Bethlehem Copper Corp.	6 490 726	Copper concentrates, 41 580 t; molybdenite concentrates, 269 t containing 133 777 kg of molybdenum	124 661	7 299 470	18 312 007			
Lornex	Highland Valley	Lornex Mining Corp. Ltd.	15 927 064	Copper concentrates, 208 799 t; molybdenite concentrates, 3 459 t containing 1 864 355 kg of molybdenum		17 486 200	63 114 028			

Table M-1—Metal Production, 1978—Continued

Property or Mine	Location of Mine	Owner or Agent	Ore Shipped or Treated	Product Shipped	Gross Metal Content					
					Gold	Silver	Copper	Lead	Zinc	Cadmium
			t		g	g	kg	kg	kg	kg
Liard Mining Division										
Nil										
Lillooet Mining Division										
Bralorne	Bridge River	Nelson Machinery Co. Ltd.	149	Clean-up	14 992	4 976		150	150	
Nanaimo Mining Division										
Island Copper	Rupert Inlet	Utah Mines Ltd.	14 200 203	Copper concentrates, 218 515 t; molybdenite concentrates, 2 087 t containing 859 104 kg of molybdenum; rhenium shipments are confidential	1 345 360	10 402 740	50 653 152			
Nelson Mining Division										
HB	Salmo	Cominco Ltd.	200 888	Lead concentrates, 3 900 t; zinc concentrates, 15 264 t		827 713		1 451 180	8 381 566	67 298
New Westminster Mining Division										
Nil										
Nicola Mining Division										
Craigmont	Merritt	Craigmont Mines Ltd.	1 899 934	Copper concentrates, 93 082 t; iron concentrates, 33 183 t; coarse iron, 2 513 t			26 290 618			
Omineca Mining Division										
Bell (Newman)	Babine Lake	Noranda Mines Ltd. (Bell Copper Div.)	4 470 070	Copper concentrates, 64 464 t	763 299	2 210 148	17 144 917			
Endako	Endako	Placer Development Ltd. (Endako Mines Div.)	10 656 643	Molybdic tri-oxide, 10 176 t; ferro-molybdenum, 200 t; total content, 6 030 967 kg of molybdenum						
Golden Eagle	Topley	V. G. Finch and R. Williams, Smithers	3	Crude ore	9	10 404		317	140	
Granisle	Babine Lake	Granisle Copper Ltd.	4 549 265	Copper concentrates, 47 366 t	467 571	4 819 410	14 851 373			
Silver Standard	Hazelton	George Braun, Hazelton	57	Crude ore	187	78 286	138	2 811	4 016	
Sunrise Silver	Hazelton	M. Kryger, Smithers	26	Crude ore		19 377		1 642	2 356	
Osoyoos Mining Division										
Brenda	Brenda Lake	Brenda Mines Ltd.	9 995 736	Copper concentrates, 46 880 t; molybdenite concentrates, 5 820 t containing 3 310 663 kg of molybdenum	111 629	7 140 191	14 072 630			
Horn Silver	Keremeos	Dankoe Mines Ltd.	28 677	Bulk concentrates, 979 t; jig concentrates, 97 t	23 949	7 569 195	5 518	21 091	27 927	
Revelstoke Mining Division										
Nil										

