Bruce J. Donald
Reclamation Manager

June 14, 2005

Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU X0B 1J0
Attention: Rita Becker, Manager of Finance, Licensing, and Admin.

and

Department of Indian and Northern Development
Box 100
Iqaluit, NU X0A 0H0
Attention: Carl McLean, Manager, Lands Administration

Dear Rita and Carl;

Re: Polaris Mine Decommissioning and Reclamation – Response to Letter of Direction Dated February 28, 2005

The letter of February 28, 2005 from the Nunavut Water Board ("NWB") and the Department of Indian and Northern Affairs Canada ("INAC") identified a number of outstanding issues that relate to the documentation and reporting of reclamation activities and monitoring data from the Polaris Mine. It is Teck Cominco's intention to submit a final detailed report of all outstanding items by August 30th, 2005.

Attached to this letter is a discussion of the monitoring requirements included in the Water Licence and the Polaris Mine Decommissioning and Reclamation Plan ("DRP"), as well as other monitoring requirements resulting from work approvals issued subsequent to the Water Licence and DRP approvals. The discussion of monitoring requirements identifies items that are obsolete as well as recommending revised monitoring that should be instituted now that reclamation activities have been essentially completed.

The site inspection conducted by INAC and the NWB on September 9th, 2005 identified some areas where additional reclamation activities are required. Additionally, the inspection report identified a number of outstanding issues related to monitoring requirements and these are addressed in the attached review of site monitoring requirements. Relative to the additional reclamation work requested, the following are planned:

a) Clean up of Litter at the Site:
   It was anticipated that there would be some work outstanding after a major reclamation program so an exploration style temporary camp was established on site to provide shelter for a small crew. A crew is currently being mobilized to reside at the site for part of this summer

to conduct monitoring activities and to complete the clean-up of scrap and other wastes identified in the inspection report.

b) Contouring and Grading of Areas identified by INAC's consultant, BGC:
Several pieces of mobile equipment have been left on site including an track mounted excavator, a small tracked dozer, and a dump truck. It was assumed that after the substantial amount of site re-grading that was undertaken over the past two years that some minor erosion or settlement of earth works could occur over the first year or two as the site stabilizes. The final inspection by INAC identified several areas that require some additional re-sloping and grading. It is not intended to conduct any earth work this summer but rather to monitor site conditions. Potentially by the summer of 2006 some earth work requiring maintenance may be identified. If so, then to be cost effective, in 2006 a small crew of equipment operators would be mobilized to site to complete both the outstanding reclamation work and the maintenance work.

Please do not hesitate to contact the undersigned if you have any questions or concerns or wish to discuss the contents of this letter further.

Yours truly,

Bruce Donald,
Reclamation Manager

Attachment (1)

Cc: Walter Kuit, Teck Cominco

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June 14, 2005

POLARIS MINE

POST-RECLAMATION MONITORING PROGRAM

1. CURRENT STATUS OF THE SITE

Reclamation of the Polaris Mine site was completed in September of 2004 (with the exception of a few minor items identified in the September INAC inspection). The site is unoccupied by personnel except as required for routine site monitoring or to conduct the remaining minor reclamation work. The site has an exploration style temporary camp established that is suitable for summer use for up to 6 or 8 people.

There are several pieces of mobile equipment remaining at site including a tracked backhoe, a D6 Dozer and a dump truck. This equipment is suitable for completing the outstanding reclamation work identified during inspections by INAC. After two years of intensive reclamation activity at the site, it would not be a surprise if some minor touch up earthwork is required as the site stabilizes over the first one or two years after completion of reclamation.

The site is approximately 100 km North West of Resolute Bay and the only practical access is through the use of chartered aircraft. As the site is not occupied, aircraft will only land during daylight hours and when lighting conditions allow for good visual verification of landing conditions. The majority of the site monitoring will be done during the short snow free period in the summer when the ground surface of the site can be observed.

2. COMPONENTS OF THE SITE TO BE MONITORED

The Polaris Mine site comprises of a number of components, each with their own reclamation objectives and monitoring requirements.

2.1. Mine Workings

The primary objectives of decommissioning are to ensure public and wildlife safety by sealing mine openings and by monitoring subsidence of the surface over the mine workings. Monitoring should include:

2.1.1. Geotechnical Inspections:

- Of the subsidence in the area of the Reclamation Landfill,
- Of the stability and integrity of the mine portal seals,
- Of the stability of the re-contoured slopes at the New Quarry.

