



Conservation and Water Stewardship

Climate Change and Environmental Protection Division
Environmental Approvals Branch
123 Main Street, Suite 160, Winnipeg, Manitoba R3C 1A5
T 204 945-8321 F 204 945-5229
www.gov.mb.ca/conservation/eal

File: 5583.00
December 20, 2012

Cal Liske
Mines Branch
Manitoba Innovation, Energy and Mines
360-1395 Ellice Avenue
Winnipeg MB R3G 3P2

Dear Mr. Liske:

Re: Hudson Bay Mining and Smelting Co. Limited (Hudbay) – Lalor Mine - Environment Act Proposal

The responses from the Technical Advisory Committee (TAC) and public that requested additional information regarding HudBay's Environment Act Proposal for the Lalor Mine were forwarded to the proponent for response.

Please find attached Hudbay's December 17, 2012 letter responding to the comments and requests for additional information presented by the TAC and public. Please review the information provided to determine if your comments or concerns have been satisfactorily addressed.

Your comments, if any, are required to be submitted to the Environmental Approvals Branch by January 25, 2013. No response on your part will be assumed to indicate no concern.

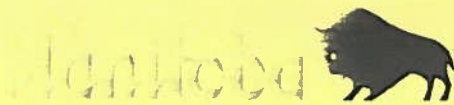
If you have any questions, please contact me at 204-945-7012.

Yours truly,

Jennifer Winsor, P.Eng.
Environmental Engineer

Enclosure

- c. Don Labossiere, Director – Environmental Compliance and Enforcement Branch, Manitoba Conservation and Water Stewardship
Ernest Armitt, Director – Mines Branch – Manitoba Innovation, Energy and Mines Public Registries



Conservation and Water Stewardship

Climate Change and Environmental Protection Division
Environmental Approvals Branch
123 Main Street, Suite 160, Winnipeg, Manitoba R3C 1A5
T 204 945-8321 F 204 945-5229
www.gov.mb.ca/conservation/eal

File: 5583.00
December 20, 2012

James Stibbard
Office of Drinking Water
Manitoba Conservation and Water Stewardship
1007 Century Street
Winnipeg MB R3H 0W4

Dear Mr. Stibbard:

Re: Hudson Bay Mining and Smelting Co. Limited (Hudbay) – Lalor Mine - Environment Act Proposal

The responses from the Technical Advisory Committee (TAC) and public that requested additional information regarding HudBay's Environment Act Proposal for the Lalor Mine were forwarded to the proponent for response.

Please find attached Hudbay's December 17, 2012 letter responding to the comments and requests for additional information presented by the TAC and public. Please review the information provided to determine if your comments or concerns have been satisfactorily addressed.

Your comments, if any, are required to be submitted to the Environmental Approvals Branch by January 25, 2013. No response on your part will be assumed to indicate no concern.

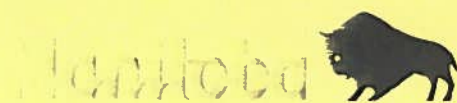
If you have any questions, please contact me at 204-945-7012.

Yours truly,

Jennifer Winsor, P.Eng.
Environmental Engineer

Enclosure

- c. Don Labossiere, Director – Environmental Compliance and Enforcement Branch, Manitoba Conservation and Water Stewardship
- Ernest Armitt, Director – Mines Branch – Manitoba Innovation, Energy and Mines Public Registries



Conservation and Water Stewardship

Climate Change and Environmental Protection Division
Environmental Approvals Branch
123 Main Street, Suite 160, Winnipeg, Manitoba R3C 1A5
T 204 945-8321 F 204 945-5229
www.gov.mb.ca/conservation/eal

File: 5583.00
December 20, 2012

Kevin Jacobs
Water Quality Management Section
Manitoba Conservation and Water Stewardship
123 Main Street, Suite 160
Winnipeg MB R3C 1A5

Dear Mr. Jacobs:

Re: Hudson Bay Mining and Smelting Co. Limited (Hudbay) – Lalor Mine - Environment Act Proposal

The responses from the Technical Advisory Committee (TAC) and public that requested additional information regarding HudBay's Environment Act Proposal for the Lalor Mine were forwarded to the proponent for response.

Please find attached Hudbay's December 17, 2012 letter responding to the comments and requests for additional information presented by the TAC and public. Please review the information provided to determine if your comments or concerns have been satisfactorily addressed.