Similkameen Mining Division										
Similkameen (Ingerbelle)	Princeton	Newmont Mines Ltd. (Similkameen Div.)	6 779 045	Copper concentrates, 88 964 t	1 152 926	4 347 297	24 725 222			
Skeena Mining Division										
Granduc	Stewart	Newmont Mines Ltd. (Granduc Operating Div.)	741 648	Copper concentrates, 52 268 t	160 460	9 056 914	14 780 100			
Premier	Stewart	Spring Investments Ltd.	245	Clean-up; lead concentrates, 58 t; ore, 187 t	9 144	312 212	98	17 915	15 035	
Tasu	Tasu Sound	Wesfrob Mines Ltd.	889 933	Iron concentrates, 554 414 t; copper concentrates, 5 989 t	28 397	1 198 647	1 175 609			
Troy	Stewart	Nick Benkovich, Stewart	22	Crude ore	370	5 038		420	641	
Slocan Mining Division										
Arlington	Slocan	R. S. Reilly and D. P. Bialkoski, Slocan, and Selmon Resources Ltd.	17	Lead concentrates, 17 t; dump clean-up		84 569		5 946	3 647	
Colonial	Sandon	N. Sibilleau, North Surrey	2	Crude ore		8 802		1 895	82	
Corinth	Sandon	Corinthian Mines Ltd.	7	Crude ore		1 680		443	1 350	
Grey Copper (Blue Bird)	Cody	G. Sipos, Kaslo	19	Crude ore		6 096		671	4 993	
Little Tim	Slocan City	D. Nebor, Slocan	54	Lead concentrates, 2 t		54 710		646	386	
Mammoth	Silverton	D. Pengelly, Silverton	15	Lead concentrates, 5 t; zinc concentrates, 10 t		16 982		3 784	5 279	
Ottawa	Springer Creek	C. Thickett, Slocan	496	Silver concentrates, 7 t; crude ore, 42 t		1 372 047	234	647	335	
Pilot Bay	Pilot Bay	D. Pearce, Nelson	8	Smelter clean-up; lead concentrates, 2 t; zinc concentrates, 6 t		1 275		527	3 746	
Queen Bess (Idaho)	Sandon	I. T. Steenhoff, New Denver	8	Crude ore	10	43 389		6 284	135	
Scranton	Kaslo	Hem Mines Ltd.	114	Lead concentrates, 56 t; zinc concentrates, 58 t	5 381	109 669		41 112	32 651	681
Silmonac (Minniehaha)	Slocan Lake	Silvana Mines Ltd.	15 967	Lead concentrates, 1 460 t; zinc concentrates, 972 t		7 579 024		883 758	638 881	3 724
Trail Creek Mining Division										
Bluebird	Rossland	Standonray Mines Ltd.	130	Lead concentrates, 54 t; zinc concentrates, 76 t	560	280 860		13 755	29 385	
Golden Drip	Rossland	J. A. Ruelle and L. G. McLellan, Rossland	16	Crude ore	1 711	1 213		34	17	
Vancouver Mining Division										
Warman (Northair)	Callaghan Creek	Northair Mines Ltd.	93 397	Lead concentrates, 2 782 t; zinc concentrates, 2 161 t; dore bars	1 069 386	5 708 023	100 930	1 140 032	1 464 364	
Vernon Mining Division										
Silver Bell	Cherry Creek	Cheyenne Mines Ltd.	14	Crude ore	311	43 171		700	252	
Victoria Mining Division										
Sunro	Jordan River	Dison International Ltd.	(1)	Copper concentrates, 9 t	31	435	2 143			

[1] Disposal of stockpile.

Table M-1—Metal Production, 1979

Property or Mine (and Location of Mine)	Owner or Agent	Ore Shipped or Treated	Product Shipped	Gross Metal Content					
				Gold	Silver	Copper	Lead	Zinc	Cadmium
Alberni Mining Division		t		g	g	kg	kg	kg	kg
Lynx and Myra (Buttle Lake)	Western Mines Ltd.	266 877	Copper concentrates, 12 284 t; lead concentrates, 7 178 t; zinc concentrates, 34 069 t	802 688	37 990 999	3 595 016	3 137 575	18 933 570	79 887
Atlin Mining Division									
Nil									
Cariboo Mining Division									
Boss Mountain (Big Timothy Mountain)	Noranda Mines Ltd. (Boss Mountain Division)	496 108	Molybdenite concentrates, 1 094 t containing 614 961 kg of molybdenum						
Gibraltar (McLeese Lake)	Gibraltar Mines Ltd.	10 446 035	Copper concentrates, 115 388 t; molybdenite concentrates, 752 t; molybdic trioxide, 25 t containing 408 676 kg of molybdenum		3 373 452	32 217 953			
Clinton Mining Division									
Nil									
Fort Steele Mining Division									
Shado (St. Mary River)	Shado Mines Ltd.	3	Crude ore		1 352		756	143	
Sullivan (Kimberley)	Cominco Ltd.	2 047 726	Lead concentrates, 142 223 t; zinc concentrates, 130 512 t; tin concentrates, 549 t containing 207 095 kg of tin		107 342 730		92 146 668	70 745 854	
Golden Mining Division									
Ruth Vermont (Spillimacheen)	Ruth Vermont Mines Ltd.	36	Clean-up; lead concentrates, 34 t; zinc concentrates, 2 t	26	20 964		3 981	5 459	
Greenwood Mining Division									
B A S (Rock Creek)	R. W. Yorke-Hardy, Revelstoke	1	Crude ore	22	7 029		83	77	
Highland Bell (Beaverdell)	Teck Corporation	33 664	Lead concentrates, 388 t; zinc concentrates, 399 t; jig concentrates, 97 t	4 199	10 259 637	613	93 324	140 679	1 000
Midway, Number Seven (Boundary Falls)	David Moore, Midway	36	Crude ore	105	8 253				
Riverside (Rock Creek)	Baykem Enterprises Ltd.	85	Crude ore	93	16 889		460	591	