2.2. Landfills

The primary reclamation objective is to ensure that the contents in the landfills remain permanently frozen. To confirm this, the thermal regime of the landfill cover caps should be monitored and the physical integrity of the cover caps are inspected at both of the Operational Landfill and the Little Red Dog ("LRD") Quarry Landfill. In addition, the LRD Quarry Landfill contains metals contaminated soils so that surface run off should be sampled. Monitoring should include:

2.2.1. Geotechnical Inspections:
- Of the slope stability of the cover caps, signs of settlement of the landfill surface, erosion by surface run-off

2.2.2. Thermal Monitoring
- Of the thermal performance of the cover caps and the landfill contents

2.2.3. Water Quality Monitoring:
- Of any surface water flowing from LRD Quarry Landfill.

2.3. Garrow Lake and Garrow Creek

Decommissioning of Garrow Lake and Garrow Creek was done by lowering the surface of the lake to its original elevation and the removal of Garrow Dam. These activities were done to allow the lake to discharge naturally and for the discharge from the lake to be returned to the original creek channel. The monitoring objectives are to ensure Garrow Lake stratification remains stable (i.e. retains its density gradient), that the water quality of the surface layer of Garrow Lake (the Mixolimnion) remains low in metals (most notably, zinc), that the resulting effluent discharge from the Lake meets water quality objectives, and that the outlet channel of Garrow Lake (i.e. in the area of the wavebreak structure) including Garrow Creek (i.e. in the area of the decommissioned dam) remain stable. Monitoring should include:

2.3.1. Geotechnical Inspections:
- Of the stability of the discharge point of Garrow Lake into Garrow Creek in the area of the former wavebreak structure,
- Of the stability of the decommissioned Garrow Lake dam fill on the slopes of Garrow Creek and the associated rip-rap channel.

2.3.2. Physical Stability of Garrow Lake:
- Confirmation that the stratified structure of Garrow Lake remains intact,
- Monitoring mechanisms that could disturb the stratification of the lake.

2.3.3. Water Quality Monitoring:
- Of the water column in Garrow Lake,
- Of the effluent discharge from Garrow Lake.

2.4. Frustration Lake

Decommissioning of the freshwater system at Frustration Lake included leaving the jetty largely intact so as not to remove fish habitat. The objective of monitoring is to confirm that there is minimal erosion of the jetty during open water season to protect the aquatic environment. Monitoring should include:

2.4.1. Geotechnical Inspections:
- Of the jetty area for signs of abnormal erosion.

2.4.2. Water Quality:
- Sampling of the water for suspended solids during open water season.

2.5. Marine Foreshore and Former Dock Area

Reclamation activities included the decommissioning of the marine dock and the re-contouring of the adjacent foreshore areas to improve the aesthetics of the site and to control erosion of the foreshore. The foreshore area is influenced by the pack ice through the majority of the year and is exposed to wave action during a brief period during summer (usually in August and September). The objective of monitoring is to confirm the foreshore areas are stable from abnormal erosion during open water periods. Monitoring should include:

2.5.1. Geotechnical Inspections:
- Of the rate of erosion of the foreshore area over time.

2.6. Site Roads and Other Surface Disturbances at Site

Mine operations required the construction of roads, the installation of culverts, construction of an airstrip, and other re-contouring of site surface features. During decommissioning and reclamation activities, site roads were re-contoured to lessen their visual impact, culverts and obstructions were removed to restore natural drainage patterns, and other disturbances to physical surface features were re-contoured to improve the visual appearance and to ensure physical stability of slopes. Monitoring objectives are to confirm the physical stability of these features and to verify the site is properly cleaned up of debris and garbage. Monitoring should include:

2.6.1. Geotechnical Issues:
- Of disturbed drainage paths for abnormal erosion,
- Of disturbed slopes for signs of erosion or slope instabilities.