Your comments, if any, are required to be submitted to the Environmental Approvals Branch by January 25, 2013. No response on your part will be assumed to indicate no concern.

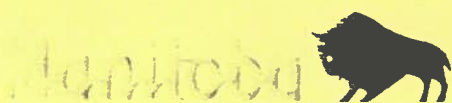
If you have any questions, please contact me at 204-945-7012.

Yours truly,

Jennifer Winsor, P.Eng.
Environmental Engineer

Enclosure

- c. Don Labossiere, Director – Environmental Compliance and Enforcement Branch, Manitoba Conservation and Water Stewardship
Ernest Armitt, Director – Mines Branch – Manitoba Innovation, Energy and Mines Public Registries



Conservation and Water Stewardship

Climate Change and Environmental Protection Division
Environmental Approvals Branch
123 Main Street, Suite 160, Winnipeg, Manitoba R3C 1A5
T 204 945-8321 F 204 945-5229
www.gov.mb.ca/conservation/eal

File: 5583.00
December 20, 2012

Laureen Janusz
Manitoba Conservation and Water Stewardship
200 Saulteaux Crescent, Box 40
Winnipeg MB R3J 3W3

Dear Ms. Janusz:

Re: Hudson Bay Mining and Smelting Co. Limited (Hudbay) – Lalor Mine - Environment Act Proposal

The responses from the Technical Advisory Committee (TAC) and public that requested additional information regarding HudBay's Environment Act Proposal for the Lalor Mine were forwarded to the proponent for response.

Please find attached Hudbay's December 17, 2012 letter responding to the comments and requests for additional information presented by the TAC and public. Please review the information provided to determine if your comments or concerns have been satisfactorily addressed.

Your comments, if any, are required to be submitted to the Environmental Approvals Branch by January 25, 2013. No response on your part will be assumed to indicate no concern.

If you have any questions, please contact me at 204-945-7012.

Yours truly,

Jennifer Winsor, P.Eng.
Environmental Engineer

Enclosure

- c. Don Labossiere, Director – Environmental Compliance and Enforcement Branch, Manitoba Conservation and Water Stewardship
Ernest Armitt, Director – Mines Branch – Manitoba Innovation, Energy and Mines Public Registries



December 17, 2012

Ms. Jennifer Winsor, P.Eng.
Environmental Approvals Branch
Manitoba Conservation and Water Stewardship
123 Main Street, Suite 160, Union Station
Winnipeg, Manitoba
R3C 1A5

Dear Ms. Winsor,

Re: Hudson Bay Mining and Smelting Co., Limited – Lalor Mine *Environment Act* Proposal
Manitoba Conservation and Water Stewardship File Number: 5583.00

Thank you for forwarding the comments provided by your Technical Advisory Committee (TAC) concerning our *Environment Act* Proposal for Lalor Mine. The following further information is submitted in response to the TAC comments:

Letter from Water Quality Management Section - Kevin Jacobs. June 25, 2012:

TIA Questions - Paragraphs 1 to 3

It is correct that there will be no discharges of wastewater to water bodies in the immediate facility of the Lalor Mine. However, as a point of clarification, no ore processing occurs or has occurred at the site of the Chisel North Mine.

Please refer to page 22 to 25 of the Lalor Mine *Environment Act* Proposal Report (EAP Report), which describes in detail the operation of the existing Stall Lake Concentrator and the use of the Anderson TIA.

A new processing plant (concentrator) will be proposed, subject to a further *Environment Act* Proposal. The new concentrator will be located within the footprint of the existing Lalor AEP and the proposed Lalor Mine. No new tailings facilities will be constructed to support the new concentrator. The new concentrator will use the existing Anderson TIA, which has capacity up to 2017, based on future ore production projections for Lalor Mine.

To accommodate additional tailings, the existing Anderson TIA will be expanded through dam construction within the designated legal description of the TIA, subject to a Notice of Alternation concerning the existing *Environment Act* license.

Potentially Acid Generating (PAG) Waste Rock – Paragraph 4

As indicated in the EAP Report, waste rock produced during production mining will be used as backfill or transported to the Chisel Open Pit for disposal. No waste rock will be stored on surface at the Lalor Mine site. Should interim storage of PAG be required on surface due to unforeseen circumstances, Hudbay will utilize the existing licensed PAG waste rock and ore storage pads located at the Chisel North Mine.