Kamloops Mining Division									
Afton (Kamloops)	Afton Mines Ltd.	2 822 850	Copper concentrates, 10 249 t; blister copper, 19 827 t	1 860 022	9 365 673	25 611 766			
Bethlehem (Highland Valley)	Bethlehem Copper Corp.	6 525 449	Copper concentrates, 51 339 t; molybdenite concentrates, 592 t containing 306 286 kg of molybdenum	122 797	6 535 338	21 260 613			
Lornex (Highland Valley)	Lornex Mining Corp Ltd.	16 126 103	Copper concentrates, 194 829 t; molybdenite concentrates, 3 818 t containing 2 059 851 kg of molybdenum		16 562 009	60 858 558			
Mosquito King (Adams Plateau)	Orell Copper Mines Ltd.	147	Crude ore	218	35 645		14 804	12 256	
Liard Mining Division									
Erickson (McDame Lake)	Erickson Gold Mining Corp.	28 896	Gold concentrates, 401 t	574 668	567 763				
Lillooet Mining Division									
Nil									
Nanaimo Mining Division									
Island Copper (Rupert Inlet)	Utah Mines Ltd.	13 339 997	Copper concentrates, 218 490 t; molybdenite concentrates, 2 705 t containing 1 111 400 kg of molybdenum; rhenium shipments are confidential	1 684 627	10 994 861	50 254 743			
Nelson Mining Division									
Big John (Salmo)	R. Spinks and T. Brown, Salmo	44	Crude ore		4 417		2 219	3 438	
Gold Belt (Salmo)	Goldbelt Mines Ltd.	1 010	Crude ore	9 860	21 275	681	7 564	3 927	
Keystone (Salmo)	R. G. Taylor, Montrose	40	Crude ore	1 337	5 319	54	1 459	1 072	
Reno (Salmo)	Nugget Mines Ltd.	64	Crude ore	554					
New Westminster Mining Division									
R N (Harrison Lake)	R. J. Dealy, Vancouver	37	Crude ore	1 147					
Nicola Mining Division									
Craigmont (Merritt)	Craigmont Mines Ltd.	1 924 570	Copper concentrates, 56 631 t; iron concentrates, 41 372 t; coarse iron, 3 156 t			16 188 137			
Stump Lake (Nicola)	El Klondike Mines Ltd.	9	Crude ore	111	3 473		239	168	

