Pacific Booker Minerals Inc.

Morrison Copper/Gold Project
Misinformation in the 2012 Decision
RECOMMENDATION of the Executive Director
Derek Sturko, Associate Deputy Minister and Executive Director EAO
Updated September 20, 2012 - On Page 32 of 33

“I recommend Ministers consider the Assessment Report prepared by my delegate, which was an analysis of the technical aspects of the Project as proposed by the Proponent. **The Assessment Report indicates that, with the successful implementation of mitigation measures and conditions, that the proposed Project does not have the potential for significant adverse effects;** and, First Nations have been consulted and accommodated appropriately.

As set out in section 17(3)(b) of the *Environmental Assessment Act*, ”[…] ministers may consider any other matters that they consider relevant to the public interest in making their decision on the Application [...]“. Therefore, in addition to the technical conclusions presented in the Assessment Report, which assumes successful implementation of all mitigation strategies, I recommend Ministers consider a number of additional factors which were raised during the assessment of the proposed Project. In particular, I recommend that Ministers **adopt a risk/benefit approach** that considers the following factors in making a decision on whether to issue an environmental assessment certificate:” *(emphasis added)*

**Those listed factors are addressed on the following slides**
PBM View:

The recommendations of the Executive Director appear to make the assumption that the implementation of mitigation measures may not be effective. These mitigation measures have been designed by qualified industry professionals in compliance with their professional standards. By implying that these may not be effective, the Executive Director is questioning the qualifications and professional standards of those individuals/firms involved in the design.

The Executive Director also recommended that Ministers adopt a risk/benefit approach in making the decision on the environmental assessment certificate. Risk/benefit was not part of the agreed-on terms for the Environmental Assessment Application and had not been previously adopted as part of the assessment.

Prior to this decision, PBM was not given an opportunity to comment on these additional factors or to challenge the impressions held by the Executive Director.
PBM Qualified Professional is Harvey McLeod of Klohn Crippen Berger

- 40 years of experience in mine environment and water resource projects in Canada and internationally and has worked on over 100 water/tailings storage dams over 80 mining projects.
- Canadian Representative and Chairman of the Tailings Subcommittee of the International Committee on Large Dams (ICOLD)
- Awarded the Robert R. Hedley Award of 2013 by AMEBC for excellence in social and environmental responsibility, for his leadership in the evolution and development of mine waste management practices as well as in integrating socio-environmental responsibility with the engineered aspects of tailings and waste rock.
- The lead for Klohn Crippen Berger in the BC Mine Inspector’s investigation of the breach at Mt. Polley
- Has been responsible for all aspects of mine environment studies: baseline environmental studies, geotechnical/environmental design, impact assessment/mitigation, mine geochemistry (ARD/ML), closure plans, and risk assessments.

BC Government Reviewers

- Alana Dickson, BSc, Freshwater Angling Guide—author of LBN salmon Spawning Reports and DNA Assessment of the Morrison Watershed Sockeye
- Dave Tamblyn, (aka Envirodude, “Saving the planet since 2004”), Public Health Engineer at Northern Health Authority—responsible for review of Hydrogeological assessment for Ministry of Forests, Lands and Natural Resource Operations
- Greg Tamblyn, RPBio, (Registered Professional Biologist) MOE Environmental Impact Assessment — responsible for the Review of Morrison Lake model/hydrogeology
- Kim Bellefontaine, P.Geo., MEM Manager Environmental Geoscience & Permitting since 1997 — contracted Lorax Environmental who concluded that “the bulk of the issues have been resolved satisfactorily, to the extent possible at this stage of assessment” then the conclusion was qualified by saying “however, (...) will result in very large, long-term environmental liabilities” yet recommended commitments be incorporated into the final Table of Commitments for the EAC
Executive Director’s comment: “the location of the proposed Project directly adjacent to Morrison Lake, which has a genetically unique population of sockeye salmon at the headwaters of the Skeena River that could be impacted if the Proponent's mitigations measures are unsuccessful”

FACTS:

The Skeena River originates at the southern end of Spatsizi Plateau, in a valley between Mount Gunanoot and Mount Thule, south of the Stikine River watershed. It flows south-east, between the peaks of the Skeena Mountains, through the McEvoy and Jackson flats. It continues in this direction until it passes the Slameeess Range, then flows westwards to Fourth Cabin, when it turns south through a canyon below Poison Mountain. After Kuldo, it takes an eastward turn, then flows south again below Cutoff Mountain and Mount Pope. It continues through to the community of Kispiox and then Hazelton, where it receives the waters of Morice-Bulkley River, and turns south-west. At Kitwanga, the river turns south around the Seven Sisters Peaks and Bulkley Ranges, through the Skeena Provincial Forest, then between the Nass Ranges and Borden Glacier, past the ferry crossing at Usk, through the Kitselas Canyon, and then through the Kleanza Creek Provincial Park. It then flows south-west through Terrace. It continues westwards, then flows into the Dixon Entrance at Eleanor Passage, between Port Edward and Port Essington, facing De Horsey Island.
Morrison Lake Location

