NORTHWEST REGION

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SUMMARY AND TRENDS

The reduced level of activity in the exploration and mining industry continued in early 2009, as part of the world slowdown resulting from tight financial markets. During 2009, copper, silver and zinc gradually recovered much of the value they lost late the preceding year and gold, which had not declined, climbed to a record high price. The price of molybdenum improved only a modest amount after it fell more than any other metal. Beginning in August risk capital became more available, in particular flow-through funds, and resulted in a late-season surge in exploration drilling. The outlook for 2010 is moderately positive.

The Endako molybdenum mine reactivated a major expansion and modernization program, expending approximately $39 million in 2009 on the only major mine development project active in the region. Owners of the Huckleberry copper-molybdenum mine announced a two year extension of operations until 2012. Fireside barite, a small seasonal quarry in the far north, continued in operation. Construction stopped at the Tulsequah Chief copper-zinc-silver-gold mine; the owner, Redfern Resources Ltd became bankrupt after spending $170 million and the project assets are being sold by the Receiver. Adanac Moly Corporation was placed under Bankruptcy Protection and the construction camp for its Ruby Creek molybdenum project was sold and removed from site. Figure 1.1 shows major mines, small mines and proposed mines in Northwest region. Metal production and mine reserves are listed in Table 1.

Galore Creek, Red Chris, KSM (Kerr-Sulphurets-Mitchell) and Kitsault lead a group of mine development projects. The Galore Creek copper-gold proposed mine is on hold pending redesign of the project. Teck Corporation continued to construct the access road and a corporate decision on the project's future is anticipated in 2010. In a landmark move, the governments of British Columbia and Canada agreed to share the cost to build the Northwest Transmission Line, an extension of the 287 kilovolt power grid to Bob Quinn that could service new mines in the region, such as Galore Creek. The Red Chris copper-gold project, which also holds a development certificate for an open pit mine, is located 125 km beyond Bob Quinn. Exploration at Red Chris continued for a deep copper-gold deposit. The KSM gold-copper and Kitsault molybdenum projects conducted engineering, environmental and archeological field studies. The KSM project is one of the five largest undeveloped gold resources in the world. It will be reviewed under the BC and Canadian environmental assessment processes. The Kitsault molybdenum mine operated previously and may proceed under an Amendment to its current Mine Permit. There were no field activities at the Kutcho copper-zinc or Schaft Creek copper projects. Environmental review of the Davidson molybdenum project is suspended pending supplemental information.

Three small gold projects progressed towards commercial operation. The Yellowjacket project near Atlin received a Small Mines Act permit following pilot milling in 2008; however, only 73 ounces of gold was produced. The Cassiar Gold project began underground development at the Table Mountain mine and surface mining of a bulk sample at the nearby Taurus mine. Work at the two sites was halted in November. Near Smithers, the new owner of the closed Dome Mountain mine refurbished the underground workings and applied for a Small Mines Act permit to mine the remaining gold resource for off-site milling.

Estimated expenditure on major and small mine development projects was $47 million, down from $245 million in 2009. Mineral exploration expenditures declined to $65 million from $140 million (Figure 1.2). There were 17 exploration projects that exceeded $500,000 in expenditures, down from 55. Exploration drilling totaled about 144 000 metres at 30 drilling programs (Figure 1.3). Highlight exploration projects to the time of writing in late November were:

- Red Chris, a drill intercept below the proposed open pit grading 4.1% copper and 8.8 g/t gold over an interval of 152 m.
- Exploration of under-explored gold-silver zones at Snowfield-Brucejack and re-consideration of historic work that resulted in new resource estimates; 120.5 Mt at 1.04 g/t Au and 16.9 g/t Ag (measured plus indicated).
- Snowfield and KSM projects, aggregate resources (measured, indicated and inferred) at these adjoining projects totals 4.37 billion tonnes containing 85 million ounces of gold.

Second-order highlights, ranked below those listed above, include Rock and Roll where exploration was revived on a precious metal-rich volcanogenic massive sulphide prospect, and Bronson Slope where significant gold drill intercepts were encountered in a new area.

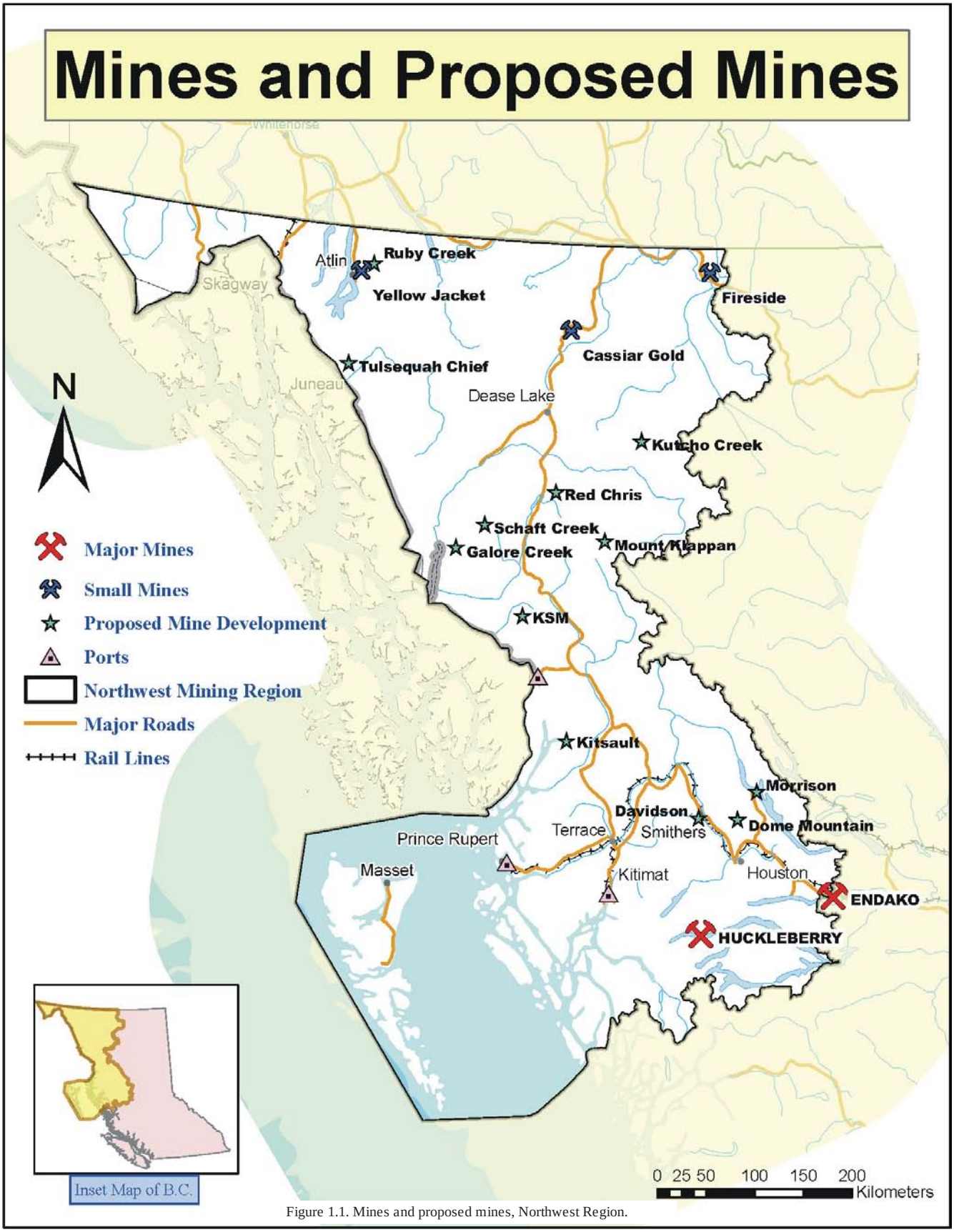

Figure 1.1. Mines and proposed mines, Northwest Region.

TABLE 1.1. MINE PRODUCTION AND RESERVES, NORTHWEST REGION

Mine	Operator	Production (2008)	Tonnes milled (2008)	Grade	Reserves (Dec 31, 2008)
Endako	Thompson Creek Metals Company (75%) & Sojitz Corporation	5612 tonnes molybdenum	10 767 000	0.070% Mo	279 200 000 tonnes at 0.050% Mo (includes low-grade stockpile)
Huckleberry	Huckleberry Mines Ltd. (50% Imperial Metals Corp.)	16 882 tonnes copper, 85.2 t molybdenum	6 031 300	0.316% Cu, 0.006% Mo	8 368 000 t at 0.362% Cu, 0.005% Mo
Fireside	Fireside Minerals Inc.	8000 tonnes	from stockpile		Not available

Figure 1.4 shows the distribution of expenditure; grassroots 0.4%, early stage 30.7%, advanced stage 30%, mine evaluation 38.1% and mine property 0.8%. Definitions of exploration stages are provided in the *Foreword* to this volume. Figure 1.5 shows spending distribution by mineral deposit type; porphyry copper (copper-gold and copper-molybdenum projects) 52%, gold and silver in vein-type deposits 34%, porphyry molybdenum 9%, polymetallic massive sulphide deposits 4% and skarn 1%.

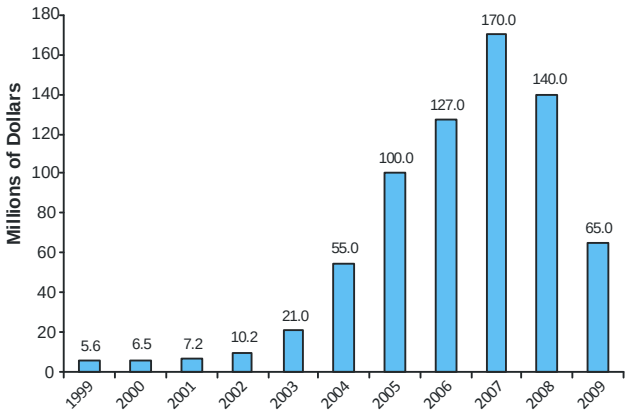

Figure 1.2. Annual exploration spending, Northwest Region.

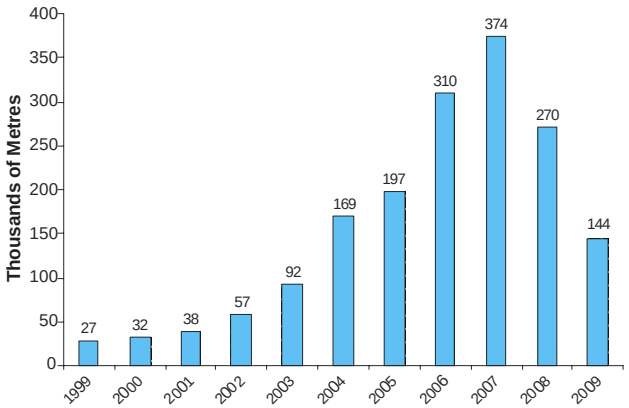

Figure 1.3. Annual exploration drilling, Northwest Region.