Table M-1—Metal Production, 1979—Continued

Property or Mine (and Location of Mine)	Owner or Agent	Ore Shipped or Treated	Product Shipped	Gross Metal Content					
				Gold	Silver	Copper	Lead	Zinc	Cadmium
Omineca Mining Division		t		g	g	kg	kg	kg	kg
Bell (Newman), (Babine Lake)	Noranda Mines Ltd. (Babine Div. Bell mine)	5 073 909	Copper concentrates, 48 456 t	656 601	1 661 368	13 136 524	.....	.....	.....
Endako (Endako)	Placer Development Ltd. (Endako Mines Div.)	4 768 000	Molybdenite concentrates, 12 t; molybdic trioxide, 6 205 t; ferromolybdenum, 104 t; total content, 3 738 530 kg of molybdenum	.....	.....	.....	.....	.....	.....
Granisle (Babine Lake)	Zapata Granby Corp. and Noranda Mines Ltd. (Babine Div.—Granisle Mine)	4 382 882	Copper concentrates, 50 205 t	497 624	5 338 725	17 326 860	.....	.....	.....
Sil-Van (Smithers)	P. Kindrat, Smithers	94	Crude ore	118	344 693	.....	8 008	9 279	.....
Silver Standard (Hazelton)	G. Braun, New Hazelton	93	Crude ore	233	114 243	.....	5 348	5 627	.....
Sunrise Silver (Hazelton)	Kryco Mines Ltd.	181	Silver concentrates, 15 t	.....	22 985	.....	2 790	2 374	.....
Osoyoos Mining Division									
Brenda (Brenda Lake)	Brenda Mines Ltd.	9 075 723	Copper concentrates, 36 672 t; molybdenite concentrates, 4 496 t containing 2 536 180 kg of molybdenum	101 289	5 727 844	10 626 562	.....	.....	.....
Horn Silver (Keremeos)	Dankoe Mines Ltd.	25 536	Bulk concentrates, 872 t; jig concentrates, 132 t	18 755	6 084 338	4 789	17 244	24 299	.....
Revelstoke Mining Division									
Independence (Revelstoke)	R. Bacon, Kamloops	31	Crude ore	156	373	.....	31	31	.....
Similkameen Mining Division									
Similkameen (Ingerbelle), (Princeton)	Newmont Mines Ltd. (Similkameen Div.)	6 898 844	Copper concentrates, 94 297 t	1 185 509	4 316 292	26 506 197	.....	.....	.....
Skeena Mining Division									
Blue Grouse (Glacier Creek)	J. Lehto, Stewart	6	Crude ore	26	16 360	36	1 104	1 325	.....
Goat Ridge (Stewart)	Nor-Quest Resources Ltd.	124	Crude ore	1 110	540 401	.....	726	9 789	.....
Premier (Stewart)	Spring Investments Ltd.	105	Clean-up; lead concentrates, 36 t; ore, 69 t	2 242	13 122	445	9 937	8 146	.....
Tasu (Tasu Sound)	Wesfrob Mines Ltd.	1 009 247	Iron concentrates, 589 642 t; copper concentrates, 18 739 t	92 159	3 529 716	3 861 563	.....	.....	.....
Troy (Stewart)	N. Benkovich, Stewart	33	Crude ore	505	16 588	.....	870	1 004	.....