The Morrison Project is located approximately 65 km northeast of Smithers, 35 km north of the Village of Granisle and east of Morrison Lake. Morrison Lake is not located at the headwaters of the Skeena River. It is located at the eastern edge of the Skeena River watershed. Morrison Lake drains via the Morrison River into the northeastern arm of the Babine Lake (175 km long). Babine Lake flows into Nilkitkwa Lake. Nilkitkwa Lake flows into the Babine River. The Babine River meets the middle section of the Skeena River approx. 50 kms north of Hazelton. From this meeting, the Skeena River flows approx. 225 kms to the ocean.
Executive Director's comment: “the long-term environmental liability and risk from the proposed Project to the environment, as well as financial risk and liability to the Province, particularly if the Proponent's operations and closure plans are unsuccessful or, the Proponent is unable to resource long term closure plans”

FACTS:
The design and environmental assessment of the proposed mine was prepared by qualified professionals who have extensive world-wide experience. In addition, independent 3rd Party reviews, initiated by the EAO, supported the assessment of no significant adverse environmental effects that may occur during the life cycle of the project. PBM has addressed over 70 government agency reviewers, 9 organizations and over 800 issues/comments during the application process.

The BC Environmental Assessment Office concluded that there are no significant adverse effects, that consultation and accommodation with First Nations was carried out adequately; and that PBM has adequately and reasonably addressed all the issues raised by government agencies, First Nations and the public. The Canadian Environment Agency has also produced a draft Comprehensive Study Report that concluded that the proposed Project is not likely to cause significant adverse environmental effects.

BCEAO identified 32 Conditions that would have to be met as part of the EAC. Those Conditions would be legally binding as a condition of the Certificate and there is a deadline for the Proponent to substantially start the project, typically 5 years from the date the ministers issue the EAC. The information and plans will be developed during the Detailed Engineering phase and would be completed prior to the issuance of the Mines Act Permit. PBM will meet those Conditions during Construction, Operations and Closure, in compliance with the Mines Act and Environmental Management Act.
Executive Director's comment: “the use of the dilution capacity of Morrison Lake as the primary means of mitigation for mine effluent, and in particular the "in-perpetuity" nature of water treatment and discharge into Morrison Lake; the anticipated long-term decline in water quality in Morrison Lake”

FACTS:
Lake Behaviour Modeling was carried out assuming all Upper Bound (worst case scenario) conditions, including upper bound for geochemical loadings; upper bound for higher groundwater flows; conservative assumptions in lake modelling (inflow/outflow only during freshet instead of all year); assumption that all Tailings Storage Facility seepage flows directly to Morrison Lake with no dispersion or loss in volume; and conservative assumption that all water flows to the water treatment plant on closure. Predicted lake metal concentrations, using upper bound loadings due to the project, are below BC Water Quality Guidelines and only a very small quantity above baseline. The project meets BC Water Quality Guidelines for Morrison Lake, streams and emerging groundwater and the design is protective of Aquatic Environment. This view was supported by an BCEAO commissioned independent 3rd Party review by a hydrogeologist and a lake behavior specialist who reviewed the Projects water quality, hydrogeology and fisheries effects assessment.

Morrison Lake annual inflow/outflow is 50.7% of lake volume, which means that one half of the lake volume would flow out each year and be replaced with fresh water. The water in Morrison Lake mixes from top to bottom during two periods each year. On closure of the mine, the expected flow rate of water from the water treatment plant is 140 cubic meters per hour which equals 1,226,400 cubic meters per year or 0.43% (43 of 10,000 parts) of lake volume or 0.85% (85 of 10,000 parts) of lake annual inflow/outflow volume.
To put these numbers in a scale that we all can understand, these images are representative of the water volumes involved.