2.6.2. General Site Aesthetics
- Of the general tidiness of the site.

2.7. Former Building Sites

Decommissioning and reclamation of the site included the removal of buildings so that no further monitoring is required of these structures. An exception is the former Concentrate Storage Building which has a thin layer of residual metals contamination over a portion of its foot print. This minor contamination was isolated by a cover cap. Monitoring objectives are to confirm that surface soils quality remains within remedial targets for metals concentrations. Monitoring should include:

2.7.1. Geotechnical Aspects:
- Of the cover for signs of erosion from any surface water flows.

2.7.2. Soil Quality:
- To confirm that metals contamination does not migrate to the surface of the cover cap.

3. REVIEW OF EXISTING WATER LICENCE MONITORING REQUIREMENTS

3.1. Water Licence – Table 1 Monitoring Requirements.

Now that the reclamation program is complete and the project is into the post-reclamation monitoring phase, Table 1 of the Water Licence monitoring requirements has been reviewed to identify items that remain relevant, items that are obsolete, and items that should be updated. While comments and proposals regarding changes to Table 1 are discussed below, Section 4 of this letter lists proposed monitoring requirements for the post-reclamation period and so will repeat some of the comments made in this section of this document or makes reference to them.

Discussions of the monitoring requirements listed in Table 1 are presented in the same order that they occur in the Water Licence.

Station 262-1: Frustration Lake Pump House

The Water Licence requires monthly monitoring of the volume of fresh water use. The pump house and fresh water system have been decommissioned so that there is no freshwater use after September of 2004. As of 2005 the Water Licence does not authorize freshwater use.

Proposal: That the requirement for reporting volumes of fresh water used be discontinued starting in January 2005.

Station 262-1: Garrow Lake At Centre

Sampling of Garrow Lake water quality parameters is required three times annually. The sampling events are to occur at mid-winter, at maximum ice thickness, and during the period of maximum melt of the ice. The requirement to sample the lake three times per year was initiated while the mine was in production and tailings were being actively discharged into the lake during all seasons of the year which was prudent. Now that disposal of tailings has ceased and during the winter when the lake is ice covered, there are no physical processes or mechanisms that could cause a disturbance to the lake structure. The mid-winter sampling event is required at a time when there is no daylight at the site (due to the high Arctic latitude). Charter aircraft will not land at site in darkness due to lack of visibility, effectively preventing access to the site to conduct the sampling in the middle of the winter.

Proposal: That sampling continue to be required during maximum ice thickness in the late winter when aircraft can land at the site and again in the summer (August) when the lake has the best chance of being ice free.

The water chemistry of the lake is of key importance in the mixolimnion and through the halocline. The mixolimnion supports sculpins and represents the effluent that is discharged to the ocean each summer. The area below the

halocline through the deeper portion of the water column is not fish habitat, and the requirement to sample every metre between 10 metres depth and 20 meters depth does not add useful information regarding the stability of the lake.

Proposal: That the number of samples taken between the 10m and 20m depth be reduced from every meter to sampling at 10m, 15m and 20m depth. Also delete the sample at 22m but continue requiring the 30m and 40m sample depth. During the winter sampling through the entire water column totals 12 samples and during the summer would require 15 samples (as there is no ice) through the water column. This is still a comprehensive sampling of the water column.

Station 262-3a: Garrow Lake Near Outlet Where Depth at Least 19m

After more than 20 years of sampling, the comparative results between stations 262-3 and 262-3a are consistently similar. The physical properties and the water chemistry of Garrow Lake vary vertically through the water column, not laterally. There is no chemical or density reason why they should differ. If there were a disturbance to the lake stratigraphy it would not be a localized event and would be evident throughout all locations of the lake. While sampling the same water body at two locations does not add information, it does add considerably to the cost of the sampling. Due to the number of samples required and the sampling conditions, it is difficult and sometimes impossible to complete the sampling program at both stations in one day. To conduct the winter sampling event a chartered aircraft must fly to the site and to remain at site (for safety reasons) during the sampling event. If a second day of sampling is required, the additional plane charter costs would be in the order of $4,000 in addition to the increased labour and laboratory costs.

Proposal: That sampling at Station 262-3a be discontinued.

Station 262-4: Garrow Lake Near Outlet

The Water Licence requires that during the decommissioning of the Garrow Lake dam that vibration monitoring of peak pressures in the lake be conducted. The dam has been decommissioned and so there will be no additional blasting at the site.

Proposal: That the requirement for monitoring of peak pressures is no longer relevant and should be removed from the monitoring program.