MINES AND QUARRIES

METAL MINES

The **Endako** open-pit molybdenum mine (MINFILE 93K 006) is 75% owned and operated by Thompson Creek Metals Company. Sojitz Corporation, a major Japanese-based molybdenum trading company, holds 25% interest. In 2008 the mine produced 5612 t of molybdenum from 10 767 000 t of ore with an average grade of 0.070% molybdenum. Thompson Creek scaled back 2009 production in response to weaker molybdenum markets and forecasts Endako output at between 3000 and 4200 t of molybdenum. Employment near year-end totaled 253, including 10 contractor employees.

Beginning in 2008 ore was mined from the newly developed West Denak pit. Ore passes through an in-pit crusher and then is transported on a 3 km conveyor. Mill throughput, molybdenum recovery (at 77.7%) and metal output all increased in 2008 over 2007 levels due to the higher grade and favourable characteristics of West Denak ore compared to that mined from the Endako pit.

A construction project to expand capacity of the Endako mill from 28 000 to 50 000 t of ore per day was halted in December 2008 due to a pronounced decline in demand for molybdenum, but work resumed in August 2009 when markets improved. The project is estimated to cost $498 million of which $62 million was expended in 2008 and $39 million budgeted in 2009. The mill has been in operation since 1965 and the expansion project will improve efficiency of processing and enable treatment of lower grade ore. Included in the project is the installation of a new grinding circuit with a semi-autogenous (SAG) mill and ball mills, a modern floatation circuit and an upgrade of the roaster circuit.

Endako is a porphyry molybdenum deposit within the early Cretaceous Francois Lake granite batholith. Mineralization is related to a late aplite phase that intrudes an older coarse-grained phase. The ore body is a vein network that is 400 m wide by 3.5 km long,

elongated to the west-northwest and extends more than 400 m below surface at a moderate southerly dip. In the principal Endako pit, quartz-molybdenite veins with K-feldspar envelopes occur in the footwall of the South Basalt fault which dips 50º to 60º south and delineates the top of the ore zone. The hydrothermal system is rooted in the steep South Boundary fault. Post-mineral cross faults segment the ore zone into the Endako, East Denak and West Denak pits. In the long-term mine plan these will merge into a large 'superpit' (Figure 1.6). In-situ and stockpile ore reserves on the property at the beginning of 2009 were 279.2 Mt grading 0.050% Mo.

The **Huckleberry** copper mine (MINFILE 93E 037) is operated by Huckleberry Mines Ltd and is owned 50% by Imperial Metals Corp and 32% by Mitsubishi Material Corp. The remaining 18% is shared equally among Dowa Mining Ltd, Furakawa Company Ltd and Marubeni Corp. The mine is located 123 km by road south of Houston at the foot of Huckleberry Mountain and employs 275 people including camp and trucking contractors. Copper concentrate is trucked to the port of Stewart for shipment to Japan and molybdenum concentrate is trucked to Vancouver. Forecast 2009 production is 16 000 t of copper.

In June 2009 Huckleberry Mines announced a two year addition to mine life, to early 2012, by extending its mine plan in the Main Zone Extension (MZX) pit to include the Saddle zone. The Saddle zone is a bedrock ridge between MZX and the Main pit. The Main zone pit contains waste rock from the East pit and tailings that complicates mining of MZX. The company stated the Saddle zone "has a high potential to provide additional extensions to the mine life depending on copper price." A 4000 m drilling program was conducted in the area. In 2008 Huckleberry milled 6 031 300 t of ore from the MZX pit grading 0.316% Cu and 0.006% Mo. Metal production amounted to 16 882 t of copper and 85.2 t of molybdenum. Copper recovery was 88.5% and molybdenum recovery was 23.2%. Ore reserves at the beginning of 2009 were 8 368 000 t at a grade of 0.362% Cu and 0.005% Mo.

Huckleberry is a porphyry copper deposit related to the late Cretaceous Bulkley intrusions. In the Main zone, copper mineralization occurs in hornfelsed and fractured Hazelton Group volcanic rocks adjacent to a 500 meter diameter granodiorite stock. The arcuate ore zone is 150-200 m wide by 600 m long and rims the contact of the stock. The East zone is larger, measuring 150 m wide by one km long, and is centred on a fault-controlled 40 m wide granodiorite dike that trends at 105°. Ore in both zones is a stockwork of quartz, pyrite and chalcopyrite, crosscut by gypsum-filled fractures. The Main and East zones are disrupted by the reactivated 105 Fault which resulted in 100 m of right lateral offset of ore. The Main Zone Extension is the faulted portion of the Main zone north of the 105 Fault.

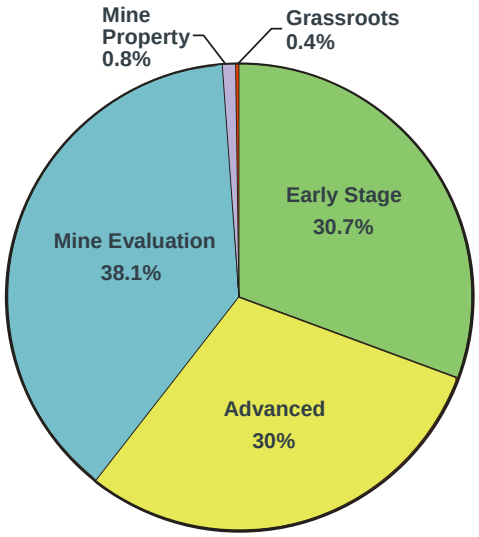

Figure 1.4. Distribution of total exploration spending in the northwest region.

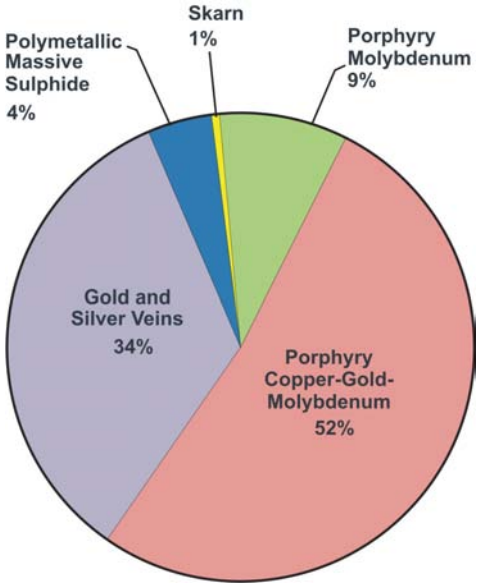

Figure 1.5. Spending distribution by mineral deposit type.

INDUSTRIAL MINERAL QUARRIES

Fireside barite quarry (MINFILE 094M 003) processed approximately 9500 t of product in 2009. Plant feed was derived mainly from material mined in 2006 and stockpiled at the site, 125 km east of Watson Lake. A small amount of barite was mined by excavator from near the crusher. The quarry is owned by a private company, Fireside Minerals Ltd of Red Deer Alberta. Fault-controlled barite veins are associated with gabbro dikes, of inferred Paleozoic age, emplaced into strata of the early Paleozoic North American continental shelf (Wojdak, 2008).

Figure 1.6. Endako molybdenum mine, aerial view of super-pit that will incorporate Endako, Denak East and Denak West, north is to the left.

Jade was produced from **Provencher Lake**, 80 km east of Dease Lake (MINFILE 104I 073, 092) and from **Cassiar** (MINFILE 104P 005).There was no activity at Polar Jade, an important producer for many years. There were two operators from adjoining properties at Provencher Lake where jade boulders are widely dispersed in glacial till. The Jade West Group extracted about 90 t, of which 30 t was saleable quality. Jade Guys Inc recovered about 50 t of raw jade and sold approximately 16 t. Cassiar Jade Contracting Ltd produced 8 t from material recovered in prior years from waste rock at the Cassiar asbestos mine. In northwest BC, nephrite jade is commonly formed at the contact between tectonically emplaced serpentinite and argillite of the Cache Creek and Slide Mountain oceanic terranes.

MINE DEVELOPMENT PROJECTS

Redfern Resources Ltd suspended construction of the **Tulsequah Chief** mine in December 2008 and filed for protection under the Companies' Creditors Arrangement Act in March 2009. Financing was unsuccessful and the company was assigned into bankruptcy in June. During 2007 and 2008 Redfern spent $170.8 million on the Tulsequah project; building a 1200 m airstrip, 15 km of site roads and construction camp and purchase of equipment including river tugs and tow vehicles, diesel power plant, rod, regrind and ball mills. Shortly before the shutdown a workforce of 104 people was on site.

Eagle Plains Resources Ltd and Prize Mining Corp formed a Joint Venture to mine the **Yellowjacket** gold property (MINFILE 104N 043) near Atlin. The project received a Small Mines Act permit for an open pit gold mine and onsite gravity concentrator to process up to 75 000 t of ore per year (Figure 1.7). The mine will operate on a seasonal basis, approximately May to October. The 2009 season began by processing the remainder of the bulk sample stockpile material. No gold was recovered and attention shifted to extraction of new ore from the open pit. A six metre wide gold zone was discovered during excavation of a ramp to access ore at the bottom of the pit. Approximately 40 000 t was mined, of which 9000 t was stockpiled for processing. Installation of a new tailings system delayed the operation and mechanical and electrical breakdowns meant the targeted milling rate of 350 t per day was not sustained. At the end of the season, a gold bar was poured weighing 2.284 kg (73.4 ounces). Development cost in 2009 was approximately $3.4 million and past expenditure was $14 million. Drilling and production data were assigned to an independent consultant to prepare a resource estimate and a winter drilling program is planned to assess near-term production material.

Figure 1.7. Yellowjacket gravity mill treating gold ore.

Native gold at Yellowjacket is associated with quartz veining and listwanite alteration developed in the Pine Creek fault zone and underlies placer gold deposits in Pine Creek. The fault zone is 20 m wide and is developed in serpentinite and basalt, components of the tectonic emplacement of the oceanic Cache Creek terrane. A bulk sample was mined in 2007 and processed in the pilot mill in 2008. Gold recovery amounted to approximately 21.8 kg (700 ounces) from 2880 t of rock.

Hawthorne Gold Corporation continued exploration and development aimed toward re-opening of the **Cassiar** gold mine (formerly **Table Mountain** mine). The mine comprises the Erickson underground workings (1979-1988), the Cusac underground workings (1986-1997) and a 270 tonne per day gravity flotation mill. The goal is to firm up resources that would provide for a minimum two years of operation. Restoration of the mill and ancillary facilities is required. A 40-person camp was installed and, in July, excavation of a 160 m ramp was begun to access the East Bain vein. Mechanical breakdowns and high water flow underground slowed the pace of development. The Katherine-Bonanza-Bain vein system (MINFILE 104P 113) is 7.5 km south of the mill in the area of the Cusac workings and is the southernmost vein mined on the Table Mountain property. East Bain has an inferred resource of 1158 t grading 68.57 g/t Au and an indicated resource of 20 100 t grading 21.21 g/t Au. Underground drilling is planned to upgrade the resource. Drilling from surface totaled 7524 m and explored geophysical targets in the so-called Gap area between the productive Jennie-Maura-Alison vein system in the Erickson workings and the Eileen-Michelle-Lily vein in the Cusac workings. Other geophysical targets were tested by drilling in the Pete, Wings Canyon and Katherine areas. Drilling also tested for extensions of the East and West Bain.