A standard sized bathtub is 40 imperial gallons. Expected flow rate of water from the treatment plant into Morrison Lake is 43 parts per 10,000 parts. So, based on 40 gallons, the expected flow is roughly equivalent to ½ teaspoon per day. If you start off with an empty bathtub, it would take 233 years to fill the bathtub.
Executive Director's comment: “the use of the dilution capacity of Morrison Lake as the primary means of mitigation for mine effluent, and in particular the "in-perpetuity" nature of water treatment and discharge into Morrison Lake; the anticipated long-term decline in water quality in Morrison Lake”

FACTS:
On closure, any residual surface water in the Tailings Storage Facility will be directed to the open-pit, which will be filled with waste rock and allowed to fill with water to a level below the level of Morrison Lake. The open-pit water will be treated by a high-density sludge (“HDS”) water treatment plant. A conceptual design of a HDS water treatment plant was carried out by SGS-CEMI. The plant is capable of treating the full range of water quality estimates in the open-pit.

In a letter from Ministry of Energy and Mines, the Ministry, along with its consultant Lorax Environmental, stated “MEM considers a HDS lime treatment plant to be proven technology that is capable of providing effective and reliable means of treating Morrison TSF and open-pit water to protect the environment”.

The treated water from the HDS treatment plant will be transported, via a pipeline, to the northern section of Morrison Lake. The pipeline will extend to the deepest portion of the lake and discharge vertically upward from a depth of approximately 60m (197 feet) from a single port diffuser into the lake.

The lake mixing model and resulting water quality concentrations in Morrison Lake were carried out by Dr. Gregory Lawrence PhD, PEng of the University of British Columbia.

The BC EAO undertook a third-party review of the lake effects, which was carried out by Dr. Bernard Laval, PhD, PEng, also of the University of British Columbia.
Executive Director's comment: “the Proponent's currently limited knowledge about the physical limnology, behaviour and ecosystem of Morrison Lake, recognizing their mitigations depend upon certain assumptions regarding lake behaviour (e.g. lake turnover, flushing rates, etc).

FACTS:

Note that the BC EAO website states that “Usually it takes 12 months to gather the required environmental baseline information needed”. PBM collected Baseline data since 2002 through 2011. Information from the studies carried out on the Morrison watershed since the early 1900’s were also incorporated into the knowledge base.

Baseline water quality monitored in Morrison Lake receiving (intermittent) streams since 2003 and in Morrison Lake (an upper oligotrophic lake) since 2006. Water quality sampling conducted at five sites on Morrison Lake, at multiple depths (surface, thermocline and bottom).

A depth profile including in situ measurements of temperature profiles to confirm stratification, pH, dissolved oxygen, total dissolved solids, conductivity and oxidation reduction potential was conducted. Water sampling included sampling during freshet (Ice-Off) which confirmed that the lake turns over. A bathymetry (measurement of depth of water) survey was conducted in 2008.

Aquatic resources data included water quality, sediment, fish habitat surveys, benthic invertebrate and plankton, periphyton taxonomy, chlorophyll and biomass; drift net sampling; and fish sampling, including metals analysis.
This diagram shows that the bottom of the open pit will be more than 250 meters lower in elevation than the elevation of the bottom of Morrison Lake.

On closure, the open-pit will be backfilled with the waste rock and a growth medium will be placed on the surface and wetland plants will be planted. In the pit, a water pond will be allowed to collect water and will be maintained below the elevation of Morrison Lake to ensure no seepage discharge into the lake.
Executive Director's comment: "input from the Ministry of Energy and Mines which highlights concerns such as the "in-perpetuity" environmental liabilities of the proposed Project; the unprecedented scale of the bond that would be required; inconsistency with provincial Metal Leaching/Acid Rock Drainage policy; and, uncertainties related to the Proponent's proposed water treatment;

FACTS:

The mitigation strategy planned is consistent with the Provincial Metal Leaching/Acid Rock Drainage Policy. That policy provides for a variety of mitigation strategies that are available, including avoidance, underwater storage, blending of Potential and Non-Potential Acid Generating materials, covers, collection and treatment. The collection and treatment of ARD is not the preferred choice, however, it is acceptable under the Policy, Guidelines and precedence set by other projects as an effective and reliable means for protecting the environment.

The Company's strategy, as per the Feasibility Study, was to store waste rock on land adjacent to the open-pit, in a natural catchment draining into the pit. On closure, an engineered low permeability cover was proposed and the seepage from the waste rock dump and pit-walls would be collected and treated. Open-Pit water treatment is required for all mitigation alternatives. PBM was asked to provide a conceptual design for an engineered low permeability cover for on-land waste rock storage as necessary to meet regulatory requirements for reclamation. The EAO had concerns with the on-land storage and another design change was made, placing the waste rock into the open-pit on closure. The Company revised the ML/ARD predictions and presented the results. The EAO commissioned an independent 3rd Party review which concluded that the Morrison Project does not have the potential for significant adverse effects.