Station 262-7: Final Discharge Point From Outlet of Garrow Lake at Dam Discharge Siphons

During periods of flow in Garrow Creek at the former Garrow dam location, the Water Licence requires weekly sampling of water quality and flow rates. It should be noted that the siphons no longer exist as the dam has been

decommissioned and the natural flow patterns in Garrow Creek have been restored. There is also a requirement for both acute and sub-acute lethality testing during periods of flow in the creek. The above requirements are also mandated by the Metal Mining Effluent Regulations ("MMER"). The Polaris Mine is a "Closed Mine" under the MMER which requires a 3 year period of monitoring after closure. This requirement will be fulfilled by the end of 2005. The MMER (and the Water Licence) requires a final report of the Environmental Effects Monitoring program to be submitted by December 2005. The final MMER Annual Report for the 2005 monitoring season will be submitted March 31, 2005. These studies and monitoring reports will have useful information that should be taken into consideration before any changes to the effluent monitoring program are proposed.

Proposal: That a revision to the Garrow Lake effluent monitoring program is considered once the MMER requirements have been submitted including the EEM study report and the 2005 effluent monitoring data. These will be submitted to Environment Canada and the Nunavut Water Board ("NWB"). Teck Cominco anticipates that a submission to update the effluent monitoring program would be included with the 2005 annual Water Licence report. It is anticipated that the submission would propose changes to the monitoring program beginning in the spring of 2006.

Station 262-7a: Receiving Environment Exposure Area Surrounding Point of Entry of Effluent from Final Discharge Point

Monitoring of the receiving environment (Garrow Bay) is required by the MMER and for consistency was adopted by the Water Licence.

Proposal: As stated above, once the final MMER regulatory and environmental effects monitoring reports have been issued, TCL proposes to make a submission to the Water Board to modify the monitoring requirements for the receiving environment starting in the 2006 monitoring season.

Station 262-7b: Reference Area with Respect to Station 262-7a

Monitoring of a reference area relative to the receiving environment (Garrow Bay) is required by the MMER and for consistency was adopted by the Water Licence.

Proposal: As stated above, once the final MMER regulatory and environmental effects monitoring reports have been issued, TCL proposes to make a submission to the Water Board to modify the monitoring requirements for the receiving environment starting in the 2006 monitoring season.

Station Therm No. 14: North Thermistor in Garrow Lake Dam
This station is obsolete as the dam has been decommissioned removing this thermistor.

Proposal: Monitoring of this station should be removed from the monitoring program as it is obsolete.

Station Therm No. 15: North Thermistor in Garrow Lake Dam
This station is obsolete as the dam has been decommissioned removing this thermistor.

Proposal: Monitoring of this station should be removed from the monitoring program as it is obsolete.

Station Therm No. 16: North Thermistor in Garrow Lake Dam
This station is obsolete as the dam has been decommissioned removing this thermistor.

Proposal: Monitoring of this station should be removed from the monitoring program as it is obsolete.

Garrow Lake: Tailings Piles in Garrow Lake
The final bathymetric survey was completed after tailings discharges had been discontinued as required by the Water Licence. This was a one time requirement to document the final location of the tailings within Garrow Lake.

Proposal: The monitoring requirement has been completed so it should be removed from the monitoring program.

STN. No. 8: North Quadrant – Garrow Lake near Shore
Monitoring pins were installed just above the foreshore area of Garrow Lake to monitor whether there was any instability of the slopes surrounding the lake as the lake elevation was lowered. Soils in these areas were saturated and would have been in an unfrozen state while being submerged. As they became exposed with the lake level decreasing, the soils would have been at their most unstable state (before they drained and as permafrost re-established itself). No evidence of any erosion or slope instabilities has been identified during the 2003 and 2004 monitoring seasons. By the spring of 2006, these soils will have been drained and exposed to ambient temperature conditions for two years.

Proposal: To conduct the final monitoring monthly in June, July and August of 2005 with no further monitoring of this station starting in 2006.

STN. No. 9: East Quadrant – Garrow Lake Near Shore
Same monitoring requirements as for Station No. 8

Proposal: No further monitoring of this station should be required starting in 2006.

STN. No. 10: South Quadrant – Garrow Lake Near Shore
Same monitoring requirements as for Station No. 8

Proposal: No further monitoring of this station should be required starting in 2006.

STN. No. 11: West Quadrant – Garrow Lake Near Shore
Same monitoring requirements as for Station No. 8

Proposal: No further monitoring of this station should be required starting in 2006.

STN. No. 12: Garrow Creek Near Outlet of Garrow Lake
While there as water flowing in the creek, the Water Licence required the measurement of TSS in the creek until the dam was decommissioned. As the dam has been decommissioned this requirement has been satisfied.

Proposal: That the requirement to measure TSS in Garrow Creek under this item be deleted. TSS is still being monitored as apart of the requirements at Station 262-7.