Slocan Mining Division									
Arlington (Slocan)	Edward Shukin, Slocan	1 037	Lead concentrates, 32 t; zinc concentrates, 17 t	588	117 300	53	15 724	12 967	46
Colonial (Sandon)	N. Sibilleau, North Surrey	3	Crude ore	.....	5 163	.....	1 482	128	.....
Emerald Hill (Ainsworth)	J. A. Jardine, Kaslo	2	Crude ore	.....	11 757	.....	463	44	.....
Fourth of July (Retallack)	Tri County Holdings Ltd.	2	Crude ore	.....	2 364	.....	470	117	.....
Gladstone (New Denver)	W. Turley, Kaslo	4	Crude ore	.....	9 424	.....	576	721	.....
Grey Copper (Blue Bird), (Cody)	G. H. Cook, Calgary, and G. Sipos, Kaslo	684	Lead concentrates, 2 t; zinc concentrates, 27 t; ore, 7 t	.....	39 167	.....	3 099	15 241	114
H J (Nakusp)	F. D. Jordans, Nakusp	11	Crude ore	.....	622	.....	10	10	.....
J R T (Duncan Lake)	J. O. Elmer, Vernon	4	Crude ore	2	4 354	18	2 059	38	.....
Lakeview (Slocan)	Selmon Resources Ltd.	426	Lead concentrates, 4 t; zinc concentrates, 8 t	11	51 570	.....	1 593	3 612	24
Millie Mack (Burton)	W. D. Smith and S. G. Ramer, Kelowna	73	Crude ore	529	21 088	32	905	626	.....
Molly Hughes (New Denver)	Denver Silver Inc.	3	Crude ore	5	1 768	2	26	12	.....
Morning Star (Slocan)	L. C. Dekock, Slocan	19	Crude ore	.....	404	.....	39	20	.....
Au (Silverton)	Syber Mines Ltd.	562	Lead concentrates, 7 t; zinc concentrates, 34 t; ore, 18 t	24	82 825	143	5 868	17 094	123
Ottawa, Memphis (Springer Creek)	Memphis Mines Ltd.	69	Crude ore	.....	673 764	.....	.....	.....	.....
Panama (New Denver)	United Hearne Resources Ltd.	850	Crude ore	342	757 121	.....	4 196	.....	.....
Scranton (Kaslo)	David Minerals Ltd.	3 120	Lead concentrates, 53 t; zinc concentrates, 259 t	3 348	117 670	1 012	37 256	131 535	1 563
Pilot Bay (Pilot Bay)	D. Pearce, Nelson	208	Clean-up	31	73 746	.....	824	2 100	.....
Silmonac (Minniehaha), (Slocan Lake)	Silvana Mines Ltd.	19 625	Lead concentrates, 1 500 t; zinc concentrates, 1 323 t	.....	9 021 470	.....	912 566	813 375	4 961
Silver Maiden (Silverton)	R. F. Mills, Silverton	39	Crude ore	.....	27 651	.....	659	4 458	.....
Spokane (Slocan)	W. Turley, Kaslo	183	Lead concentrates, 3 t; zinc concentrates, 16 t; ore, 8 t	.....	98 522	.....	3 025	11 716	75
Victor (Sandon)	E. Petersen, New Denver	10	Crude ore	175	43 370	.....	6 016	137	.....
Wonderful (Sandon)	G. Sipos, Kaslo	120	Lead concentrates, 4 t; zinc concentrates, 8 t	.....	20 218	.....	1 645	3 772	.....
Trail Creek Mining Division									
Midnight (Rossland)	Carnelian Mines Ltd.	42	Crude ore	5 319	3 764	183	144	42	.....
Vancouver Mining Division									
Warman (Northair) (Callaghan Creek)	Northair Mines Ltd.	88 309	Lead concentrates, 1 712 t; zinc concentrates, 1 587 t; dore bars	954 534	1 926 052	94 186	724 866	1 106 137	.....
Vernon Mining Division									
Nil	.....	.....	.....	.....	.....	.....	.....	.....	.....
Victoria Mining Division									
Nil	.....	.....	.....	.....	.....	.....	.....	.....	.....