Lining the Tailings Storage Facility with a geomembrane liner was at the request of the BCEAO and its reviewers who requested water quality predictions for the Tailings Storage Facility receiving streams and emergent groundwater in Morrison Lake lakebed. The geomembrane liner is proven technology that has been used at several mines in BC and would be installed over the 21 year life of the mine. The extent of the geomembrane liner would be determined during detailed engineering and prior to the issuance of the Mines Act Permit.
Executive Director's comment: “input from the Ministry of Environment which highlights concerns with the following, the "in-perpetuity" nature of water treatment; the long-term maintenance of water treatment infrastructure; and, the potential risks to fish populations and water quality if the Proponent’s mitigations are unsuccessful or do not perform as predicted”

Facts:
Numerous studies of Babine Lake and Morrison River over the last century have made them some of the best studied sockeye producing watersheds in Canada. Sockeye salmon spawn mainly in Morrison River and Tahlo Creek. The number of spawners in Morrison Lake has also been documented (2010 unknown, 224 in 2011 as per LBN Spawning reports 2010/2011). A description of the shoreline of Morrison Lake and surveys to identify potential spawning areas that might be utilized by kokanee, sockeye and lake trout have also been conducted. (Estimate of sockeye spawners was approximately 150 per 2004 Fisheries Studies Morrison Watershed, Bustard)

The Morrison sockeye salmon were enhanced by the Babine Salmon Hatchery on Morrison Creek from 1907 to 1936 and have likely been affected by the Pinkut and Fulton spawning channels since the 1960s. From the collection of eggs from Morrison Creek and from the Stuart Lake Hatchery (collected from Pierre and Pinkut creeks), the Babine Hatchery planted eggs in Tahlo Creek, fry and fingerlings in Morrison Creek, and fry in Morrison Lake. Transient populations migrate to Morrison Lake and upper tributary stocks.

The LBN Woodland Licence covers approximately 18 km along the shore of Babine Lake and is upstream from the Pinkut Creek Spawning Channels, and includes many spawning areas along the shoreline of Lake Babine. Pinkut Lake is also located within the woodland licence area.
During its 28 years of operation the Babine Hatchery released 170,953,598 sockeye fry, 5.5 million fertilized eggs and 25 million fingerlings into the Morrison watershed.

Eggs were obtained primarily from Morrison Creek and supplemented intermittently with eggs obtained from the Babine River, Fulton, Morrison, Perrie, Pinkut, Tachek and Tahlo Creek as well as from the Stuart Lake hatchery. Eggs were collected, stirred with roe then gently rinsed and left to harden for two hours. Once they were packed into shallow stackable trays in back-pack boxes, protected with moss, they were transported by boat up to Morrison Creek where the 80 pound packs were shouldered 2 miles up the creek by the first nations crews. In the spring, twenty five percent of the fry were released into a man-made pond destined for Morrison Creek. The remaining fry were transported up Morrison Lake to “the mouths of creeks with suitable food supplies” on a modified pontoon scow with screens fastened to each end which provided 6 - 8 inches of continuous flow on route up Morrison Lake (Tony Southgate, 1979)
On average, 45 million fry are produced from the channels each spring. At Pinkut Creek, annually, approximately 37,000 adult sockeye are airlifted over the falls to allow utilization of a 6 km spawning area on the upper creek.
Executive Director's comment: “opposition from Gitxsan and Gitanyow Nations and Lake Babine Nation; the strength of claim of Lake Babine Nation, in particular their moderate to strong prima facie case for aboriginal title”

Facts:

The Project is within the traditional territory of the Lake Babine Nation.

The proposed mine site is on Crown land within the Morice Land and Resource Management Plan area, designated as a resource development area (not a protected area), supporting economic activities such as mining and forestry in an area that has been extensively logged in the past and within 30 km of two former producing mines, (Bell and Granisle Mines, operated by Noranda Mining)

Verna Power, Councilor, holding the Natural Resources Portfolio (as per www.lakebabine.com), has stated that she is not personally opposed to all mines.

PBM View:

The Company holds the mineral titles for the project site and according to the Minerals Titles Office, our title may overlap with Lake Babine and the Yekooche First Nations aboriginal interests, but the claims are not on reserve, treaty or treaty related lands. The claims are in the Cassiar Land Title District and are governed by the Morice Land and Resource Management Plan. The MLRMP was passed by the BC Cabinet in 2007.
Executive Director's comment: “the economic effects on the Province, including tax revenue and job creation”

Facts:
The total Project expenditures during the life of the Project are estimated to be approximately $2.5 billion.