Drilling and rock trenching by Hawthorne on the nearby **Taurus** property (MINFILE 104P 012) sought to define zones amenable to open pit mining and grading more than 3.5 g/t Au. Taurus contains an inferred resource of 33.06 Mt grading 1.00 g/t Au. The Sable and 88 Hill zones were explored by 563 m of trenching and 3882 m of drilling. In August Hawthorne began surface mining of up to 10 000 t from the Sable zone (Figure 1.8). The material was hauled in highway trucks 10 km to the Table Mountain site and stockpiled as supplemental mill feed. Hawthorne shut down the Cassiar project in early November, having completed 129 m of underground development toward the Bain vein. Fifty people were on site at the time.

Gold at Cassiar occurs as free gold in a series of quartz-sulphide veins within a thrust-imbricated gently dipping sequence of basalt, serpentinite and argillite. Most veins are sub-vertical and strike 070°. Veins, which are developed in basalt near the northerly trending Erickson normal fault, dissipate or become contact-parallel structures in the overlying listwanite-altered serpentinite and, except for the Vollaug vein, do not extend upward into the argillite. The highest gold grades are found within 50 m of the base of a serpentinite body where the ore grades 15-30 g/t Au. Grade diminishes at depth below the listwanite. At Taurus the erosional level is deeper, approximately several hundred meters below the important altered serpentinite cap and quartz veins generally grade 5 g/t Au or less, but locally exceed 20 g/t Au. Broad carbonate alteration zones around the steep and flat quartz veins contain about 1 g/t Au, associated with coarse pyrite and arsenopyrite. Cassiar district veins have short strike extent, typically less than 200 m, but the Vollaug vein is an exception; it is a 2.7 km long flat vein within argillite. Lode mining in the district produced 350 500 ounces (10 905 kg) of gold; placer mining contributing an additional 74 500 ounces (2317 kg) of gold.

MINE EVALUATION PROJECTS

Galore Creek Mining Corp, a 50-50 partnership between Teck Corporation and NovaGold Resources Inc, continued to improve and extend the **Galore Creek** access road. The road is now serviceable to Kilometre 48, at which point a 200-meter clear-span bridge is required to cross upper More Creek. Construction of other components of the project have been suspended since late 2007 (Figure 1.9). Reactivation of mine development depends on a feasibility study of the redesigned Galore Creek project (outlined in Wojdak and Febbo, 2009) and an amendment to the certificate awarded under the Environmental Assessment process. Galore Creek (MINFILE 104G 090) is a porphyry copper deposit associated with alkalic intrusive rocks of late Triassic age. Measured and indicated resources total 785.7 Mt grading 0.52% Cu, 0.29 g/t Au and 4.87 g/t Ag. Inferred resources, which include the nearby **Copper Canyon** deposit, stand at 522.5 Mt at 0.35% Cu, 0.29 g/t Au and 4.79 g/t Ag.

Figure 1.8. Cassiar Gold, Kristian Whitehead directs mining of a bulk sample from the Sable zone on the Taurus property.

Figure 1.9. Galore Creek, construction camp and equipment at Km 89.5, a stranded segment of the access road to the copper-gold deposit.

The **Red Chris** copper-gold project is owned by Imperial Metals Corporation and located 25 km by road from the settlement of Iskut. The project has provincial and federal environmental assessment certificates to develop a 30 000 tonne per day open pit mine. A Supreme Court of Canada decision whether to uphold the federal approval (awarded under the Canadian Environmental Assessment Act) is expected by early 2010. Open pit reserves in the Main and East zones, estimated in 2004, are 277.8 Mt grading 0.35% Cu and 0.27 g/t Au, at a cut-off grade of 0.2% Cu. Resources outside the pit, including the Far West and Gully zones, are 574.8 Mt grading 0.32% Cu and 0.28 g/t Au.

Red Chris (MINFILE 104H 005) is a porphyry copper-gold deposit developed in an early Jurassic monzonite stock emplaced very near the faulted north margin of the Bowser Basin. A major exploration program was conducted; a series of holes with a planned depth of 1500 m to explore the deep roots of the East zone, below the proposed open pit. At time of writing, seven holes had been reported, two more were completed and two were in progress. Hole RC09-350 returned an outstanding intercept, 4.12% Cu and 8.83 g/t Au over 152.5 m, beginning at a depth of 540 m. This is below the bottom of the designed open pit. That portion of the hole within the planned pit graded 0.17% Cu and 0.12 g/t Au, showing a profound change in the tenor of mineralization with depth. The high grade interval is an intense quartz-flooded and vein stockwork zone containing chalcopyrite and only minor bornite. Hole RC09-348 returned three intercepts; 0.87% Cu and 0.84 g/t Au over 255 m from a depth of 302.5 m (the bottom of the design open pit), 1.21% Cu and 2.41 g/t Au over 243.9 m from a depth of 725.4 to 969.3 m, and 1.52% Cu and 3.35 g/t Au over 129.9 m from a depth of 756 to 885.9 m. The other holes returned lower grade but all intersected 30 to 50 meter widths exceeding 1% Cu and 1 g/t Au. In 2007, a vertical hole in the core of the East zone intersected 1024.1 meters grading 1.01% Cu, 1.26 g/t Au and 3.92 g/t Ag and bottomed in strong mineralization.

Other exploration activities at Red Chris included a deep penetration magnetotellurics and IP survey that gave insight to possible buried intrusive centres. Geological mapping and the drilling of 166 shallow holes to prospect bedrock (Figure 1.10) provided additional targets on the till-covered plateau for follow-up exploration drilling (S. Robertson, pers. comm., 2009).

Seabridge Gold Inc continued to advance the **KSM** (**Kerr-Sulphurets-Mitchell)** gold-copper project toward completion of a preliminary feasibility study (scheduled for March 2010) and an application under the BC Environmental Assessment Act anticipated in September 2010 (Figure 1.11). Seabridge contemplates a 120 000 tonne per day open pit mine on three proximal porphyry copper deposits (Figure 1.12). Capital cost is estimated at $3.08 billion. The site is 30 km southwest of Highway 37 near Bell II and 18 km southeast from the end of the Eskay Creek road.

Resource infill drilling comprised 4000 m in the Mitchell zone, 3100 m at Sulphurets and 900 m at Kerr (MINFILE 104B 176, 191 and 182 respectively). Substantially better than expected grades and widths were returned from the Sulphurets zone. Geotechnical drilling (3500 m) provided information for determination of slope angles in the Mitchell open pit, the zone that would be

Figure 1.10. Red Chris, innovative mobile drill designed for short core holes to explore the till-covered Todagin plateau.

Figure 1.11. KSM, representatives of government agencies at the proposed Mitchell open pit during a project familiarization tour, as part of the Environmental Assessment process.

mined first. Environmental, archeological and engineering studies constituted a major part of the 2009 program. The proposed mill site and tailings impoundment are located 23 km to the northeast and would be linked to the mine by a twin tunnel beneath the Iron Cap zone and an alpine icefield. One tunnel would transport crushed ore from the mine in a slurry pipeline and return water, diesel fuel and electrical power; the other would transport personnel and supplies. Mineral resources in the three deposits, based on work up to the end of 2008, are tabled below.

Measured plus Indicated Resources

Zone	Tonnes (000)	Gold (g/t)	Copper (%)
Mitchell	1 509 900	0.64	0.18
Kerr	225 300	0.23	0.41
Sulphurets	87 300	0.72	0.27
Total	1 822 500	0.59	0.21

Inferred Resources

Zone	Tonnes (000)	Gold (g/t)	Copper (%)
Mitchell	514 900	0.51	0.14
Kerr	69 900	0.18	0.39
Sulphurets	160 900	0.63	0.17
Total	745 700	0.50	0.17

The KSM porphyry deposits are associated with the Mitchell intrusions, high level monzonite plugs and dikes that intrude volcanic rocks of the Jurassic Hazelton Group and are in fault contact with sedimentary rocks of the Upper Triassic Stuhini Group. All lithologies are altered and deformed. The Mitchell zone is exposed in an erosional window below the Mitchell thrust fault over an area of 1600 m by 500 m. The fault truncates the upper part of the deposit. The deposit comprises schistose rocks with abundant sericite, disseminated pyrite and a strongly deformed quartz stockwork (Figure 1.13). Quartz veins constitute more than 50% of the rock in the core of the deposit. Chalcopyrite is the principal copper mineral. Copper and gold grades are remarkably uniform.

The Sulphurets zone, 2 km south of Mitchell, occurs at a higher structural level between the Mitchell and Sulphurets thrust faults. Mineral zones are structurally stacked but the principal Sulphurets zone is a moderately developed quartz stockwork that is cross-cut by a higher grade hydrothermal breccia zone. The top of the Sulphurets zone is truncated by the Sulphurets thrust which dips gently north. Drilling in 2009 intersected significant gold grade below the Sulphurets zone, e.g. 1.51 g/t Au over 33.3 m. Seabridge interprets this to be an easterly continuation of the Canyon zone (MINFILE 104B 183).

There was little fieldwork in 2009 on the **Kutcho Creek** copper-zinc project owned by Capstone Mining Corporation. The project continues in the pre-application stage of Environmental Assessment. Kutcho Creek is a volcanogenic massive sulphide deposit (MINFILE 104I 060) located 100 km east of Dease Lake. A new determination of mineral resources was announced, derived from in-fill drilling in 2008 that focused on the higher grade areas. Measured and indicated resources are estimated at 10 415 000 t grading 2.14% Cu, 2.85% Zn, 32.4 g/t Ag and 0.36 g/t Au. The inferred resource is estimated at 1 893 000 t at 2.09% Cu, 2.93% Zn, 33.6 g/t Ag and 0.46 g/t Au. Three elongate sulphide lenses (Main, Sumac and Esso) are arranged en echelon over a strike length of 3.5 km within schistose felsic volcanic rocks of early Triassic age. Capstone commissioned a preliminary economic assessment of the Kutcho project that scaled down the proposed mine to 2500 t per day at a capital cost of C$133.5 million. Development would comprise a small open-pit followed by underground mining to supply most of the ore, and dry-stacked disposition of tailings.

The **Schaft Creek** project of Copper Fox Metals Inc continued in the pre-application stage of the environmental assessment process for a proposed 100 000 tonne per day open pit copper mine. There has been little activity on the project since a preliminary feasibility study in 2008. Schaft Creek (MINFILE 104G 015) is a porphyry copper deposit with a measured and indicated open pit resource of 812 Mt grading 0.30% Cu, 0.020% Mo, 0.21 g/t Au and 1.8 g/t Ag, at a 0.20% Cu equivalent cut-off.