While there was water flowing in the creek, the Water Licence required the photographing of the creek channel during 2004. As the dam has been decommissioned this requirement has been satisfied.

Proposal: That an annual photographic record be conducted as discussed once annually from pre-established key locations along the length of the creek as part of the annual geotechnical inspection. Suggest these locations be at the inlet to the creek, at the former dam and at the outlet of the creek at the ocean.

STN. No. 13: Garrow Creek Midway Between Garrow Lake and Garrow Bay

Proposal: Same comments as for Station 12.

STN. No. 14: Garrow Creek Midway Between Garrow Lake and Garrow Bay

Proposal: Same comments as for Station 12.

STN. No. 15: Along the Length of Garrow Creek from Garrow Lake to Garrow Bay

The Water Licence required a daily inspection of the length of the Creek during decommissioning of the dam.

Proposal: The requirement has been completed and should be removed from the updated monitoring program.

Photograph the length of the creek channel once after completion of the dam removal.

Proposal: The requirement has been completed and should be removed from the updated monitoring program.

Photograph the creek channel every 100m during June to October 2004.

Proposal: This requirement has been completed and is no longer applicable and so should be removed from the updated monitoring requirements.

Station DS 1: Dock and Shoreline at Ocean Between Section Lines 600 – 1800

Visual inspections were required on a daily basis during the period of excavation of the marine dock and adjacent shoreline.

Proposal: This work is complete so the requirement is obsolete and should be deleted.

Station DS 2: Dock and Shoreline at Ocean Between Section Lines 600 – 1800

Measurements of TSS are required on a daily basis during the period of excavation of the marine dock and adjacent shoreline. This sampling was to monitor suspended sediments caused by equipment working in the water.

Proposal: This work is complete so the requirement is obsolete and should be deleted.

Station DS 3: Dock and Shoreline at the Ocean between Section Lines 600 – 1800

Weekly photographs of the foreshore were required in the area where excavation of the marine dock and adjacent shoreline was occurring.

Proposal: This work is complete so the updated monitoring requirements should be updated to an annual photographic recording of the shoreline conditions every 100m between the 600 and 1800 Section Lines.

General: Inspection of All Earthworks in Accordance with Part H. Item 6

An annual geotechnical inspection of all earthworks is required. This requirement should continue on an annual basis for the term of the Water Licence and is described in detail in Section 4.3

3.2. Proposed Changes to Other Water Licence Reporting Requirements:

The Water Licence has requirements separate from Table 1 that should be updated to take into account that the site is now in the post-reclamation phase and that conditions and activities are different than they were at the time the Water Licence was issued.

3.2.1. Notice of Discharge

Part D, Section (2) of the Water Licence requires the Licensee to provide at least ten days written notice to an Inspector prior to any planned discharges of Effluent from the Tailings Impoundment Area during each calendar year. Now that Garrow Lake dam has been removed and discharge from the lake is not controlled, it is not possible to notify an Inspector in advance of when flow will start from the lake.

Proposal: This item should be removed from the License requirements.

3.2.2. Reporting Periods

The Polaris Mine site is vacant now that the mine has ceased operations and the Decommissioning and Reclamation Plan ("DRP") work has been completed. During mine operations it was important for quarterly reporting of water use, tailings disposal, and other operational or reclamation activities. The monitoring activities proposed include:

- No monitoring in the 1st Quarter,
- Only the Garrow Lake monitoring event in the 2nd Quarter,
- The remainder of the site monitoring occurring in the 3rd Quarter, and
- No monitoring in the 4th Quarter.

Proposal: It is proposed that starting in 2006 only an Annual Report be submitted. It is proposed that the Annual Report is due by year end (Dec 31st) rather than the following March 31st. This is practical as there is no 4th Quarter monitoring to report. Any

geotechnical issues requiring action prior to the end of the year would be identified at the time of the annual geotechnical inspection. If there were any water quality non-compliances issues these would be known upon receipt of laboratory results. The Water Licence and DRP should require the reporting of these exceptions within 30 days of being identified. Also refer to Section 3.2.3 below.

3.2.3. Reporting of the Annual Geotechnical Inspection

The Water Licence requires reporting of the annual geotechnical inspection within 60 days of the inspection.

