

ENVIRONMENT CANADA'S

SUBMISSION TO THE

NUNAVUT WATER BOARD

ON AN APPLICATION FOR RENEWAL OF

WATER LICENCE N4L2-0262, NWB FILE NWB1POL

BY TECK COMINCO LTD.

FOR THE DECOMMISSIONING AND RECLAMATION OF

POLARIS MINE

March, 2003

1. INTRODUCTION

Teck Cominco Ltd. has submitted an application to the Nunavut Water Board (NWB) for the use of water and deposit of wastes during their decommissioning and reclamation work at the Polaris Mine site. Environment Canada (EC) has reviewed the information supplied by Teck Cominco Ltd. in its water licence (N4L2-0262 / NWB1POL) renewal application.

The water use, tailings disposal and effluent discharge at Polaris Mine are governed by NWB Water Licence N4L2-0262, which expired on December 31, 2002. The term of this licence has been extended until June 1, 2003 or the approval of the renewal application, whichever is sooner. The renewal will cover decommissioning, reclamation and monitoring of the site. Teck Cominco Ltd. applied for an eight year term (2003 - 2011) to cover two years of closure work and six years of post-closure monitoring. The land surface leases all expire on April 30, 2011.

Environment Canada's intervention will primarily focus on the decommissioning of the Garrow Lake Dam, the implementation of a long-term water quality monitoring program, and ensuring the establishment of reasonable discharge limits. The intervention takes into consideration all of the documents associated with the water licence renewal, including the Decommissioning and Reclamation Plan (dated March 2001) that has been submitted by Teck Cominco Ltd., and comments relating to the plan that have been submitted by regulators and other interested parties.

The recommendations presented within this intervention are based on the information supplied by Teck Cominco Ltd. Should new or additional relevant information be brought forward by Teck Cominco Ltd. or be identified during the public hearing, this submission will be re-examined. Within the context of the additional information, any changes in EC's recommendations or positions will be brought to the attention of the NWB.

Environment Canada

The mandate of EC is defined by the *Department of the Environment Act*. This Act provides the Department with a general responsibility for environmental management and protection in terms of the need to foster harmony between society and the environment for the economic, social, and cultural benefit of present and future generations of Canadians. The Department shares this responsibility with the provinces and territories. Environment Canada is also responsible for providing specialist or expert information and knowledge for the preservation and enhancement of environmental quality.

The operations of the Teck Cominco Ltd. Polaris Mine are subject to the following statutes administered by Environment Canada: Section 36(3) of the *Fisheries Act*, the *Canadian Environmental Protection Act (CEPA)*, the *Migratory Birds Convention Act*, the *Canada Wildlife Act*, and the *Species at Risk Act*.

Polaris Mine is currently captured by the Metal Mining Effluent Regulations (MMER) under the *Fisheries Act*, since it was in commercial operation on June 6, 2002. Polaris Mine will be required to meet all of the requirements of the MMER for a minimum of three years. Teck Cominco has requested 'recognized closed mine' status for the Polaris Mine site. As the request was made on November 28, 2002, the Polaris site will be captured by the MMER until at least November 28, 2005. At that time, 'recognized closed mine' status will be granted, if the Polaris Mine has fulfilled all of the necessary requirements. Once 'recognized closed mine' status is obtained, the effluent from the site will be subject to the general provisions of the *Fisheries Act*.

Environment Canada's submission is based primarily on its mandated responsibility for the enforcement of Section 36(3) of the *Fisheries Act*. This section of the *Fisheries Act* prohibits the "...deposit of a deleterious substance of any type in water frequented by fish...." A first step towards compliance with this requirement is demonstrating that the effluent is non-acutely lethal. This may be demonstrated by an acute lethality determination such as *Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout* (Reference Method EPS 1/RM/13, July, 1990) and amendments (May 1996), or other techniques and procedures.

RECOMMENDATIONS

This intervention is primarily focused on the decommissioning of the Garrow Lake Dam, the implementation of a long-term water quality monitoring program, and ensuring the establishment of reasonable discharge limits. Environment Canada recommends that the following conditions be included in the water licence:

- Environment Canada **recommends** the establishment of an in-depth monitoring program for Garrow Lake to determine if the predictions made by Teck Cominco are accurate. In particular, it is necessary to confirm the predictions regarding the stability of the halocline (transition zone between brackish upper layer and the anaerobic, hypersaline bottom layer) and expected metal concentrations in the mixolimnion (the upper layer) are accurate.