Kitsault is a closed molybdenum mine located 140 km north of Prince Rupert that Avanti Mining Inc proposes to re-open. The project has a Mines Act permit but requires an amendment, primarily for a new tailings disposal site. The mine is still served by a power line and access road. Initial pit benches are developed. Work in 2009 focused on geotechnical drilling to evaluate new sites for a mill building, for a tailings dam and impoundment, and to assess conditions of the pit highwall (Figure 1.14). Test pits were dug to evaluate overburden

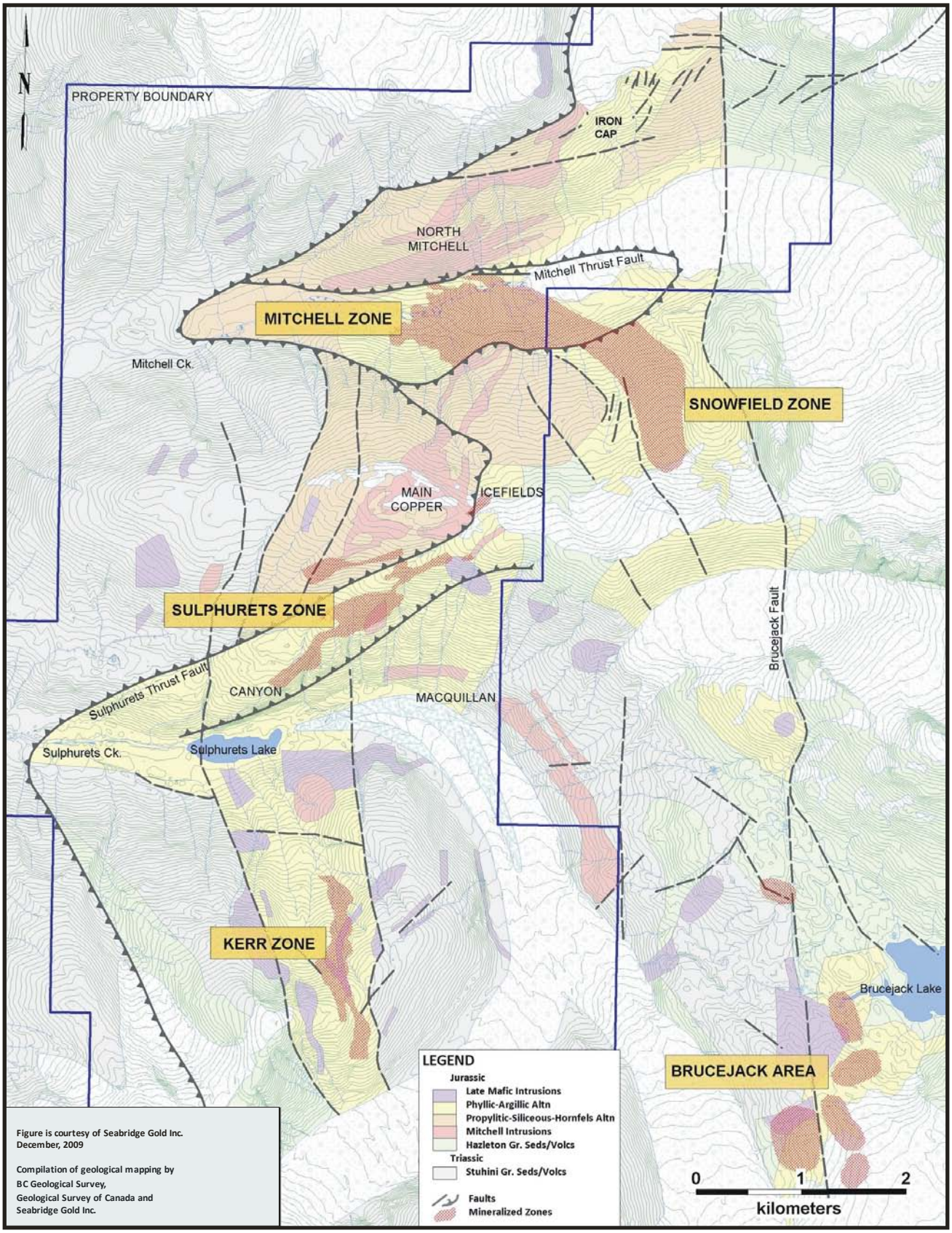

Figure 1.12. Generalized geology map, courtesy of Seabridge Gold Inc, showing the KSM property and part of the Snowfield property, owned by Silver Standard Resources Inc. Approximate location of mineralized zones are shown at Mitchell, Sulphurets, Kerr, Snowfield and in the Brucejack area. Snowfield comprises two subzones, Snowfield North and Snowfield. Alteration zones and the important Mitchell and Sulphurets thrust faults are delineated.

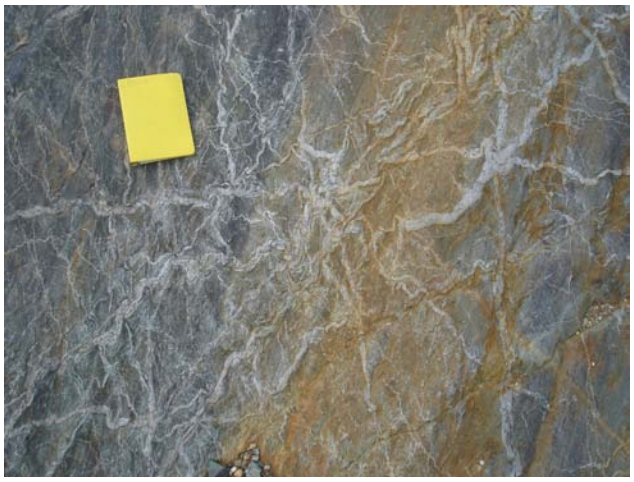

Figure 1.13. KSM Mitchell zone, quartz-chalcopyrite stockwork crenulated and disrupted during compressional deformation.

Figure 1.14. Kitsault, geotechnical drilling near the proposed plant site.

characteristics. Environmental and archeological studies were also conducted. A prefeasibility study was completed for a 40 000 tonne per day mine. It estimated a capital cost of $US641 million and used a forecast molybdenum price of $15.88 per pound. Kitsault operated between 1967 and 1972 and from 1981 to 1982 with a total production of 13 600 t of molybdenum.

The Kitsault molybdenum deposit (MINFILE 103P 120) has proven plus probable reserves of 215.3 Mt grading 0.085% Mo, upgraded from historic data by a major drilling program in 2008. Molybdenite occurs in an annular zone around a small early Tertiary stock that intruded Bowser Lake Group greywacke and siltstone, producing a hornfels aureole (Figure 1.15). Intrusive phases range from quartz diorite to quartz monzonite and late-stage aplite dikes. There are two other stocks with associated molybdenum mineralization on the property, known as Bell Moly and Roundy Creek. Recent basalt lava flows between Kitsault and Bell Moly, and extensive

Figure 1.15. Kitsault open pit, molybdenum ore forms an annular zone between the barren core of the stock (left) and hornfelsed sedimentary rocks (right).

till, hamper exploration for additional molybdenum resources.

The **Davidson** molybdenum project (MINFILE 093L 110) is located 10 km west of Smithers and is owned by Blue Pearl Mining, a wholly-owned subsidiary of Thompson Creek Metals Company. Blue Pearl submitted an Environmental Assessment project report in 2008 for a 2000 tonne per day underground mine that would ship high grade molybdenum ore to Endako Mine for processing. This development is linked with the upgraded mill under construction at Endako which would have a separate circuit to treat Davidson ore. If approved, ore haulage would be through a new 3 km adit at the base of Hudson Bay Mountain. Surface infrastructure would consist of a water treatment plant, access roads, onsite buildings and ore-handling facilities. Review of the Project Report is suspended until Blue Pearl supplies additional information requested by agency reviewers.

The Davidson molybdenum deposit is related to a blind late Cretaceous intrusive complex beneath Hudson Bay Mountain. The intrusive complex produced a hornfels zone in Hazelton Group volcanic rocks. The principal molybdenum ore zone, determined to be 75.3 Mt grading 0.177% Mo (measured plus indicated resource), is situated 300 m above a quartz porphyry plug. The preferred host rock is a granodiorite sill of inferred Jurassic age. The top of the underlying quartz porphyry contains a smaller molybdenum deposit that is characterized by crenulated quartz layers popularly referred to as ‘brain rock’. Below the lower molybdenum zone, the quartz porphyry plug is cut by a granite stock, possibly a Nanika intrusion.

The **Dome Mountain** underground gold mine 35 km east of Smithers is proposed to be re-opened by Eagle Peak Resources Inc through an affiliated company, Metal Mountain Resources Inc. Dome Mountain comprises eight (or more) gold-bearing orogenic quartz veins within volcanic and sedimentary rocks of the Hazelton Group.

During 1991-1992, the Boulder vein (MINFILE 093L 276) produced 361.4 kg of gold (11 621 oz) from 30 890 t of ore. Initial activities in 2009 focused on confirmation of proven and probable reserves calculated in 1993 (pre NI 43-101) to be 181 780 t grading 14.9 g/t Au with possible reserves of 39 650 t at 12.6 g/t Au. Work comprised 5705 m of surface drilling and underground mapping of stopes to determine prior extraction.

Metallurgical testing was performed on a 57 kg sample. Gold occurs in native form; fine grained and generally associated with pyrite. The Boulder vein occupies a fault. An IP survey (performed in 2008) and a soil geochemical survey are interpreted by Eagle Peak to show a 250 to 450 m easterly extension of the Boulder vein beyond the underground workings. Late in 2009, Metal Mountain applied for a Mines Act permit to resume mining at a rate of about 250 t per day, using the two existing levels, 1290 m and 1370 m, and a new level at 1330 m elevation. The ore would be shipped off-site for custom milling.

Pacific Booker Minerals Inc is in the pre-application stage of the Environmental Assessment process for the **Morrison** copper-gold project. The EA office returned the initial application requiring revisions to it for the application to proceed. Morrison (MINFILE 093M 007) is a porphyry copper deposit with a measured plus indicated resource of 206 869 000 t grading 0.39% Cu, 0.20 g/t Au and 0.005% Mo. The inferred resource stands at 56 524 000 t grading 0.40% Cu, 0.21 g/t Au and 0.005% Mo. The company proposes to develop a 30 000 t per day open pit mine. The deposit is developed in a biotite-feldspar porphyry stock, one of the Babine intrusions of Eocene age. It is located 70 km northeast of Smithers.

MINERAL EXPLORATION

Table 1.2 lists significant exploration projects and their locations are illustrated in Figure 1.16, keyed to deposit type.

PORPHYRY COPPER PROJECTS

Porphyry copper deposits in the northwest often contain significant gold or molybdenum. Few deposits contain all three metals in economically significant amounts. Prospects in the Iskut-Stikine district are developed in late Triassic to early Jurassic igneous rocks within Stikine terrane prior to its accretion to North America. Pre-accretion porphyry prospects are primarily copper-gold projects; molybdenum is significant only at Schaft Creek. The intrusions are sub-alkalic, potassium-rich and of intermediate composition, typically monzonite and their volcanic equivalent. K-feldspar porphyritic rocks are common. Alkalic rocks, syenite and pseudoleucite-bearing trachyte that characterize the Galore Creek deposit, represent an end-member composition. Some of the copper-gold deposits in the Stikine district have an extremely high gold to copper ratio, i.e. greater than 1 g/t gold for 1% copper. Depending on metal recoveries and relative prices, gold may be more economically important than copper in some deposits and occurrences that can be referred to as porphyry gold-copper projects. This includes the Mitchell, Sulphurets, Snowfield and Bronson Slope deposits. At the Red Chris and Kinaskan deposits, the ratio of gold (in g/t) to copper (in per cent) is approximately 1:1.

