

Willow Creek

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Mount Polley. Imperial Metals is planning a 12-hole diamond drill program designed to test 3 areas, including the Road zone, north of the open pit.

Willow Creek. Pine Valley is expected to submit its project report in May. Mine construction is scheduled to begin late in 1998. *f.f.*

OTHER

Attended Omineca Exploration Group dinner meeting in MacKenzie. Jacques Houle (Royal Oak Mines) provided an overview of progress at Kemess.

UPCOMING

Attending KEG and presenting talk and poster on 1996 Exploration Highlights in the NE-C region. Invited to provide overview and geological setting of the Gibraltar and Mount Polley deposits as part of post-meeting fieldtrip.

Bob.

Distribution:

TO: Ed Beswick of EI	(EBESWICK)
TO: Ken Macdonald of EI	(KFMACDONALD)
TO: Jamie Pardy of EI	(JPARDY)
TO: David Pow of EI	(DPOW)
TO: Ron Smyth of EI	(RSMYTH)
TO: Bill McMillan of EI	(WCMILLAN)
TO: David Lefebure of EI	(DLEFEBURE)
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JK-BL - Mar '97

MINES and MINE DEVELOPMENTS

- 1) **Babcock (Quintette).** The Babcock development, managed by Quintette Operating Corporation, is immediately S-SE of the Shikano Pit. Phase 1 of the project includes development and mining of the Little Windy Starter Pit, which will be completed by September or October, 1997 (480,000 - 500,000 tonnes total will be mined from the starter pit). By March 31, 1998 - Shikano, Wolverine and Deputy pits will be closed (reserves exhausted). The current schedule of mining runs to 2003.
- 2) **Kemess South.** Over 400 workers are currently onsite. Construction is more than 50% complete. Top soil is being stripped from the pit area; the roof is on the mill and service complexes; tailings dam construction is steadily progressing, and; mining equipment is arriving daily, including seven 260 tonne Euclid diesel-electric haul trucks that are on their way from the factory in Guelph, Ontario. Logging of the powerline will resume following the approval of amendments to the logging plans and the issuance of the Licence to Cut for the centre section of the 384 km right-of-way. An injunction by First Nations has been sought to prevent any further work on the powerline access corridor. The application will be heard in court on June 16-17th.
- 3) **Mount Polley.** The mine is in the final preparations prior to start-up and should be fully operational by the end of June. The crusher has been processing waste which is being used to upgrade mine roads; staff are now housed in the combined concentrator/office complex; drilling of the starter pit has resumed, and; exploration/definition drilling is underway on the southeast margin of the existing pit design. The tentative date for official startup is August 22.
- 4) **QR.** Operating at approximately 1400 tpd! Development of the Midwest underground zone is progressing very well, but mining of the zone has not yet begun. Once underground mining commences higher grade ore from the development will be blended with lower grade Main zone ore. Mining is continuing at the Main Zone open pit with gold grades in the 3-4 g/t range.
- 5) **Willow Creek.** The Willow Creek Coal property consists of 33 coal licenses in Willow Creek area. It is being explored by Pine Valley Coal Ltd. To date 523 exploration drill holes, totaling 34,500 metres, have been completed in Willow Creek coal block. In addition, 50 percussion holes have been drilled on claims to the SE in the Pine Pass area. The mineable reserve now stands at 15 million tonnes of low grade ('semi-soft') metallurgical coal and thermal coal. An Environmental Impact Assessment and Mine Permit application are expected by June or July, 1997. If the project receives the necessary permits, construction will commence in May of 1998 with startup scheduled for October-November, 1998. The planned 600,000 tonne per year operation has an estimated minimum mine life of 20 years.

The deposit occurs on the north side of Willow Creek and the coal measures are hosted by the Gething Formation within the east limb of the Pine River anticline. The coal occurs in 8 major seams (estimated combined thickness is about 21 metres) which are gently dipping and are affected by minor block faulting. The coal will be mined from three pits: North, North-Central and South-Central blocks. The mine will employ approximately 85 to 100 workers.