- Government tax revenues include sales taxes, fuel and other transportation taxes/fees, duties and excise taxes and service providers personal and corporate income tax.
- Total federal, provincial and municipal tax revenue from construction and operations is estimated to be $317.3 million.
  - Corporate Income Tax is estimated to be $213 million federal and $156 million provincial totaling $369 million.
  - The provincial BC Minerals Tax is estimated to be $207.8 million.
- Total estimated federal and provincial tax revenues is $893.8 million.

**During the two year construction period**
Increase in Provincial GDP from direct and indirect effects are expected to be $104.3 million annually, total $208.6 million.

- The Project will provide 1,117 jobs per year during construction. In each year, the Project and Supply Industry employees would benefit from $78.7 million in household income, totaling $157 million. In addition, the supply industry will generate $7.1 million in federal, $5.7 million in provincial and $0.9 million in municipal tax revenues.
- The contribution to government tax revenues during the construction period is estimated as $22 million in direct tax revenue, $9.5 million federal and $12.7 million provincial annually. The total annual government tax revenue is estimated to be $35.8 million per year, totaling $71.6 million.

**During the 21 year operation period**
Increase in GDP from the Project’s direct and indirect effects are estimated as $50 million annually, totaling $1.05 billion.

- The Project will provide 601 jobs per year during operations. In each year, the Project and Supply Industry employees will benefit from $34.9 million in household income for a total of $732.9 million. In addition, the supply industry would generate $3.0 million in federal, $2.5 million in provincial and $0.7 million in municipal tax revenues.
- The contribution to government tax revenues during the 21 year operation period will annually generate $5.4 million in direct tax revenue, $2.9 million to the federal government and $2.5 million to the province. The total annual government tax revenue is estimated to be $11.7 million per year for a total of $245.7 million.
Executive Director's comment: “the Proponent's views regarding these additional factors.

PBM View:
Between August 3 and October 1, 2012, PBM was not contacted by the Executive Director or the Ministers in regards to these “additional factors”. Therefore, the Executive Director could not have been aware of “the Proponents” views on these factors. As proof of this statement, if PBM had been contacted, the statement about the project being in the Skeena Headwaters would not have remained unchallenged.

Comments were made publicly about the financial capabilities of PBM. In September 2012, PBM was in the final stages of arranging financing for the construction phase of the project. This financing was not completed. At the time of the rejection, PBM’s common shares were trading at $14.95 per share and rising. After the decision was made public, the market price of the shares dropped to $4.95 overnight (loss in market capitalization of $122 million) and continued to fall. Public companies raise funds by sale of treasury shares. These shares are priced for sale based on the current trading price of those shares.
Morrison Copper/Gold Project

LBN Woodland Licence

- Approximately 18 km along the shore of Babine Lake
- 25 years, covers 36,500 hectares, allowable cut 74,000 m³/year
- Extends through Morice and Lakes timber supply areas
- Upstream from the Pinkut Creek Spawning Channels
- Pinkut Lake located within the licence area
- Highlighted area includes spawning zones along the shoreline of Lake Babine
Morrison Copper/Gold Project

• Operated from 1972 to 1992, except for the period from 1982 to 1984
• Total production was 77.2 million tonnes of ore and 75.8 million tonnes of waste rock
• Strip ratio of 0.98:1 waste to ore
• Waste-rock delivered to dumps, tailings-impoundment dams and mine roads
• Waste rock stored adjacent to Babine Lake
• Water treatment started in 2014, 22 years after production stopped
• Water management and monitoring is ongoing at the mine site to ensure that water quality in Babine Lake remains protected
• The mine is in compliance with Permits issued by the BC Ministry of Environment

Former Bell Mine
Morrison Copper/Gold Project

Operated from 1966 to 1982
Total production was 52.7 million tonnes of ore and 72.2 million tonnes of waste
Strip ratio of 1.37:1 waste to ore
The main part of the mine site consists of two islands in Babine Lake, joined together by a tailings impoundment and waste rock-rock dams
Water management and monitoring is ongoing at the mine site to ensure that water quality in Babine Lake remains protected
The mine is in compliance with Permits issued by the BC Ministry of Environment
Morrison Copper/Gold Project

Approved since PBM

Brucejack Gold Mine Project
Approved March 26, 2015

EAO decision based on available information and best efforts to address FN’s issues
Certificate granted with 15 conditions
Additional information requirement was carried over to permitting phase as a condition
Morrison Copper/Gold Project

Approved since PBM

KSM Project
Approved July 29, 2014

EAO satisfied that the proposed certificate conditions and Project design would prevent or reduce potential negative environmental, social, economic, heritage or health impacts of the Project.

Additional information requirement in permitting phase
Certificate granted with 41 conditions
Your attention is appreciated!