Porphyry copper-molybdenum prospects predominate in the Skeena district. Some copper-gold prospects occur (e.g. Zymo) but the gold content is appreciably less than in the Iskut-Stikine district. Skeena district porphyry prospects are all contained in post-accretion intrusions comprising the extensive late Cretaceous Bulkley, and more localized Eocene Nanika and Babine calc-alkaline intrusions. The three suites have separate distribution patterns but all occur within a transverse geologic feature known as the Skeena Arch. Bulkley and Babine intrusions are generally intermediate in composition; medium to coarse granodiorite is typical of the Bulkley suite and biotite-feldspar porphyry is characteristic of the Babine suite. Nanika intrusions contain more quartz and potassium feldspar, and comprise pink granite and quartz porphyry rhyolite dikes. Bulkley intrusions are associated with the Huckleberry, Poplar and possibly the Zymo deposits. Babine intrusions are linked to formation of the past-producing Granisle and Bell mines and the Morrison deposit. A Nanika intrusion is associated with the Berg deposit.

ISKUT-STIKINE DISTRICT

Important exploration programs carried out on the Red Chris and KSM properties are described in the preceding section on Mine Development projects.

At the **Snowfield** property Silver Standard Resources Inc built two camps, deployed 80 people and mobilized 7 drills for the largest exploration program in the region. The Snowfield property adjoins KSM to the east; 65 km north of Stewart (refer to Figure 1.12). The program comprised resource definition drilling in the Snowfield North zone and wide-spaced drilling at Brucejack; an area of intense exploration from 1980 until 1994. The scale of work at Brucejack was augmented by encouraging results from zones that had undergone little or no previous drilling (Figure 1.17).

The Bridge and nearby Galena Hill zones (MINFILE 104B 200 and 197 respectively) are underlain by sericite-altered volcanic rocks and K-feldspar porphyritic intrusive rocks, both cut by quartz breccia veins. Hole SU-19, one of the best holes in the Bridge zone, returned 0.87 g/t Au over 552 m. Drill set-ups utilized a series of nunataks near the margin of the icefield south of Brucejack Lake (Figure 1.18). Visible gold was encountered in some drillholes at Galena Hill; hole SU-12 intersected 16 949 g/t Au and 8696 g/t Ag over 1.5 m.

TABLE 1.2. MAJOR EXPLORATION PROJECTS, NORTHWEST REGION

Property	Operator	MINFILE	Commodity	Deposit Type	Work Program
Atlin Gold	Blind Creek Resources Ltd	104N 044	Au	Orogenic vein	DD (1200 m, 17 holes)
Big Bulk	AngloGold Ashanti Holdings PLC	103P 016	Cu, Au	Porphyry	DD (2100 m, 3 holes)
Bronson Slope	Skyline Gold Corp	104B 077	Au, Cu	Porphyry	DD (740 m, 2 holes)
Brucejack	Silver Standard Resources Inc	104B 197, 200	Au, Ag	Epithermal	DD (17 846 m, 37 holes)
Cassiar Gold (Table Mountain & Taurus)	Hawthorne Gold Corp	104P 012, 113	Au	Orogenic vein	TR; DD (11 406 m); BU
Cassiar Moly	Velocity Minerals Ltd	104P 035	Mo	Porphyry	UG; DD (84 m)
Clone	Canasia Industries Corp	103P 251	Au	Vein	DD (1675 m, 35 holes)
Deer Horn	Golden Odyssey Mining Inc	093E 019	Au, Ag	Vein	G; GP; DD (1700 m); EN
Dome Mountain	Metal Mountain Resources Inc	093L 276	Au	Orogenic vein	UG; DD (5705 m); MS; EN
Dome South	Golden Odyssey Mining Inc	093L 332	Cu, Ag	Vein	DD (1111 m)
Golden Eagle	Troymet Exploration Corp	104M 044	Au	Vein	DD (505 m, 5 holes)
Homestake Ridge	Bravo Venture Group Inc	103P 216	Au, Ag	Epithermal Vein	AB-EM; DD (13 436 m, 48 holes)
Huckleberry Mine	Imperial Metals Corp	93E 037	Cu, Mo	Porphyry	DD (4000 m, 14 holes)
KSM	Seabridge Gold Inc	104B 176, 191, 182	Au, Cu	Porphyry	DD (8000 m); GD (9500 m) EN; PF
Kitsault	Avanti Mining Corp	103P 120	Mo	Porphyry	GD (1600 m); EN; PF
Lone Pine	Bard Ventures Ltd	93L 027, 028	Mo	Porphyry	DD (2495 m, 9 holes)
Mt Dunn	Paget Minerals Corp	104B 079	Cu, Au	Porphyry	DD (1587 m, 5 holes)
Nizi	Solomon Resources Limited	104I 032	Au, Ag	Epithermal Vein	DD (416 m, 2 holes)
Premier	Ascot Resources Ltd	104B 054, 154, 147	Au, Ag	Epithermal Vein	TR; DD (7465 m, 48 holes)
Red Chris	Imperial Metals Corp	104H 005	Cu, Au	Porphyry	GP; DD (8782 m, 7 holes)
Red Cliff	Decade Resources Ltd	104A 033	Au, Cu	Vein	DD
Rock and Roll	Pacific Northwest Capital Corp	104B 377	Au, Ag, Zn	VMS	AB-EM, DD (540 m, 5 holes)
Snowfield	Silver Standard Resources Inc	104B 179	Au, Cu	Porphyry	DD (23 778 m, 42 holes)
Terrace	Argonaut Resources Inc	103I 062, 076	Au, Ag	Vein	DD (864 m, 11 holes)
Treaty Creek	American Creek Resources Ltd	104B 078	Au, Ag	Epithermal Vein	DD (9520 m)
Trek	Romios Gold Resources Inc	104G 029	Au, Cu	Porphyry	DD (2370 m, 9 holes)
Zymo	Eastfield Resources Ltd	093L 324	Cu, Au	Porphyry	DD (1800 m, 5 holes)

Work Program Abbreviations:

A = access; trail, road construction on claims; AB-EM = airborne electromagnetics; AB-MG = airborne magnetics; AB-RD = airborne radiometrics; BU (X tonnes) = bulk sample (weight in tonnes if known); CD = condemnation drilling; CQ = coal quality testing; CT = carbonization test (coal); DD (Xm) = diamond drilling totaling X metres; EN = environmental baseline studies/monitoring, remediation work; FS = feasibility studies; G = geology, mapping, etc; GC = geochemical sampling (rock, soil, silt, etc); GD = geotech drilling; GP = geophysics (general); IP = Induced Polarization; 3D-IP; MG = magnetics; MK = marketing-primarily for industrial mineral products; MS = metallurgical studies; OB = overburden drilling; OP-BU = open-pit bulk sample; P = prospecting; PD = percussion drilling; PF = pre-feasibility studies; PP = Pilot plant, R = reclamation; RC = reverse circulation drilling; TR = trenching, UG (X m) = X metres of underground development; UG-BU = underground bulk sample; UT = UTEM; VLF;WT = washability test (coal)

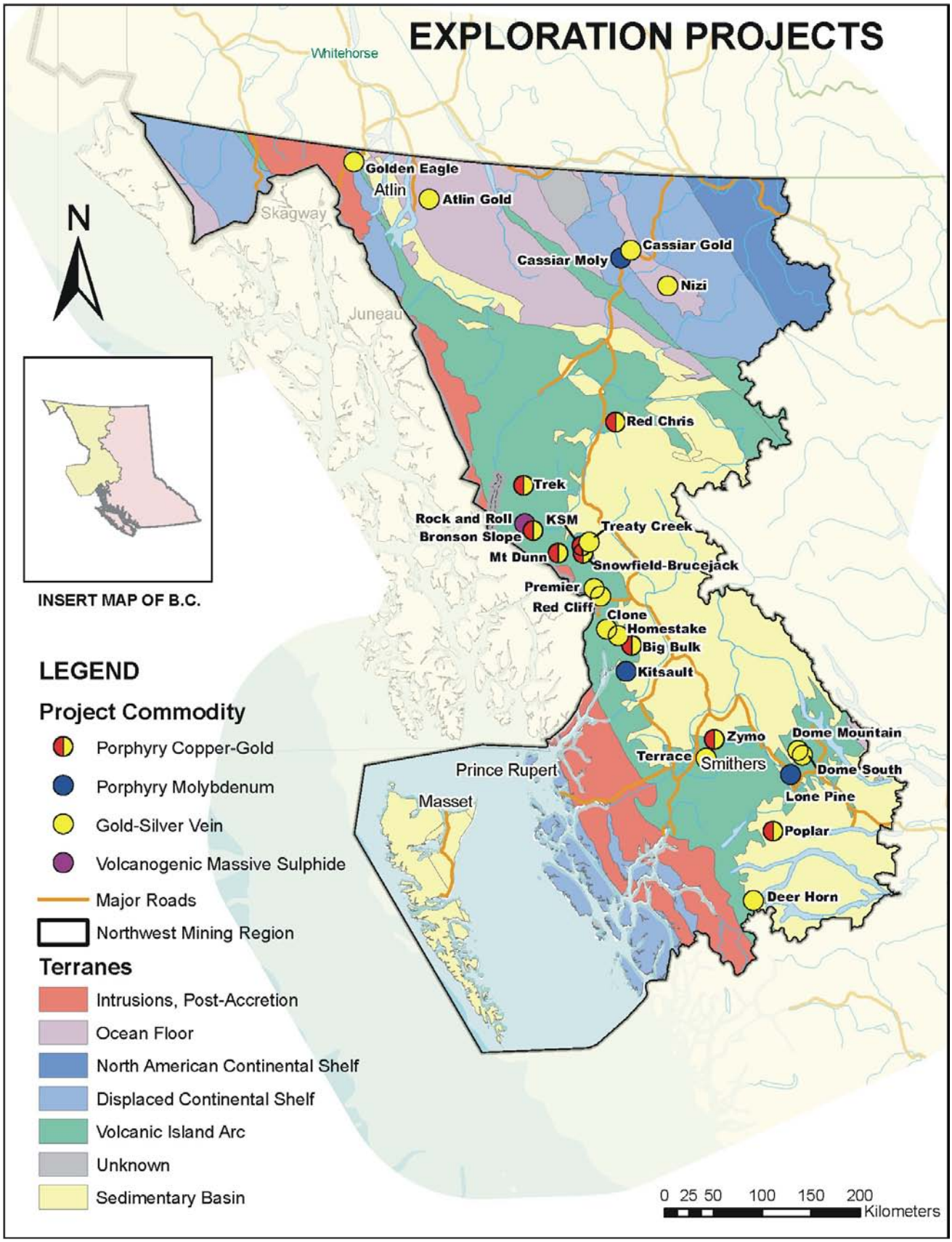

Figure 1.16. Exploration projects, Northwest Region.