Winter drilling was completed by the first week of April. A 2-tonne bulk sample, is planned for July, using large diameter drilling. Geotech drilling will also take place this summer.

BL MR - May '97



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**Ministry of
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and Investment**

Energy and Minerals Division
3990 — 22nd Avenue
Prince George BC V2N 3A1

MEMORANDUM

**August 1997 Monthly Report
for the
Northeast-Central Region
by
Bob Lane, Regional Geologist, Prince George**

MINES and MINE DEVELOPMENTS

Kemess mine construction camp numbering close to 1000 workers as summer ends. Construction continues at an impressive pace. The powerline, tailings impoundment, and mine site proper are major projects unto themselves. The volume of earth being moved is staggering. The three water diversion dams are close to being completed, the coffer dam is completed and work is advancing on the main tailings impoundment. Three 260-tonne Euclid haul trucks are now in operation and the northern wall of the pit is being developed as overburden and blasted rock is removed.

Mount Polley official opening scheduled for September 13, 1997. The mill is being fine-tuned and is processing close to 800 tonnes per hour.

*Willow
CK* **Pine Valley Coal Ltd. has submitted its' Stage II Report for the Willow Creek coal project, 45 km west of Chetwynd in the Peace River area, northeast BC. Mine construction is planned to begin in the Spring of 1998 with production scheduled to begin late in the same year. Measured open pit coal reserves are 15.6 million tonnes and provide for a mine life of 15 years. Coal production will be approximately 900,000 tonnes per year.**

FIELD WORK

AL. AGC Americas Gold Corp. has completed the first phase of diamond drilling (13-holes totaling 1704 metres) on the Bonanza zone, adjacent to the old Bonanza-Ghost pit, an area that was mined by Cheni Resources. Many of the holes twined holes drilled in 1987 by Energex. Early assay results include (mineralized intervals are true widths): 27 metres averaging 0.122 oz/t Au in hole AL97-02, 6 metres averaging 0.86 oz/t Au in hole AL97-04, and 17 metres grading 0.202 oz/t Au in hole AL97-06. Bedrock exposed in the Bonanza-Ghost pit comprises zones of fractly silica that flank pockets of crystalline barite that are associated with high grade gold values. These zones are structurally controlled and may be attributed to solutions flooding through the rock and dissolving clay-altered subhedral plagioclase grains and thereby generating the open spaces. The formal joint venture agreement between AGC and Antares Mining and Exploration has been completed. The exploration budget for 1997 is estimated by Paul Hawkins, project Manager, to be in the order of \$2.5 million. It provides for approximately 12,000 metres of diamond drilling—only half of which is likely to be completed this year before winter-like conditions set in.

Baker Mine. Mining of the remainder of the Multinational B vein has been completed. Mining of tailings is underway. The mill is expected to start up next week and begin processing stockpiled ore from the Multinational B pit. Processing of tailings will follow. Ed Craft has estimated that approximately 1500 ounces of gold will be produced in 1997. The concentrate produced at Baker will be sold to Highland Valley Copper (HVC) where it will be blended with the porphyry producers

Main pit have also contributed to higher costs. Increased costs coupled with the current low gold price have led to a detailed life-of-mine review, which will take into account recent and expected minesite exploration.

Skook. Nations River Resources (Colin Campbell) conducted a grid-based soil/till sampling program on their Zn-Pb-Ag-Au property located north of Chuchi Lake and approx. 20 km west of the Mt. Milligan Cu-Au porphyry deposit. Two prospects, Wit and Skook, are described as VMS - Shallow Submarine Hot Spring deposits. The Wit has been traced for 600 metres along strike and was intersected at 100 metres below surface in ddh WT95-1 which graded 11.4% Zn, 3.84% Pb, 23.3 g/t Ag and 1.28 g/t Au over 3.5 metres. Mineralization consists of crudely banded sphalerite, galena, barite and chalcedonic quartz within a carbonate and silica-rich tuff that is part of the Chuchi Lake Fm. The company is in the process of being listed on the VSE and plans to drill the WIT zone in 1998.