Accidents and Malfunctions – Paragraph 5

As the potential for spills as a result of accidents and malfunctions is always a possibility, spills and accidents have been addressed in Section 5.12.4 of the EAP Report. Comprehensive spill response planning is required in all Hudbay operations, pursuant to its existing ISO 14001 Environment Management System. Copies of specific plans can be provided for review upon request.

The Lalor operation includes a comprehensive spill monitoring and response system, which provides for the detection of leaks and immediate implementation of spill response. The entire discharge line from the Lalor AEP site to the Lalor Booster Pump Station (see Section 2.2.2.1), and all the way to the Chisel Water Treatment Plant (WTP) is fully automated by computer (PLC) control system. The system monitors the discharge pressures, and if pressures fall above or below the commissioned "normal," the system shuts down all wastewater pumps and issues an alarm. The alarm is sounded in the Lalor Mine hoist house, which is operated 24 hours per day, so that any alarm is immediately detected.

As an additional measure, the flow exiting the Lalor Booster Pump Station is cross-checked with the flow entering the Chisel WTP in real time, and any discrepancy immediately triggers the PLC control system to shut down all pumps and signal an alarm.

Polishing Ponds – Paragraph 6

The polishing ponds include a geosynthetic clay liner to minimize seepage, placed between two woven geotextiles to provide added protection. The synthetic clay liner is rated with a maximum permeability factor of 5×10^{-9} cm/sec, which exceeds the standard of protection requested in Mr. Jacobs' comment. Please see the enclosed specification sheets for the synthetic clay liner (Bentofix) and the geotextile (Geotex). I also enclose a drawing of the polishing pond.

It should be noted that the polishing pond will only be utilized during the initial shaft sinking (up to June 2014) after which time the polishing pond will not be receiving any mine discharge water and will only be used to collect precipitation and surface runoff for fire-fighting purposes.

Recommendation for Limnological Studies – Paragraph 7

Any water body that is potentially affected by discharge related to the proposed Lalor Mine is already subject to historic and ongoing aquatic monitoring and sampling programs, pursuant to various *Environment Act* Licenses and the environmental effects monitoring required under the

MMER. This is described in Section 1.5.3. of the EAP Report. Thus, these water bodies are well studied on an ongoing basis.

Please see Section 5.7 of the EAP Report, which assesses all realistic pathways for the proposed development to affect surface water and explains why there will not be an effect on any water body in proximity to the proposed development. Absent such a pathway, there does not appear to be any principled basis for further aquatic studies.

Sanitary Wastewater Treatment Plant Monitoring Requirements – Paragraph 8, Bullet 1

Hudbay has no objection to the requested effluent standards for BOD, TSS and Fecal Coliform. However, the total phosphorus limit of 1 mg/L that has been proposed does not seem reasonable for the Lalor Mine sewage treatment plant. This plant is not a new development, as it is currently permitted pursuant to the Onsite Wastewater Management Regulation made under *The Environment Act*. The operation of the plant was approved prior to the Manitoba Water Quality Standards, Objectives and Guidelines Regulation (196/2011) coming into force in November 2011, and has been operating in a satisfactory manner.

In addition, it is our understanding that a 1 mg/L limit is required only for facilities that exceed a total annual threshold of 820 kg of phosphorus. Although testing conducted on the effluent from the Lalor STP exceeds the 1 mg/L limit, the calculated annual volume of total phosphorus discharged from the plant is well below the 820 kg per year threshold. Based on an evaluation of existing discharge rates and measured phosphorus concentrations (approximately 4 mg/L to 6 mg/L), it is estimated that at the current rate the Lalor Mine sewage plant would discharge a total of approximately 5 kg to 7 kg of total phosphorus annually. Although it can be expected that the discharge rate from the Lalor STP will increase when production mining at the Lalor Mine is underway, it is expected that, at most, the discharge rate would increase no more than three times the current rate. Even with this "worst case" increase in flow, the amount of total phosphorus that would be discharged from the STP would be between 15 kg to 21 kg annually, which is well below the maximum threshold of 820 kg per year.

It should also be noted that the effluent discharged from the Lalor STP does not flow directly to the environment, but is pumped to the Chisel Open Pit with Lalor Mine discharge water for additional treatment at the Chisel Water Treatment Plant. Discharge from the Chisel Water Treatment Plant is analyzed regularly, and the measured total phosphorus values have been below the analytical method detection limit (0.20 mg/L in 2011 and 0.10 mg/L in 2012) for the past two years.