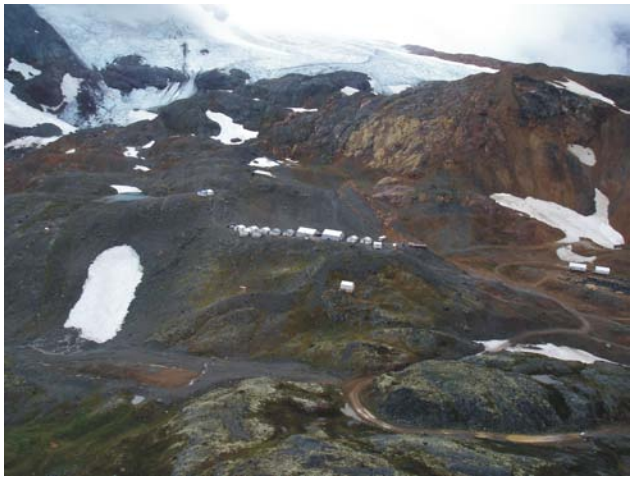

Figure 1.17. Snowfield-Brucejack camp, looking south to Galena Hill zone (the gossan bluff) and toward the Bridge zone on the skyline.

Figure 1.18. Snowfield-Brucejack, two drills at work on the Bridge zone, view is toward the north.

A 20.6 m interval that included the 1.5 m interval averaged 5.33 g/t Au (with high gold assays cut to 31.1 g/t Au) and 159 g/t Ag. Hole SU-5, with no visible gold reported, graded 1.26 g/t Au and 20.4 g/t Ag over 155.0 m. Drilling also tested the Mammoth and SG zones.

Silver Standard completed 17 846 m of drilling in 37 holes in the Brucejack area. A total of 798 historic surface and underground drillholes were incorporated in a new resource estimate. Measured plus indicated resources in six zones at Brucejack total 120.5 Mt grading 1.04 g/t Au and 16.9 g/t Ag. Inferred resources are estimated at 198.0 Mt grading 0.76 g/t Au and 11.2 g/t Ag. A cut-off grade of 0.35 g/t gold-equivalent was used, and grade capping levels were determined for each zone from probability and capping graphs.

At Snowfield North, 4 km north of Brucejack, drillholes were spaced 100 m apart in order that inferred gold resources could be upgraded to measured and indicated categories (Figure 1.19). Silver Standard completed 23 778 m of drilling in 42 holes. Snowfield North is characterized by intense quartz veining. The veins are deformed (flattened and crenulated), gold occurs with chalcopyrite and grades of copper and gold are remarkably uniform. Host rocks appear to be sericite-altered intrusive rocks. Geological and mineralogical features appear to be identical to the Mitchell zone at KSM. Seabridge geologist M. Savell (Rock Talk presentation, February 2009) suggests that Snowfields North is the upper part of the Mitchell deposit displaced by 2 km of easterly movement on the Mitchell thrust fault (refer to Figure 1.12). If this interpretation is correct, the restored Mitchell-Snowfield deposit totals 3.5 billion tonnes with roughly 40% of it on the Silver Standard property.

A new resource estimate for Snowfield (Snowfield and Snowfield North sub-zones) that incorporates the 2009 drilling determined 847.1 Mt in the measured and indicated categories grading 0.72 g/t Au, 0.12% Cu and 92 ppm Mo. Inferred resources are 639.7 Mt grading 0.37 g/t Au, 0.08% Cu and 89 ppm Mo. Both calculations used a cut-off of 0.5 g/t gold-equivalent. Metallurgical studies are in progress and include investigation of rhenium content. Molybdenite in the Mitchell-Snowfield deposit contains exceptionally high levels of rhenium (W.D. Sinclair, pers. comm., 2009).

Despite their close proximity, the Snowfield and Snowfield North zones have different characteristics (K. Konkin, pers. comm., 2009). The Snowfield zone is characterized by a weak, undeformed quartz-pyrite-molybdenite stockwork, contrasting with the deformed, quartz-rich, chalcopyrite-bearing stockwork at Snowfield North. Gold at the Snowfield zone is present as electrum encased in pyrite (versus chalcopyrite) and the grade is about 1.2 g/t (versus 0.7 g/t Au). The transition between the two zones appears to be abrupt; it is speculated by the author that an intervening fault has down-dropped the Snowfield side, exposing a higher structural level in the undeformed Snowfield gold zone.

Figure 1.19. Snowfield North, four drills at work in the large gold-copper zone; the Snowfield gold-molybdenum zone is located further upslope, above the highest drill.

The **Mount Dunn** prospect (MINFILE 104B 079) 70 km northwest of Stewart was explored by Paget Minerals Corporation. A drill program consisted of five widely spaced holes (1587 m) along a north-striking zone of sheeted quartz veins in a linear body of monzonite. Chalcopyrite and local bornite and molybdenite are reported. Historic chip sampling returned 0.87% Cu and 1.67 g/t Au across 10.7 m. The best drill intersection came from the most southerly and lowest elevation drillhole which returned 0.23% Cu and 0.28 g/t Au over 80.1 m. Grades are inferred to improve to the south and with depth. More work is planned in 2010.

On the **Trek** property (MINFILE 104G 029) located at Kilometre 92 of the Galore Creek access route, Romios Gold Resources Inc continued to drill a copper-gold breccia and fracture vein zone (Figure 1.20). Mineralization is related to a northeast fault and occurs in monzonite dikes and fractured andesite country-rock. Romios drilled 9 holes (2370 m) over a 250 m by 700 m area. Most holes intersected short intervals of high copper and/or gold values within wide intervals of low grade; for example TRK09-01 intersected 0.12% Cu and 0.18 g/t Au over 151 m including a 1.5 m interval grading 5.22% Cu and 4.67 g/t Au.

Romios Gold Resources Inc also drilled four holes on its **Newmont Lake** skarn gold prospect (MINFILE 104B 281) located 32 km south of Trek. These tested an IP anomaly adjacent to the Northwest zone but did not intersect gold mineralization. On the Dirk nunatak (MINFILE 104B 114) 5 km west of the Northwest zone, sampling of silicified limestone rafts within a syenite intrusion returned 2.9% Cu and 0.64 g/t Au over 8.0 m.

Skyline Gold Corporation reactivated its **Bronson Slope** copper-gold project (MINFILE 104B 077) adjacent to the reclaimed Snip gold mine. Two holes were drilled 400 m southeast along trend of the deposit to test the CE zone. Work in the late 1980's indicated wide, low-grade gold intercepts in potassic to propylitic alteration, and containing short intervals of semi-massive pyrite, sphalerite and galena. Results from the current drilling confirmed the character of gold mineralization and returned significant intercepts that include visible gold. Hole SK-09-1 intersected three separate intervals; 1.50 g/t Au over 26.5 m, 1.82 g/t Au over 22.4 m and 1.86 g/t Au over 18.7 m. Hole SK-09-2 intersected 4.36 g/t Au, 75.9 g/t Ag, 0.13% Cu and 1.15% Zn over 27.0 m. The hole averaged 0.97 g/t Au over its full 284.7 m core length. The Bronson Slope deposit contains a measured plus indicated resource of 225.1 Mt grading 0.36 g/t Au and 0.14% Cu and an additional 91.6 Mt inferred at a grade of 0.27 g/t Au and 0.13% Cu. The deposit consists of a quartz-magnetite replacement and stockwork zone (Figure 1.21) at the top of the Red Bluff syenite stock. A second aspect of the 2009 program was to resample core to quantify the magnetite content so that it can be added to the resource estimate.

At its **Glenora King** (GK) property (MINFILE 104G 003) near Telegraph Creek, Strategic Metals Ltd

Figure 1.20. Trek, drilling a copper-gold breccia from a steep slope set-up.

Figure 1.21. Bronson Slope, quartz-magnetite vein stockwork and replacement.

conducted a prospecting and soil geochemical program. Volcanic rocks near the contact of a high-level alkalic pluton contain shear and replacement zones with significant copper and gold values. Extensive copper and gold soil anomalies will receive detailed follow-up in 2010, likely to include diamond drilling.

AngloGold Ashanti Holdings PLC, a major gold-producing company, acquired an option on the Big Bulk prospect (MINFILE 103P 016) near Kinskuch Lake 50 km southeast of Stewart. Previous work identified extensive but sub-economic porphyry type mineralization related to a sub-volcanic intrusion about 4 square km in size. A deep-penetration IP survey performed in 2008 detected a strong anomaly at 350 m depth that was tested in 2009 by three holes, each approximately 700 m deep.

SKEENA DISTRICT

Zymo (MINFILE 93L 324) is an early-stage copper-gold prospect located 45 km west of Smithers. Eastfield Resources Ltd conducted a second round of drilling in the

Hobbes zone discovered in 2007. The westernmost step-out hole returned the widest intercept drilled on the property, 0.23% Cu and 0.13 g/t Au over 339 m (Figure 1.22). Another hole that tested below a 2008 drillhole, did not extend higher than average copper-gold grade to depth. Five holes were completed in the program. The Hobbes zone is 600 m long and corresponds to a strong IP chargeability anomaly that extends 400 m west of the drilling. Mineralization is developed in monzonite, associated with secondary potassium feldspar, biotite and magnetite. The monzonite is one of several similar bodies that lie within a 2 by 4 km magnetic anomaly, and are interpreted to be apophyses of a larger intrusion.

Exploration of the **Poplar** copper-molybdenum prospect located 45 km southwest of Houston was reactivated by Lions Gate Metals Inc. Poplar (MINFILE 093L 239) has a historic resource (pre N.I. 43-101) of 236 Mt at a grade of 0.37% Cu, 0.1 g/t Au and 0.0095% Mo based on 105 drillholes (23 164 m). The deposit is centred on a Bulkley granodiorite stock. Fifteen holes were drilled in 2005 by Aumega Discoveries Ltd on a separate intrusive body but were not reported. Lions Gate compiled past work, conducted geological mapping and performed an 18 km gradient IP survey.

A grassroots exploration program was carried out in the Babine area at **Turkey Mountain**, 10 km northwest of Granisle, by 753027Alberta Ltd. The target was derived from the Quest West geophysical survey completed by Geoscience BC. The property is underlain by rocks of an early Tertiary volcanic centre. Correlative volcanic rocks at the Bell Copper deposit are closely related to a coeval Babine intrusion. Turkey Mountain also corresponds to a strong negative magnetic anomaly, 1.5 km wide, which is internal to a broad positive response. David Laing (pers. comm., 2009) hypothesized the anomaly may correspond to an alteration zone within an intrusion below the eruptive centre. A single drillhole 780 m deep was angled to cross the anomaly and also the projected trend of a Babine biotite feldspar porphyry dike. The hole intersected feldspar porphyry with strong hematite alteration, accounting for the magnetic response, but no copper mineralization.