With the partial removal of the Garrow Lake Dam, the water quality in the mixolimnion must be closely monitored to ensure that it is not degrading. Teck Cominco Ltd. is proposing to conduct a two-phase monitoring program

on the water quality of Garrow Lake (January 2, 2002 letter from Teck Cominco Ltd. to Bruce Donald re: Response to Environment Canada Letter re Post-Closure Monitoring). Phase I would be conducted from mine closure until 2004, and Phase II would occur from mine closure through until 2011.

Environment Canada **recommends** that the new water licence include requirements for annual sampling until 2011, including a full metal MS-ICP scan in addition to pH, temperature, conductivity, TSS, and salinity.

As currently proposed, the Phase I monitoring plan for Garrow Lake does not include sampling requirements for all parameters at all depths. EC **recommends** that the sampling take place three (3) times per year, during the winter when the ice thickness is the greatest, at the first opportunity once the ice is off from the lake, and just prior to initial freeze up. Furthermore, EC recommends that samples be taken at one metre intervals to a depth of 20 metres, with additional samples taken at 22, 30 and 40 metre depths. These samples should be taken from at least two (2) stations, one situated over the deepest portion of the lake (centrally located if possible) and one near the outlet of the lake, with a depth of at least 19 metres.

The Phase II monitoring plan as proposed by Teck Cominco Ltd. contains minimal monitoring requirements. Environment Canada **recommends** that the requirements of the Phase I monitoring be extended throughout the life of the monitoring program (until 2011), with provision for reduced frequency if results warrant a reduction.

- The decision by Teck Cominco Ltd. to use the partial removal of the Garrow Lake Dam as the preferred alternative for the decommissioning and reclamation of the tailings impoundment assumes a thorough understanding of the dynamics of the lake. EC **recommends** that the water licence renewal include requirements for Teck Cominco Ltd. to monitor ice thickness levels, yearly precipitation, lake water levels, and wind events throughout the monitoring program and to determine the final bathymetrics of Garrow Lake. This information will ensure a complete understanding of Garrow Lake which will assist in determining the overall long term stability of the lake.
- As the Polaris Mine has ceased production and begun decommissioning, this facility no longer has the infrastructure in place to ensure that the discharge limits set out in the current water licence are met. As such, Environment Canada **recommends** that effluent quality criteria be set which reflect the shift from a controlled discharge facility to one with intermittent discharges to the natural environment. Any discharge from Garrow Lake must meet effluent quality limits that protect the receiving environment. An outlet station in Garrow Creek should be established and monitored to ensure that any water discharged meets established licence limits. Such a station is required given the lack of any control or response mechanisms once release starts.

Environment Canada is willing to work with the NWB to help establish these limits.

- Environment Canada **recommends** that the water licence also include a provision to ensure that, in the event that the water quality of surface waters of Garrow Lake or its associated discharge channel is degraded due to an upset in the stability of Garrow Lake, Teck Cominco Ltd. will be held fully responsible for re-establishing appropriate containment and treatment, if required. This provision should include a security bond, in an amount to be determined by the NWB and DIAND.

ADDITIONAL COMMENTS

- Environment Canada has reviewed the design and cover material chosen for the closure of the landfill sites and agrees with Teck Cominco's recommendations that further durability tests should be undertaken to evaluate "shale" as a cover material. Environment Canada agrees that these studies be completed in order to ensure the long term stability of the cover materials from freeze/thaw degradation.
- General post closure monitoring of the operational areas of the mine should be established to verify that reclamation activities have indeed left a stable and clean site. Areas to be monitored would include the marine foreshore and shoreline areas adjacent to areas of activities, quarry and landfill sites, fuel storage areas, pipeline corridors, and any sites associated with spills of tailings, hydrocarbons or other hazardous materials.
- As noted earlier, Polaris Mine is currently captured under the Metal Mining Effluent Regulations (MMER) under the *Fisheries Act*. Environment Canada will work with Teck Cominco to ensure that the provisions of these Regulations are respected.