Sampling Frequency - Paragraph 8, Bullet 2

As for the requirement for "the monthly geometric mean of one grab sample collected at equal intervals on each of a minimum of 3 consecutive days per week," Hudbay would like to recommend that this be limited to the collection of 3 grab samples (collected within consecutive hours) on one day. There are logistical challenges in shipping environmental samples from Snow Lake to the analytical testing laboratory in Winnipeg. There is no daily bus service from Snow Lake, and therefore shipping on consecutive days would result in samples arriving at the testing lab outside of the required storage holding times. Providing Hudbay with the opportunity

to collect consecutive grab samples on the same day for submission and analysis would minimize the risk of missing a sample holding time due to shipping constraints.

Biosolids Disposal – Paragraph 8, Bullet 4

Sewage sludge generated at the on-site sewage treatment plant is currently being hauled by a licensed contractor to the Town of Snow Lake for disposal. A new waste disposal ground is being planned for the Lalor Mine, which will include a sludge drying and disposal facility. Preliminary siting and engineering for this waste disposal facility has been completed.

Watershed Management Study/Nutrition Reduction Program

With respect to the recommendation for a nutrient reduction management study, monitoring of nutrients (including total phosphorus) is included in existing monitoring programs, including MMER monitoring and EEM studies for the final point of discharge to the environment (Chisel Treatment Plant effluent). Therefore any additional monitoring of nutrients would be redundant.

Email from Laureen Janusz – Manitoba Water Stewardship, July 10, 2012

Results from Historical Environmental Effect Monitoring – Paragraph 4

Although the Initial and Periodic Environmental Effects Monitoring (EEM) studies indicated minor “effects” on benthic community and size of some fish species in Anderson Bay, the question of whether the characteristics identified in these studies are actually associated with Anderson TIA effluent is still the subject of debate.

The only benthic invertebrate effect that was observed was determined through utilization of the Bray Curtis Index (BCI), which is now the subject of great debate over statistical inaccuracies in the calculation method proposed by Environment Canada. Stantec conducted a research study on the BCI (Stantec, 2011) which indicates that the method used in the Metal Mining Effluent Regulations (MMER) EEM guidance is flawed and skewed towards indicating effects when none are actually present. A subsequent Investigation of Cause (IOC) EEM study (Phase IV) was conducted in August 2011, and BCI results from the previous three phases were re-evaluated using the proposed Stantec alternate calculation. The recalculation eliminated the “effect” observed in the Initial of Periodic (Phase I and II) studies. The IOC report for Anderson has been recently completed, and will be issued the week of December 17, 2012.

It should be noted that the BCI did not show any effect in the Phase III study, regardless of the calculation methodology used. Phase IV also re-evaluated the Phase I-III data using numerous other benthic community health indices and again came to the conclusion that there was no effect on benthic invertebrates.

Regarding the effects on Yellow Perch, it appears to us that this too is a result of a flaw in the methodology used in the current version of the MMER. The sampling methodology used in the Pulp and Paper Effluent Regulations applies a “critical effects sizes” criterion to eliminate results that may simply relate to variations between natural habitats. This is necessary as some differences in communities are bound to be expected. By applying the “critical effect sizes”

developed for the Pulp & Paper EEM process, all but one effect on Yellow Perch would have been eliminated. The only remaining effect would have been weight-at-age, which indicated larger fish in Wekusko Lake compared to the Reference Area, Tramping Lake.

This brings us to the subject of the observed results from the Phase I and II EEM, which indicated younger Yellow Perch in Anderson Bay, which are also much larger in size than in the Reference Area. The Gonadosomatic Index (GSI) indicated relatively smaller gonads in fish from Anderson Bay, but this index is slightly flawed in that it assumes linearity between total weight and gonad weight. We do not consider the slightly lower GSI to be an issue because the index is skewed due to the fish in Anderson Bay being almost double the size of the fish in Tramping Lake. Larger Yellow Perch were observed in the Exposure Area, and that is the opposite effect that is expected in fish exposed to heavy metals.

The only confirmed effect in Brook Stickleback (after correcting for critical effect sizes) was slightly enlarged livers in males.

The Phase IV EEM study looked at indicators of metal exposure (metallothionein and metal accumulation in tissues) and indicators of food resource availability (liver glycogen, triglyceride levels and gut contents). A second Reference Area (Goose Bay) was also used to help make better comparison of results. In very general terms, the study found no indication of metal uptake or differences in food resources:

- No indication of elevated metal accumulation in tissue (iron slightly elevated in Brook Stickleback, selenium slightly elevated in Yellow Perch (although below CCME levels), many more metals were found to actually be lower in the Exposure Area tissues than the Reference Area).
- No differences in metallothionein levels.
- Glycogen and triglycerides were the same for Brook Stickleback; Yellow Perch saw no differences in glycogen levels although lower triglycerides were observed in the Tramping Lake Reference Area.