Proposal: The geotechnical inspection should be conducted during the snow free period during the summer. It is proposed that the inspection is normally reported as part of the Annual water licence report (at the end of December) unless the inspection identifies any issues of concern that the geotechnical engineer recommends be dealt with urgently (i.e. prior to year end). For issues of concern, the Water Board would be notified within 30 days of the inspection rather than the currently required 60 day period. The notice would then be followed up with a formal report within the current 60 day period (from the inspection date). The reasoning for requesting this change it due to the difficulty in obtaining routine draft reports from consultants, reviewing them, and issuing of the final geotechnical report within 60 days of the inspection. This proposal eases the burden of obtaining formal reports quickly when there are no significant concerns but provides for a quicker response when there are issues of significance.

4. PROPOSED POST-RECLAMATION MONITORING PROGRAM

The proposed revised post-reclamation monitoring requirements are discussed by the mine component that they relate to, and by the type of monitoring proposed. Unless otherwise stated, the frequency of the monitoring is annually and the timing of the monitoring is during the snow free period during the summer (3rd Quarter).

4.1. Mine Workings

4.1.1. Geotechnical Inspections

4.1.1.1. Subsidence Area

In the vicinity of the Reclamation Landfill, the ground surface has been subsiding for a number of years due to ground movement within the underground mine workings. Over the past two years the movements have slowed so that they do not present a public safety issue. While Teck Cominco believes that the majority of the surface ground movement has already

occurred and that the surface features of the area are increasingly stable, this must be demonstrated through monitoring.

Proposal: To conduct annual visual inspection of the area combined with topographic surveys of this area during the snow free period each summer to monitor changes in the ground surface profile. Over a number of years this will identify if there are any significant ground surface movements and document any trends of changing subsidence rates. It is proposed that the results of these annual surveys are submitted as part of the annual geotechnical review in the Annual Report.

4.1.1.2. Mine Portals

The mine portals were sealed to prevent access to the underground mine workings by both the public and wildlife. Surrounding topography was re-contoured to hide the openings, to improve the visual appearance of the area, and to eliminate any steep slopes associated with the mine portals.

Proposal: The annual geotechnical inspection should include visual inspections, photographic documentation, and a written discussion of the stability of the slopes at the four portals that were sealed as part of the reclamation program (the Main Portal, the Exploration Portal, the CV-03 Portal and the North Portal).

4.1.1.3. New Quarry Area

The New Quarry area was a surface quarry where shale was excavated for road maintenance and other uses. At closure the pit walls were re-sloped for public safety and to improve the visual aesthetics.

Proposal: The annual geotechnical inspection should include visual inspections of the slopes for instability or erosion.

4.2. Landfills (Operational Landfill & LRD Quarry Landfill)

There are two major landfills on site, the Operational Landfill and the Little Red Dog ("LRD") Quarry Landfill that have been decommissioned by installation of a 1.8m thick engineered cap. Monitoring of the landfills should include:

4.2.1. Geotechnical Inspections:

Performance of the landfill cover caps requires that the caps remain physically intact.

Proposal: Annual geotechnical inspections should be conducted during the snow free period of the summer and should include:

- *Inspection of the landfill slopes for signs of instability,*
- *Inspection for signs of erosion by surface run-off, and*
- *Inspection of the landfill surface for signs of settlement.*

4.2.2. Thermal Monitoring of the Operational and LRD Quarry Landfills

The Water Licence and DRP approvals require monitoring of the landfills through the use of thermistors in both landfills. Monitoring of the temperatures should be conducted to document:

a) That the permafrost is being re-established throughout the vertical extent of the landfills, and
b) That during the summer, that the base of the active layer remains within the cover cap system and does not extend into the debris buried in the landfill.

Teck Cominco investigated the use of frost gauges but literature indicates that these do not precisely indicate the point of freezing. The proposal below addresses the desire to more accurately monitor the active layer.

Proposal:

a) Spacing of Thermistor bulbs - Although the approval for the landfill design included the design for thermistors bulbs to be 0.5m apart in the cover cap, to provide for more precise monitoring of the active layer, we have decreased the spacing between thermistor bulbs in the thermistors we purchased. Custom manufactured thermistor strings with thermistors at 0.25m intervals between 0.75m deep to 2.5m deep will more accurately monitor the base of the active layer than the approved spacing. Below 2.5m, four additional thermistor bulbs will monitor the temperatures through the remaining thickness of the landfill.

b) Annual monitoring of the thermistors should be conducted either weekly (when personnel are on site) or through the use of data loggers (if personnel are not residing on site) between June 15th and August 15th. Frequent monitoring of temperatures will more precisely document the depth of the active zone. As the site is now abandoned and there is no power at the site for the data loggers, it is not practical to monitor temperatures during the remainder of the year, nor is it necessary as the maximum temperatures in the landfills will occur during the summer months and not during the cold winter months.