PORPHYRY MOLYBDENUM PROJECTS

Molybdenum prospects occur in Cretaceous to Tertiary age plutons that post-date terrane accretion. There are two distinct areas of concentration, the Skeena Arch and the Atlin-Cassiar area. Skeena Arch molybdenum deposits are found in a number of intrusive suites: the early Tertiary Alice Arm and Nanika intrusions, the Jurassic Francois Lake batholith and perhaps in late Cretaceous Bulkley intrusions. In the Atlin-Cassiar area, molybdenum occurs mainly in late Cretaceous batholiths, the Surprise Lake and Cassiar batholiths in particular and also in Tertiary stocks.

Figure 1.22. Zymo, chalcopyrite and quartz in an altered, even-grained diorite.

Molybdenum deposits in Northwest BC can be divided into batholith-hosted and stock-hosted types based on host intrusion, deposit morphology and alteration. The latter correspond to the well-described Henderson deposit type but batholith-hosted deposits, important in Northwest region, are not widely recognized. Due to decreased activity on molybdenum deposits in 2009, the reader is referred to Wojdak and Febbo (2008) for more complete descriptions of several of the deposits noted below.

The Endako, Ruby Creek and Storie deposits belong to the batholith-hosted group. They are associated with multiple-phase granite batholiths in which the phases are distinguished primarily by texture (e.g. coarse, porphyritic or fine grained), not by composition. These deposits formed in a passive environment and consist of a wide-spaced molybdenite vein network that contains little quartz. Rich veins of coarse, nearly pure molybdenite are characteristic. Alteration of the host rock is minimal, comprising local vein envelopes of K-feldspar (Endako) or muscovite (Storie). Fluorite may be present (Ruby Creek). The deposits are laterally extensive, forming a tabular or blanket shape that is sub-horizontal at Storie and Ruby Creek, but moderately inclined at Endako. Storie and Ruby Creek are 100 to 200 m thick by 1000 m horizontally, though Endako is much larger (3.5 km). The molybdenum zone is rooted in a steep fault (South Boundary fault at Endako, Crone fault at Storie, Boulder Creek fault at Ruby Creek). Batholith-hosted deposits contain lower molybdenum grade than stock-hosted deposits but, if surface topography is favourable, they are well-suited to open-pit mining.

The Davidson, Lucky Ship, Lone Pine, Red Bird, Mount Haskins, Kitsault and other Alice Arm deposits belong to the stock-hosted group of molybdenum deposits. They are associated with small silicic intrusions approximately 500 m in diameter. Composition ranges from quartz diorite and quartz monzonite (Kitsault, Red Bird) to quartz porphyry rhyolite (Davidson, Lucky Ship,

Lone Pine), which may be the differentiated phase of a more intermediate pluton. The molybdenum deposit formed in a high-energy, in some cases explosive environment. This leads to a vertical deposit geometry with the molybdenum zone forming a hood near the top of the stock (Davidson, lower zone) or as an annular zone around the sub-vertical pluton (Lucky Ship, Red Bird, Kitsault). Stacked mineral zones may be present and mineralization can extend more than 2 km vertically (Davidson). Mineralization extends beyond the causative intrusion into altered or contact metamorphosed country rocks. Banded molybdenite veins are characteristic and breccia zones with veined clasts may be present, a result of multiple pulses of mineralization. Alteration comprises large-scale introduction of quartz as an intense stockwork and as quartz flooding. Fluorite may be present. Stock-hosted deposits tend to be higher grade than batholith-hosted, due perhaps to superimposed pulses of mineralization. The vertical morphology of stock-hosted deposits tends not to be well-suited to open-pit mining (except Kitsault); however, their higher grade may support higher cost underground mining. High rock strength and hardness imparted by silicification factors into consideration of underground mining methods and milling cost.

ATLIN-CASSIAR DISTRICT

Velocity Minerals Ltd reopened a 965 m adit on the Cassiar Moly prospect (MINFILE 104P 035). The adit (Figure 1.23) was driven in the late 1960's to explore surface showings but has since been inaccessible due to ice formation and scree cover at the portal. Underground mapping by Velocity found molybdenite occurs in north northeast faults and fractures over a 110 m width. It extends at least 268 m along trend in the workings and 253 m vertically to the surface showing. The zone was not sampled continuously; select intervals graded up to 0.403% Mo across 1.0 m. The property is 4.4 km south of the Storie prospect and is underlain by similar rocks; coarse to porphyritic phases of the Cassiar batholith. Winter conditions forced cancelation of a surface drilling program soon after the first hole was begun.

Velocity Minerals Ltd drilled four holes on its Haskins Mountain property, located north of Cassiar (MINFILE 104P 059). Based on work in 2008 the property has an inferred resource of 11.0 Mt grading 0.101% Mo at a cutoff of 0.05% Mo. The molybdenum zone is developed in an Eocene granite stock and adjacent metamorphic aureole and skarn.

Columbia Yukon Resources Inc deferred field activities on its Storie deposit (MINFILE 104P 069) near Cassiar during a period of weak molybdenum markets but worked with the Dease River First Nation to sign a traditional knowledge protocol agreement. A new resource estimate based on 2008 drilling upgraded the measured plus indicated resource to 139.82 Mt grading 0.064% Mo and the inferred resource to 58.39 Mt grading

Figure 1.23. Cassiar Moly, portal location in the rugged Cassiar Mountains.

0.059% Mo, both at a cutoff of 0.03% Mo. Mineralization is concentrated in a sub-horizontal tabular zone between texturally distinct phases of the Troutline stock, a distinct body within the Cassiar granite batholith. Molybdenite occurs as fracture coatings associated with muscovite, as disseminations and in narrow quartz veinlets.

SKEENA DISTRICT

Bard Ventures released a molybdenum resource estimate for its Lone Pine project (MINFILE 93L 027, 028) located 15 km north-northwest of Houston. Based on drilling to 2008, measured and indicated resources in the Alaskite zone are estimated at 110.34 Mt averaging 0.083% Mo with an additional 25.84 Mt inferred grading 0.088% Mo, at a cutoff of 0.04% Mo. The alaskite might be more appropriately named a quartz porphyry rhyolite dike. Much of the resource is located more than 300 m below surface and a preliminary open pit design gave a strip ratio of 10.8:1. Consequently, Bard focused its 2009 work on geological mapping that located a target area 800 m east of its mineral resource. Molybdenite was found in coarse grained, quartz and K-feldspar porphyritic granite and a border phase of quartz porphyry. The stock measures 500 by 300 m. A soil geochemical survey provided focus to the target area. Drilling began late in 2009. In addition to the leucocratic granite and quartz porphyry, which are assigned to the Nanika intrusions, drilling encountered a body of granodiorite that is correlated with the Bulkley intrusions.

MAGMATIC DEPOSITS

Turnagain is a bulk-tonnage nickel prospect in a zoned ultramafic complex, located 70 km east of Dease Lake and owned by Hard Creek Nickel Corporation. It is the only nickel project in the region. Measured plus

indicated resources are estimated at 695 Mt at a grade of 0.174% Ni and 0.014% Co (as sulphide minerals). The inferred resource is estimated to be 511 Mt at 0.173% Ni (as sulphide minerals). Determination of sulphide nickel is based on selective leach analyses; total nickel content is about 0.22%. Hard Creek contracted Norilsk Process Technology to determine the viability of its patented hydrometallurgical process to extract nickel and cobalt from a sample of Turnagain concentrate. There was no fieldwork in 2009.

POLYMETALLIC MASSIVE SULPHIDE PROJECTS

Volcanic hosted massive sulphide deposits span a wide age range and terrane affiliation in Northwest region. The Tulsequah Chief deposit is in Paleozoic strata; Kutcho Creek is in rocks of Triassic age and Eskay Creek is in Jurassic volcanic rocks.

The **Rock & Roll** project in the Iskut district was reactivated by Pacific North West Capital which drilled four in-fill core holes on the polymetallic deposit. A fifth hole tested a conductor identified by both a new AeroTEM survey and a historic horizontal loop survey. Stacked sulphide lenses occur within a sequence of argillite, siltstone and andesite of probable Triassic age. A historic inferred resource in the Black Dog zone contains 580 044 t grading 2.4 g/t Au, 335.9 g/t Ag, 0.64% Cu, 0.79% Pb and 3.1% Zn (MINFILE 104B 377).

Mountain Boy Minerals Ltd announced on October 6, 2009 that core logging had commenced on 38 core holes drilled in 2008 on the **Barbara Anne** (or BA) project (MINFILE 104A 178). The property is located 30 km northeast of Stewart. A sequence of well-bedded massive pyrite, iron-rich mudstone, chert and jasper is associated with spheroidal rhyolite in Hazelton Group strata. Silver, lead and zinc mineralization is associated with replacement-style barite and hematite alteration.

GOLD – SILVER PROJECTS

Gold-silver projects in the region targeted mainly orogenic and intrusion-related veins. In some cases these veins have associated base metal values. Gold-silver projects occur in various geologic terranes and are concentrated in four areas; the 'Golden Triangle' (or Stewart district) where most are related to Jurassic intrusions of Stikine terrane, the Atlin area where they are related to orogenic emplacement of Cache Creek terrane and to the terrane-bounding Llewellyn fault, the Cassiar area where gold veins are related to orogenic emplacement of Slide Mountain terrane, and the Skeena Arch where gold veins are mainly related to Cretaceous-Tertiary intrusions and secondarily to Cretaceous orogenic events.

ATLIN DISTRICT

Troymet Exploration Corporation returned to the **Golden Eagle** project located 50 km northwest of Atlin. Gold mineralization is related to splays of the Llewellyn fault, an important regional structure, and an intrusion that grades upward from granite to rhyolite. Five holes explored the LQ, Stibnite-Cowboy and West Gully zones (MINFILE 104M 044, 085, 039 respectively). Three holes intersected a structural zone of quartz veining and breccia that contains pyrite, arsenopyrite, sphalerite, chalcopyrite and pyrrhotite. The structural zone is more than 20 m wide and is tentatively correlated by Troymet 1300 m to an intersection in another drillhole. More drilling is required to test the mineral zone. A separate, 40 m wide mineralized fault zone was intersected in one hole in the West Gully zone. Assays are awaited.

Blind Creek Resources Ltd is a private company with extensive mineral tenure in the Atlin gold camp. The target of the **Atlin Gold** project is the source of placer gold deposits in the district. Lode gold occurs in quartz vein and breccia zones with carbonate (listwanite) alteration associated with tectonic emplacement of ultramafic rocks of the Cache Creek ophiolite complex. Eleven drillholes in the area of the Pictou prospect (MINFILE 104N 044), located 2 km east of Atlin, explored for a vein and alteration zone in the hangingwall of the Monarch Mountain thrust fault. At the time of writing, drilling was in progress at Otter Creek to test the easterly continuation of the Monarch Mountain structure and mineral zone. Continued drilling in 2010 is planned to intersect the Casino-Eagle-Rose lineament (C. Aspinall, pers.comm., 2009). Creeks draining the lineament have produced interesting gold nuggets from placer mining, including two in 2009 reported to weigh 58 to 62 oz.