The key effect endpoints from Phase I to III were also monitored. The largest magnitude and number of "effects" were found when comparing the two reference areas to one another. The overall indication is that the "effects" seen to date are simply the result of natural variations among different lakes and fish populations.

As a final note (as indicated in Section 2.2.2.1. of the EAP Report), wastewater from the Lalor Mine and Lalor Mine STP will be directed to the Chisel Open Pit, treated at the Chisel Water Treatment Plant, and subsequently discharged to Woosey Creek. None of the wastewater from Lalor Mine will be directed to the Anderson TIA.

Elevated Mercury Levels – Paragraph 5

There have been no elevated mercury levels observed in Anderson TIA effluent. For the noted instances where mercury was detected in the analysis, they have been attributed to reductions in the applicable detection limit over the course of Hubday's monitoring under the MMER limits (a drop from 0.0002 mg/L in 2003 to 0.000001 mg/L (0.001 ug/L or one part per trillion) by

2010). Prior to the reduction of the detection limits to 0.001 ug/L, there were only two instances (out of 57 samples) where the analyzed effluent samples exceeded the detection limit (one sample in 2004, and one sample 2009). In addition, the measured concentration of each of these two samples was within two times (2X) the detection limit, which would be an indication that the results could be attributed to instrument variation and inaccuracy with the laboratory test methodology.

Since the reduction of the detection limit to 0.001 ug/L in January 2010, the highest recorded mercury concentration in the tested effluent has been 0.002 ug/L, which is well below the Manitoba guideline for the protection of aquatic life (0.026 ug/L).

Based on this information, it is our opinion that the elevated mercury levels observed in these samples are not associated with potential impact from the Anderson TIA. The elevated mercury concentration observed in earlier EEM studies is likely the result of improper or inadequate laboratory methodology or analytical protocol, and the inability of some of the laboratories being unable to accurately measure concentrations as low as the prescribed mercury method detection limits.

As a point of clarification, in Sentence 3 of Paragraph 3, please note that Anderson Mine is no longer in operation. We understand this statement to mean the Stall Lake Concentrator.

Email from James Sibbard – Manitoba Water Stewardship, July 5, 2012

Town of Snow Lake Domestic Water Supply – Bullet 2

Although the water supply (Snow Lake) for the Town of Snow Lake is located downstream of Lalor Lake, the possibility of the operations at Lalor Mine impacting the town water supply is extremely remote. Surface water flowing from Lalor Lake would flow north via a series of wetlands through Maw Lake, Vamson Lake, Squall Lake and then south via Snow Creek into the western arm of Snow Lake. The total distance any contaminants from a potential spill entering Lalor Lake would be required to migrate in order to reach the Snow Lake water treatment plant is approximately 21 km.

There will be no planned discharge of untreated wastewater to surface waterbodies. Any contamination resulting from a potential spill or accident released into a surface water body would be mitigated or naturally attenuated prior to reaching Snow Lake.

Although the potential for impacting the town water supply is extremely remote, Hudbay has no objection to including the Town of Snow Lake water treatment supply operators in emergency notifications, if such is required.

Email from Cal Liske – Manitoba Innovation, Energy and Mines, July 5, 2012

As per the letter from Mr. Liske submitted to Hudbay on December 4, 2012, Hudbay will be issuing an updated Lalor Mine Closure Plan for review and approval by September 30, 2014. A copy of the letter from Mr. Liske is enclosed.

Consultation with Mathias Colomb Cree Nation has been formally initiated, and is currently ongoing.

Email from Clair Pilgrim – Snow Lake Resident, July 6, 2012

Sewage sludge generated at the on-site sewage treatment plant is currently being hauled by a licensed contractor to the Town of Snow Lake for disposal. A new waste disposal ground is being planned for the Lalor Mine, which will include a sludge drying and disposal facility. Preliminary siting and engineering for this waste disposal facility has been completed. This issue has been discussed with Mr. Pilgrim in Snow Lake.

We would be pleased to provide any other information that you may require. Thank you very much for your kind attention to this application.

Sincerely,



Stephen West, P.Eng.
Superintendent, Environment Control

cc: Sheryl Rosenberg
Tom Goodman
Brad Lantz