Table M-1—Metal Production, 1980

Property of Mine (and Location of Mine)	Owner or Agent	Ore Shipped or Treated	Product Shipped	Gross Metal Content					
				Gold	Silver	Copper	Lead	Zinc	Cadmium
		t		g	g	kg	kg	kg	kg
Alberni Mining Division									
Lynx and Myra (Buttle Lake)	Western Mines Ltd.	278 244	Lead concentrates 3 738 t; zinc concentrates 32 642 t; copper concentrates 6 997 t.	444 126	20 453 988	1 880 636	1 568 857	17 918 936	76 262
Atlin Mining Division									
Nil									
Cariboo Mining Division									
Mosquito Creek (Wells)	Mosquito Creek Gold Mining Co. Ltd.	11 419	Gold Bullion	136 869	36 885				
Boss Mountain (Takomkane Mountain)	Noranda Mines Ltd. (Boss Mountain Div.)	533 254	Molybdenite concentrates 1 523 t containing 769 806 kg of molybdenum.						
Gibraltar (McLeese Lake)	Gibraltar Mines Ltd.	12 644 000	Copper concentrates 119 325 t; molybdenite concentrates 17 t; molybdic oxide 987 t containing 528 461 kg of molybdenum.		4 639 395	32 672 960			
Park (Barkerville)	Chaput Logging	172	Crude ore	721	243 385	1 072	10 386	3 956	
Clinton Mining Division									
Nil									
Fort Steele Mining Division									
Sullivan (Kimberley)	Cominco Ltd.	2 132 416	Lead concentrates, 115 714 t; zinc concentrates 94 518 t; tin concentrates 335 t containing 113 056 kg of tin.		86 394 417		76 095 523	51 804 218	
Golden Mining Division									
Nil									
Greenwood Mining Division									
Gem (Greenwood)	Kenar Resources	40	Crude ore	92	4 728	44	681	160	
Highland Bell (Beaverdell)	Teck Corporation	39 457	Lead concentrates 333 t; zinc concentrates 386 t; jig concentrates 98 t.	3 359	10 757 821	389	93 278	145 325	1 080
Riverside (Rock Creek)	Baykem Enterprises Ltd.	8	Crude ore	61	303		17	2	
Kamloops Mining Division									
Afton (Kamloops)	Afton Mines Ltd.	2 739 799	Copper concentrates 5 058 t; blister copper 22 510 t.	1 431 195	8 859 577	24 221 282			
Bethlehem (Highland Valley)	Bethlehem Copper Corp.	6 281 765	Copper concentrates 75 512 t; molybdenite concentrates 173 t containing 93 299 kg of molybdenum.	129 204	6 503 270	22 715 445			
OK, Alwin (Highland Valley)	Dekalb Mining Corp.	48 223	Shipments commenced in 1981.						
Lornex (Highland Valley)	Lornex Mining Corp. Ltd.	16 037 591	Copper concentrates, 203 271 t; molybdenum concentrates, 2 903 t; molybdic oxide, 1 118 t; ferro-molybdenum, 83 t containing 2 168 136 kg of molybdenum.		18 372 886	63 431 872			

Liard Mining Division									
Erickson (McDame Lake)	Erickson Gold Mining Corp.	28 804	Gold concentrates 561 t.	484 662					
Lake (Tootsee River)	T. Riba, Vancouver	1	Crude ore		280		48	37	
Lillooet Mining Division									
Bralorne (Bralorne)	Nelson Machinery Co. Ltd.	6	Clean-up	404	124		7	7	
Nanaimo Mining Division									
Island Copper (Rupert Inlet)	Utah Mines Ltd.	13 782 249	Copper concentrates 219 405 t; molybdenite concentrates 2 703 t containing 1 113 074 kg of molybdenum.	1 747 704	13 456 484	50 033 433			
Nelson Mining Division									
Bee Gee (Nelson)	William Grant, Nelson	13	Crude ore		3 421		66	675	
Goldridge (Clearwater)	G. and R. Longset, Trail	46	Crude ore	184	2 578		326	116	
Keystone (Salmo)	Silver Key Mining Corp.	195	Crude ore	3 266	11 508	123	2 952	2 177	
Motherlode (Sheep Creek)	Nugget Mines Ltd.	435	Crude ore	4 429	7 123		696	1 028	
Nugget (Sheep Creek)	Nugget Mines Ltd.	425	Crude ore	4 264	2 877		469	435	
Rachel (Nelson)	Kimberley Gold Mines	14	Crude ore	946	3 851		1 335		
New Westminster Mining Division									
Nil									
Nicola Mining Division									
Craigmont (Merritt)	Craigmont Mines Ltd.	1 950 551	Copper concentrates 38 649 t; iron concentrates 41 562 t; coarse iron 2 649 t.	13 312		10 794 185			
El Klondike (Nicola)	G. Irving, Kamloops	10	Crude ore	62	4 541		162	152	
Omineca Mining Division									
Bell (Babine Lake)	Noranda Mines Ltd. (Babine Div.)	5 011 943	Copper concentrates 65 901 t.	848 347	2 259 450	17 532 042			
Dome (Hazelton)	George Braun, New Hazelton	518	Crude ore	1 586	1 004 580	1 236	29 683	32 026	
Endako (Endako)	Placer Development Ltd. (Endako Mines Div.)	11 103 147	Molybdenum concentrates 376 t; molybdic trioxide 7 284 t; ferro-molybdenum 163 t; total content 4 651 559 kg of molybdenum.						
Golden Eagle (Topley)	Gordon Finch, Smithers	31	Crude ore		17 262		648	48	
Granisle (Babine Lake)	Noranda Mines Ltd. (Babine Div.)	3 936 725	Copper concentrates 39 869 t.	387 083	4 075 675	13 258 799			
Sunrise (Nine Mile Mountain)	M. Kryger, Smithers	191	Crude ore	6 656	31 850	229	3 376	4 030	