Tsacha. Teck, as operator on behalf of JV-partner Corona Gold, completed 8 diamond drill holes totaling 1,554.5 metres on the possible northern extension of the Tommy vein system. Results were disappointing--drilling did not encounter any vein material. Lithologies intersected, primarily hematite-rich, plagioclase phyric volcanic flows, were not seen in the drilling to the south and suggest that an unrecognized east-trending(?) structure may have offset the vein system. Corona Gold is obligated, via the option agreement with Teck, to continue exploring the property next year. Likely targets are the possible south extension of the vein system as well as the potential for mineralization beneath the sill.

Willow Creek. Pine Valley Coal Ltd. has completed their Fall exploration/pre-development program on the Willow Creek coal property located 45 km west of Chetwynd. The program included the collection of a 3000 kg bulk sample from the North zone. The bulk sample is comprised of coal seams cored in 23 drill holes using open hole drilling methods and a six-inch diameter coring rig (now on its way to Telkwa!). In addition, core from 5 three-inch diameter holes will be submitted for coal characterization. Also, an infill drilling program consisting of 27 holes totaling 1200 metres was completed on the North zone. Future work will include further infill drilling on the North and Central zones.

Bob.

Lane - Mar 7/97

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felsic tuffs (Nicola Group) that host them. Several of the veins were worked during the late 1940's and early 1950's (old workings are still evident) and hand cobbled ore was shipped to the Cominco smelter in Trail. Vein sulphides consist primarily of argentiferous galena, pyrite and sphalerite. The veins are also anomalous in gold and bismuth!

Briefly toured the Willow Creek coal property of Pine Valley Coal with contract geologist Kevin James. Proposed and permitted 50,000 tonne trial cargo will not proceed until it is fully subscribed (one more client is required). The 2-3 month project is budgeted to cost approx. \$2.5 million. Current activity on the property consists of minor clean-up and reclamation.

Tas. Omni Resources is expected to begin drilling on this porphyry copper-gold prospect located near Inzana Lake, north of Fort St. James.

Activities:

Presented 1998 mining and exploration review talk for Barry Ryan's Coal Symposium in Tumbler Ridge on Monday June 21. Twenty-six were in attendance, including 6 Smoky River Coal employees who made the trip from Grand Cache, Alta. Visited Quintette (Babcock and Mesa) and Bullmoose.

Looked briefly at outcrop on lower Bearpaw Ridge—part of the ground held by 26BT Resources. Located float and then o/c of coarse-grained purple-brown syenite—quite attractive; possibly suitable for dimension stone and not too far removed from rail siding that passes through the hamlet of Sinclair Mills. Had to return to town prematurely as truck tried unsuccessfully to jettison its fuel cell. 26BT Resources plan to begin their diamond drilling program in the fall.

Bob.

Lane, Judy 9/99

MEM Weekly - July 16/99

Boliden:

- Boliden continues to be frustrated by lack of agreement on fisheries compensation package for Myra Creek tailings upgrade. MEM will facilitate one more meeting on July 19th to seek resolution so work can proceed this year. (Mines)

Kemess:

- Kemess Forest Practices Board investigation of powerline may continue. Mines Branch inspection completed and report issued. (Mines)

Pine Valley Coal:

- Hinting at winter trial cargo of 50,000 tonnes. Mines Act permit is issued. (Mines)

Willow Ck.