Exploration of the **Nizi** prospect, 80 km northeast of Dease Lake in the Cry Lake area, was reactivated by Solomon Resources Limited (Figure 1.24). Two holes were drilled from the same site to test the Discovery "vein", a multi-stage stockwork of microcrystalline quartz, 'carbon', sulphide minerals and minor barite that lies within felsic volcanic rocks of possible Devonian to Mississippian age. The holes were angled below a 1992 drillhole that averaged 5.74 g/t Au and 28.6 g/t Ag over 13.77 m. Also in 1992, diamond-sawn channel samples of the Discovery vein returned 8.9 to 27.1 g/t Au and 597 to 1220 g/t Ag over widths of 1.0 to 3.5 m. The nature of the vein 'carbon' is unclear. It is extremely fine grained, dispersed in quartz veinlets imparting a black colour to the rock, and was misidentified in 1992 fieldwork as tourmaline.

'GOLDEN TRIANGLE' (THE STEWART DISTRICT)

At **Treaty Creek** (MINFILE 104B 078), 25 km southwest of Bell II on Highway 37, American Creek

Resources completed 9520 meters of drilling on the Eureka, Copper Belle, GR2 and Treaty Ridge zones (Figure 1.25). Holes on Treaty Ridge tested a strong EM anomaly in a stratigraphic interval that corresponds to the Eskay Creek deposit and intersected thin beds of pyrite. In the other zones gold and silver occur in a series of narrow quartz veins with galena, sphalerite and chalcopyrite in sericite-altered volcanic and sedimentary rocks of the Hazelton Group.

Teuton Resources Corporation completed two drillholes on the **Tennyson** property (MINFILE 104B 167) to test a gold-bearing arsenopyrite vein. The property is near Granduc, 35 km north of Stewart. The holes intersected a sericite alteration zone with 10% pyrite; analytic results were not available.

The **Premier Gold** property was optioned by Ascot Resources Ltd which subsequently completed 7465 m of drilling in 48 drillholes, mainly on zones in the northern part of the property that had been explored only to shallow depth by previous operators. The company is developing an epithermal vein model to explore the Northstar, Province, Martha Ellen, Montana (MINFILE 104B 146, 147, 092, 093 respectively) and other zones. Steeply dipping quartz-calcite veins, stockwork and breccia contain pyrite, sphalerite and galena. Gold and silver values range widely up to bonanza grade locally. Mineralization is linked to K-feldspar porphyry dikes derived from a Jurassic granodiorite pluton that cuts andesite of the Hazelton Group.

Nanika Resources Inc conducted a drill program on the **Silver Coin** property (also known as Silver Butte, MINFILE 104B 150) located 24 km northwest of Stewart. Silver Coin is a joint venture between Pinnacle Mines Ltd, Mountain Boy Minerals Ltd and Nanika Resources. Nanika Resources is the registered owner of the **Indi** claims but Mountain Boy owns 55% interest. Nanika Resources completed 7 drillholes on the Indi claims. Gold, zinc and silver-bearing epithermal veins and breccias occur in Hazelton Group andesitic volcanic rocks. The deposit is drilled at 20 m spacing. Measured and indicated resources are estimated at 9.7 Mt grading 1.355 g/t Au and 15.95 Mt inferred grading 1.849 g/t Au.

Decade Resources Ltd completed 31 core holes in the Montrose zone on the **Red Cliff** property near American Creek, 25 km north of Stewart. Some holes intersected veinlets of quartz with pyrite, chalcopyrite and minor sphalerite in a 30 m wide shear zone. Hole 2009-5 intersected 4.75 g/t Au over 39.6 m. Select holes returned higher grade intervals and sparked late season interest in the Stewart area. Fifty tonnes of gold ore were shipped from Montrose in 1940 and 1941 (MINFILE 104A 033).

The **Clone** property (MINFILE 103P 251) is located 16 km west of Stewart and is jointly-owned by Teuton Resources Corp and Silver Grail Resources Ltd. Shear-controlled quartz veins cut Hazelton Group volcanic rocks and contain disseminated native gold and sulphide minerals. Drilling in 2009 amounted to 1675 m in 35 closely spaced holes. Several high-grade intercepts were reported; a resource estimate has not been prepared.

Figure 1.24. Nizi, Discovery vein outcrops midway between the upper drill platform and the ridge crest, view toward the north.

Figure 1.25. Treaty Creek, Raul Sanabria supervised drilling in the GR-2 zone, view is north across Treaty glacier.

Bravo Venture Group Inc returned to the **Homestake Ridge** gold-silver prospect (MINFILE 103P 216), 35 km southeast of Stewart, to complete 13 436 metres of drilling in 48 holes. The focus of the program was to extend areas of high grade in the resource area and to explore the Homestake Silver zone, 800 m to the southeast. Bravo suggests that Homestake Silver may be an extension of the silver-rich, upper portion of the main Homestake zone. The zone also contains significant gold; the company reported an intercept of 49.0 g/t Au and 9027 g/t Ag over 0.7 m. An in-fill hole in the main deposit intersected 13.0 g/t Au and 19.5 g/t Ag over 11.9 m. Mineralization on the property consists of complex quartz-calcite veins and breccia, with associated sphalerite, galena, pyrite and chalcopyrite, in structures that are interpreted to be coeval with Hazelton Group volcanism. Based on drilling prior to 2007 the inferred

resource was calculated at 2.3 Mt grading 7.53 g/t Au, 31 g/t Ag and 0.27% Cu, at a 3 g/t Au cut-off. Late in the year, Bravo Ventures began work on the Silver Basin project, located 14 km southeast of Homestake Ridge.

SKEENA DISTRICT

On the **Kalum** property, 40 km north of Terrace, Eagle Plains Resources Ltd and Windstorm Resources Ltd carried out a soil geochemical survey and extended an IP survey north of the Burn gold showing (MINFILE 103I 211). The project targets an intrusion-related gold deposit. Prospectors found a new gold showing on the property.

The **Terrace** property covers a large area approximately 30 km northeast of Terrace. Apex Geoscience Ltd conducted work for Argonaut Resources completing nine short drillholes at M&K (MINFILE 103I 062) and two deep holes at Golconda (MINFILE 103I 076), the latter to test an IP anomaly. A series of base and precious metal quartz veins, including M&K, lie within an 8 km east-trending zone along the northern margin of the Lower Jurassic Kleanza pluton. Golconda is one of numerous precious and base metal vein occurrences that lie in a large embayment of Hazelton Group volcanic rocks intruded by dikes of the Cretaceous Carpenter Creek pluton.

The historic **American Boy** (MINFILE 093M 047) prospect 7 km northeast of Hazelton was explored by a new company, TAD Capital Corporation as the Hazelton South project. A series of quartz veins on the property contain base metals and significant gold and silver; a total of 348 t of ore were shipped between 1918 and 1955. TAD performed magnetometer and soil geochemical surveys and detailed geological work in preparation for a drilling program. The veins occur in the hornfels aureole of a Bulkley granodiorite stock.

At **Blunt Mountain**, 25 km east of Hazelton, Remington Resources Inc reappraised a series of high-grade gold-silver-lead-zinc veins by trenching and drilling. The Skilokis prospect (MINFILE 093M 099) was explored by Noranda Mining and Exploration Inc and Atna Resources Ltd in the 1980's. The veins occur in the hornfels aureole of a Bulkley granodiorite stock.

Deer Horn is a historic gold-silver prospect located 160 km south of Smithers (MINFILE 093E 019) and was the subject of a comprehensive exploration program by Golden Odyssey Mining Inc. Geological mapping, LIDAR and IP (15 km) geophysical surveys, channel sampling and diamond drilling (1700 m in 35 holes) were performed. A gold-silver-tellurium vein is developed in the hangingwall of a local thrust fault and may be related to a body of quartz diorite with tungsten mineralization (as scheelite). A historic unclassified resource (not NI 43-101 compliant) of 249 000 t grading 10.1 g/t Au and 294 g/t Ag was derived from some 600 m of underground workings developed in the 1950's (Figure 1.26). In the current program, historic holes were twinned to validate important intercepts. Also, a 150-meter segment of the Main Vein was drilled with close-spaced holes; a bulk sample is being considered in 2010.

Figure 1.26. Deer Horn, Harry Huffels and Cody Philpott at the adit and collapsed 1989-1990 drill core; the moderately dipping quartz-gold vein is visible above the portal.

Golden Odyssey Mining Inc completed a program of nine core holes (1111 m) on its **Dome South** property, 45 km east of Smithers. Drilling targeted three zones; the Peggy polymetallic vein showing, a chargeability anomaly and a magnetic high anomaly. Geological work by the company determined that the Peggy showing occurs within silicified limestone near the transition between intermediate and felsic volcanic rocks. Surface sample analytic values were up to 7800 ppm Cu and 77.9 ppm Ag across 1.55 m. Drilling results were not available.

Callinan Mines Ltd completed a 40 km induced polarization survey over its new silver-base metal target area on the **Coles Creek** project. The property is located 90 km south-southwest of Houston. A proposed drilling program was not carried out.

OUTLOOK FOR 2010

Capital markets began to recover in 2009. Late in the year risk capital became more available for mineral exploration, as evidenced by nine drilling programs in Northwest region that began in October and November, a time when drilling programs normally conclude. Gold and silver prices are at very high levels. Copper and zinc are fairly strong and their prices are trending higher. The outlook for molybdenum is less certain. Based on these commodity and financial trends, the increase in exploration activity that began in the second half of 2009 is expected to continue and may gain strength in 2010. The focus in the northwest will be on gold and copper.

Porphyry copper projects in the Iskut-Stikine district, several uncommonly enriched in gold, will feature prominently in exploration, evaluation and development of new mines. A start on construction of the Northwest

Transmission Line will be an important step toward realizing the potential of some of these deposits. Reactivation of the Galore Creek project is possible, with Teck Corporation conducting a feasibility study of the redesigned project while applying for an amendment to its environmental assessment certificate. Imperial Metals is anticipated to pursue a Mines Act permit for an open pit mine at Red Chris, subject to confirmation of its federal development certificate by the Supreme Court. It is likely there will be an expanded deep drilling program at Red Chris in 2010, to follow up on very encouraging results. A reduced level of activity is anticipated at KSM as mineral resource and environmental data has largely been collected and the Project Report required for environmental assessment is being prepared. A high level of activity is likely to continue on the neighbouring Snowfield-Brucejack property. New gold resource estimates for the adjoining Brucejack, Snowfield, Snowfield North, Mitchell, Sulphurets and Kerr deposits have an aggregate total exceeding 4.37 billion tonnes containing more than 85 million ounces of gold. The location presents huge challenges to development so that economic viability is not assured, but this enormous resource will continue to command the attention of the mining industry.

Junior companies will continue to evaluate precious metal projects in the Stewart, Atlin, Cassiar and Skeena Arch districts for opportunities to develop small gold mines in the near-term, building on the experience of the Yellowjacket, Cassiar Gold and Dome Mountain projects. These are predominantly vein deposits with potential for high grade.

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