Table M-1—Metal Production, 1980—Continued

Property of Mine (and Location of Mine)	Owner or Agent	Ore Shipped or Treated	Product Shipped	Gross Metal Content					
				Gold	Silver	Copper	Lead	Zinc	Cadmium
Osoyoos Mining Division		t		g	g	kg	kg	kg	kg
Brenda (Brenda Lake)	Brenda Mines Ltd.	9 126 860	Copper concentrates 32 390 t; molybdenite concentrates 3 330 t containing 1 855 166 kg of molybdenum.	77 494	4 816 579	9 152 418	.....	.....	.....
Horn Silver (Keremeos)	Dankoe Mines Ltd.	19 634	Bulk concentrates 678 t.	7 981	2 936 329	.....	9 275	15 273	.....
Revelstoke Mining Division									
Balden Bush (Tangier River)	G. L. Benwell, Revelstoke	6	Crude ore	.....	15 769	.....	3 897	356	.....
Canadian (Revelstoke)	C.T. Explorations Ltd.	67	Crude ore	230	6 812	.....	1 485	1 282	.....
Similkameen Mining Division									
Similkameen (Ingerbelle) (Princeton	Newmont Mines Ltd. (Similkameen Div.)	6 612 035	Copper concentrates 90 871 t.	1 168 495	4 860 882	26 258 573	.....	.....	.....
Skeena Mining Division									
Goat Ridge (Stewart)	Nor-Quest Resources Ltd.	1 865	Silver concentrates 30 t; crude ore 1 462 t.	3 412	945 075	153	3 278	32 397	.....
Monroe (Stewart)	W. Rodway, Stewart	6	Crude ore	32	2 229	.....	.....	79	.....
Tasu (Tasu Sound)	Falconbridge Nickel Mines Ltd. (Wesfrob Mines Div.)	996 422	Iron concentrates 581 637 t; copper concentrates 10 689 t.	51 694	2 206 506	2 225 590	.....	.....	.....
Slocan Mining Division									
Blue Bird (Sandon)	Alsi Holdings	11	Crude ore	.....	13 958	.....	1 803	612	.....
Capello (New Denver)	Emu Enterprises	4	Crude ore	.....	4 199	.....	34	67	.....
Hall (Sandon)	Hallmac Mines Ltd.	41	Crude ore	28	180 618	.....	30 109	414	.....
Hecla (Silverton)	Mills and Mengler, Silverton	489	Crude ore	228	570 065	390	29 784	41 665	.....
Lakeview (Springer Creek)	Selmon Resources Ltd.	3	Crude ore	.....	50 294	.....	2 706	290	.....
McAllister (New Denver)	Ralph Sostad, West Vancouver	523	Crude ore	52	145 004	.....	2 501	1 788	.....
Mercory (New Denver)	P. McCrory, New Denver	18	Crude ore	.....	5 381	.....	668	1 186	.....
Meteor (Slocan)	N. Storgard, Slocan	33	Crude ore	142	15 552	.....	33	33	.....
Molly Hughes (New Denver)	Monte Lloyd, New Denver	11	Crude ore	.....	1 835	.....	264	1 167	.....
Monarch (Silverton)	Kegorhe Mines Ltd.	46	Crude ore	22	83 196	46	6 465	2 022	.....
Noonday (Slocan)	Dennis Tyres, Kaslo	5	Crude ore	.....	5 474	.....	359	441	.....
Nor 1 and 2 (Lendrum Creek)	Ron Davidson, Ainsworth	14	Crude ore	3	4 248	.....	64	107	.....
Ottawa (Springer Creek)	Memphis Mines Ltd.	596	Crude ore	.....	994 689	.....	.....	.....	.....
Panama (New Denver)	United Hearne Resources	826	Crude ore	409	904 800	809	2 889	621	.....
Pilot Bay (Pilot Bay)	D. Pearce, Nelson	.....	Clean-up	317	530 314	.....	5 820	13 194	.....
Puck (New Denver)	C. G. Pownall, New Denver	90	Crude ore	31	16 765	.....	181	181	.....
Ritch-Mitch (Slocan Lake)	David Groenhuysen	10	Crude ore	.....	7 434	.....	7 357	2 422	.....