Quinsam:

- Research on ownership of natural gas in the Quinsam area for future coalbed methane development completed. Majority of rights are privately owned. Research continuing on area west of Nanaimo. (MTL)

Tulameen Coal

- (Pacific West Coal Ltd.) - a permit will be issued to LA Transport Limited to extract a 10,000 tonne bulk sample from this property for testing and marketing. (Mines)

Petroleum Leases:

- The July oil and gas rights sale on Wednesday will offer 26 drilling licences and 16 leases covering 49,688 hectares. Compared to July 1998 which offered 24,369 hectares and brought \$6 million in revenue. (PLA)
- Proposed meeting with the Mount Currie First Nation to discuss a geothermal resources application has been postponed until mid August. (PLA)

Sand and Gravel:

- Received DM approval for 4 phase process to address aggregate issues. Phases are:
 1. Interagency committee to refine scope, clarify issues and identify options. This phase is well underway.
 2. Consultation with UBCM and industry to further refine issues and options, and to develop a public consultation process.
 3. Public consultation process, to proceed in late 1999.
 4. Implementation, including drafting legislation and policy and monitoring and evaluating impacts. (Mines)
- Mainland Sand & Gravel - Contractor has been hired to facilitate BCAL review of Pitt Lake barge loadout for pit proposal in coordination with MEM permit review. (Mines)
- Resort Municipality of Whistler - Preparing for meeting with Ted Hall, Linda Stewart and Gerald German to discuss aggregate planning. (Mines)

Communications

- CBC Radio: Jeff Weaver of CBC interviewed Peter Bobrowsky on July 14 regarding tsunamis hazards. (GSB)

Natural Hazards

- Peter Bobrowsky has been contacted by Jonathan Fannin, UBC Professor, requesting help with a large delegation (10) from Norway (Norwegian Fund for Natural Disasters) for the 3rd week of October 1999.

Willow CK.

Pine Valley Coal: The application for permit amendment for a 100,000 T trial cargo project has been referred to the appropriate agencies. MoF in Dawson Creek has responded.

Slate Placer: Company that placed reclamation security expressing concerns they may lose the security if the operator doesn't comply with permit. They are worried about their security and the work required on the property.

Land Use:

Implementation meetings starting up for several LRMP's. Mackenzie LRMP remains the regional land planning priority with final(?) table meeting scheduled for Feb 10/11.

Beswick, Feb. 10/00

Lorraine. Eastfield Resources has released some very encouraging drill assays for the Bishop and Lower Main zones of its Lorraine alkalic copper-gold porphyry deposit. The property is in the Swannell Ranges of the Omineca Mountains about 280 km NW of Prince George. Hole 2001-58 intersected two mineralized intervals in the Bishop zone with the lower one averaging 0.59% Cu and 0.11 g/t Au over 69.8 metres. Hole 2001-60, drilled south of the Lower Main zone, intersected 113.2 metres grading 0.76% Cu and 0.49 g/t Au. Both zones are still open to the south and will be targets for next years drilling campaign.

Kemess North. Kemess Mines Ltd. has completed its 2001 diamond drill program on the Kemess North porphyry gold-copper target. Assays from the last 6 holes will be released when all data has been received/reviewed by the company. About 1 foot of snow blankets the mine.

Eaglet Fluorite. Visited October 30 with Ken MacDonald. Impressive non-active advanced exploration site located between the north and east arms of Quesnel Lake immediately east of Wasko Bay--boat access only (provided by West Fraser). There is little outcrop in the vicinity of the old workings, but there is plenty of blasted muck (mainly from Adit #2) and diamond drill core (from holes drilled between 1980 and 1985) to examine. Feldspar-quartz-mica gneiss (foliated granite?) is the most common rock type. Biotite schist, garnetiferous amphibolite and pelite are also common. Fluorite occurs as pale to dark purple, pale green to colourless and white mineral aggregates as either disseminations, discrete veinlets or stockwork zones in association with quartz, calcite, celestite, K-feldspar megacrysts and barite, plus reported. Molybdenite and pyrite are the most conspicuous sulphide minerals; galena, sphalerite and traces of chalcopyrite were also noted. Two adits were driven in the early 1980's and significant surface diamond drilling and local trenching helped to outline the deposit.