Silmonac (Minniehaha) (Slocan Lake)	Dickenson Mines Ltd.	29 820	Lead concentrates 1 362 t; zinc concentrates 1 223 t.	.....	7 687 934	.....	791 327	726 989	4 410
Snowstorm (Slocan)	T. Eccles, Rossland	1	Crude ore	.....	1 285	.....	502	158	.....
Spokane (Slocan)	Arley Mines Ltd.	463	Crude ore	.....	203 697	.....	10 128	27 354	.....
Utica (12 Mile Creek)	David Minerals Ltd	9 525	Lead concentrates 403 t; zinc concentrates 150 t; crude ore 12 t.	804	1 056 989	.....	28 755	141 958	577
Westmont (Silverton)	Hoko Exploration Ltd.	481	Lead concentrates 6 t; zinc concentrates 5 t; ore 34 t.	36	89 827	54	2 389	4 956	17
Whitewater (Retallack)	Woodcrest Holdings Ltd.	18	Crude ore	218	373	.....	18	35	.....
Trail Creek Mining Division									
Golden Drip (Rossland)	Lloyd McLellan, Rossland	23	Crude ore	2 657	1 564	.....	93	24	.....
Vancouver Mining Division									
Warman (Northair) (Callaghan Creek)	Northair Mines Ltd.	71 124	Lead concentrates 1 779 t; zinc concentrates 2 246 t; dore bars.	564 131	1 894 138	97 203	871 219	1 246 617	.....
Vernon Mining Division									
Black Beard (Silver Bell) (Lumby)	Black Beard Mine Inc.	16	Crude ore	31	1 337	.....	49	33	.....
Zumar (Kelowna)	Zumar Resources	55	Crude ore	261	2 324	.....	55	55	.....
Victoria Mining Division									
Nil	.....	.....	.....	.....	.....	.....	.....	.....	.....

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SCALE - KILOMETRES
20 0 20 40 60 80 100 120 140 160 180 200

FIGURE M-1

MINES PRODUCING MORE THAN 1 000 TONNES, 1975–1980

METAL MINES Geological Class	Underground Mine	Open Pit
PORPHYRY Cu, Mo	●	⊙
SKARN Cu, Fe	✕	⊗
MASSIVE SULPHIDE Zn, Cu, Pb	✚	⊕
STRATIFORM Pb, Zn, Ag	■	
OTHER	▲	△

NON-METALLIC MINES AND QUARRIES		
ASBESTOS		⊘
GYPSUM		⊘
BARITE	◓	⊖

COAL MINES		
COAL	◖◗	◇

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Province of British Columbia
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FIGURE M-2

MINING IN BRITISH COLUMBIA, 1975–1980
INDEX MAP OF PROPERTIES

SCALE 1: 2 000 000

KILOMETRES 50 0 50 100 150 200 KILOMETRES

SYMBOLS

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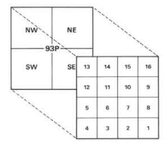
COAL MINES ..... ×93

MINING DIVISION BOUNDARIES .....

MINING DIVISIONS

1	ATLIN	13	KAMLOOPS
2	LIARD	14	NICOLA
3	SKEENA	15	SIMILKAMEEN
4	OMINECA	16	OSOYOOS
5	CARIBOO	17	VERNON
6	CLINTON	18	GREENWOOD
7	LILLOOET	19	TRAIL CREEK
8	VANCOUVER	20	NELSON
9	NEW WESTMINSTER	21	SLOCAN
10	NANAIMO	22	REVELSTOKE
11	ALBERNI	23	GOLDEN
12	VICTORIA	24	FORT STEELE

N.T.S. BREAKDOWN



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