A drill indicated mineralization was estimated to be approx. 24 Mt grading 11.5% fluorite. In addition to producing the fluorite, a Pb concentrate (with Ag grades up to 52 o/t) and a molybdenum concentrate were contemplated.

Hixon Creek Placer/Lode. Visited November 1 with Brian McGrath. Operator LeWayne Musselwhite working in vicinity of former Quesnel Quartz gold mine (bedrock). Surficial material adjacent to the mine was apparently never mined. Channels are shallow but carry 'rice-size' nuggets and as well as fine gold. Gold grains are very angular (but not 'jagged' as they are two km upstream) and the larger ones often occur with quartz still attached suggesting a local bedrock source. Bedrock consists of Fe-oxidized and locally hematitic phyllite. Likely is part of the Barkerville terrane, but very near contact with 'greenstones' of the Quesnel Terrane. Numerous mm-scale, discontinuous quartz 'ribbons' are parallel to foliation and may be associated with gold. A 1.6 metre chip sample was taken. Two shattered quartz veins are exposed near the old Quesnel Quartz mine workings. These will be sampled next visit. Also briefly investigated greenstones of the Quesnel Terrane that are exposed in a nearby pit. Quartz-carbonate veins carrying euhedral pyrite were noted; alteration is limited to narrow epidote-chlorite-calcite envelopes. Work in the area by Noranda in the mid-1980s encountered multi-gram gold grades over narrow widths.

Red. Brett Resources has entered an agreement to option the Red porphyry copper-gold property located in the Omineca Mountains, about 35 km northeast of Doublestar's Sustut copper property. An exploration program is being planned for next season.

Tam. The Tam epithermal gold-silver property, located in the Nechako Plateau immediately east of the Tsacha property (TeckCominco), has been optioned by Southern Rio Resources (Lindsay Bottomer). Plans for the 2002 field season include prospecting, ground geophysics and diamond drilling.

Peace River Coalfield Activity

Willow Creek. Pine Valley Coal Ltd. has recently produced a revised mining proposal that outlines a small raw coal production facility that would produce 200,000 tonnes/year from the Peninsula Pit area. The bulk of the coal would come from the low-ratio '7 Seam' that is brought close to surface by a series of minor folds. Approximately 830,000 tonnes (run-of-mine) of coal comprise this area. The raw product would have an ash content of 9%, an average of 15.7% volatile matter and an average sulphur content of less than 0.6%. Coal is suitable for the low-volatile PCI market. The company has also submitted a NoW that outlines a limited trenching and 4-hole, 1000-metre drill program scheduled to begin in mid-November.

Western Coal Corp., a 100%-owned subsidiary of Western Canadian Coal Corp., continues to advance exploration on four its properties in the Peace River coalfields. Most of the work consists of air-rotary drilling with spot coring of coal seams.

West Brazion. Drilling has yet to start on this project located about 50 km southwest of Chetwynd. However, all access trails and drill pads have been constructed. Six to eight holes will be drilled although the company has been permitted for twelve holes. Drilling will begin in a week to ten days time. It will focus on Upper Gething coals that are exposed on the flanks of a plateau immediately south of Brazion Creek. Strata is gently inclined (5 degrees south). Holes will generally be limited to about 80 metres maximum depth as the coal measures are relatively close to surface. Main target is the 'Discovery seam' that has a cumulative coal thickness of 3.8 metres within a 5.5 m total thickness (including partings). Total coal thickness is 8-9 metres within a 70-metre interval

BL - Nov, 2/01 2

Burnt River. Western Canadian Coal Corp. is currently coring coal seams on its Burnt River thermal/PCI coal property, work that will continue into mid-January.

Willow Creek. Pine Valley Mining Corp. has finalized terms to purchase the Mitsui Matsushima's 33% interest in the project. The purchase price is \$6 million and must be completed in a series of scheduled payments by June, 2005. Completing the deal will enable Pine Valley to regain the exclusive right to market the PCI coal.

Bob.

BZ - Dec. 19/03