4.2.3. Drainage from LRD Quarry Landfill

During 2004 metals contaminated soils were disposed of in LRD Quarry Landfill. Approvals to place the metals contaminated soils in the LRD Quarry Landfill specified that surface water flowing out of LRD is to be sampled.

Proposal: During the annual summer site inspections, any surface water that is flowing from the LRD Quarry area will be sampled and analyzed for total metals (lead and zinc).

4.3. Garrow Lake and Garrow Creek

The closure objectives of Garrow Lake and Garrow Creek are primarily to protect water quality. Monitoring of Garrow Lake and Garrow Creek requires the following monitoring to document that the lake and creek features are stable and that water quality remains in compliance:

4.3.1. Geotechnical Monitoring Program

4.3.1.1. Of the shoreline features of Garrow Lake - Decommissioning of the Garrow Dam involved lowering the level of Garrow Lake, exposing shoreline features that were previously submerged. To ensure that these features were stable while they drained and as they permafrost is re-introduced into the area a program of erosion pins were established around the perimeter of the lake. This monitoring was to ensure there were no sediments being introduced into the lake as result of instability of shoreline features. Monitoring in 2003 & 2004 did not identify any stability concerns.

Proposal: To be cautious, continue the previous erosion pin monitoring pin program for one more year (2005) and then to discontinue the monitoring subsequently if no issues are identified by the monitoring and, if recommended by the geotechnical engineer conducting the 2005 inspection.

4.3.1.2. Of the wavebreak structure - Garrow Creek is the only flow out of Garrow Lake and therefore controls the elevation of the lake. During operations, a wavebreak structure was constructed between Garrow Lake and Garrow Creek. During decommissioning, the wavebreak structure in the channel of Garrow Creek was excavated to ensure naturalized flow out of the lake was not impeded. The remainder of the wavebreak structure was partially removed for aesthetic purposes.

Proposal: Monitoring should include an annual inspection of the Garrow Creek channel in the area of the wavebreak structure for signs of erosion. Stability of the discharge channel should be demonstrated by surveying the lake elevation each year after the annual discharge cycle of the lake has been completed in early August. If the lake elevation does not change then clearly the elevation of the outlet channel is not being eroded as it controls the elevation of the lake.

4.3.1.3. Of the residual slopes of the decommissioned Garrow Lake dam and the associated rip-rap channel - Decommissioning of the Garrow Lake dam was accomplished by removing the centre portion of the dam which allows Garrow Creek to resume flowing in its original channel.

Proposal: Monitoring of the stability of the residual portions of the dam remaining on the banks of Garrow Creek should be conducted on an annual basis. Monitoring should include inspections for stability of the slopes, signs of erosion, and to confirm the integrity of the rip-rap channel. This would be done as part of the annual geotechnical inspection.

4.3.2. Physical Stability of Garrow Lake

Monitoring requirements to document the stability of the stratification of Garrow Lake at Station 262-1 should continue as proposed in Section 3 previously (Review of Existing Water Licence Monitoring Requirements).

As identified in the review of Garrow Lake stability in the DRP, high winds over an extended period of time is the only mechanism that has sufficient energy to cause mixing in the upper portion of Garrow Lake. Winds can only affect the lake during ice free periods that can occur annually, typically during August.

Proposal: When the site is not occupied by personnel, wind speed data will be monitored by collecting data from the weather station at Resolute on a weekly basis from mid-July to mid-September each year. If a major wind event sufficient to potentially cause mixing of in excess of 5m of the mixolimnion *of Garrow Lake occurs, then a sampling event to monitor the lake stratigraphy will be conducted on a priority basis. The wind event would be reported to the Water Board and INAC within 30 days and the results of the laboratory data would be reported within 30 days of being received.*

4.3.3. Water Quality Monitoring of Garrow Lake, Garrow Creek and the Receiving Environment

Please refer to discussions regarding water quality monitoring of Garrow Lake, Garrow Creek and Garrow Bay presented in Section 3 (Review of Existing Water Licence Monitoring Requirements) monitoring stations 262-1, 262-3a, 262-7, 262-7a, and 262-7b.

4.4. Frustration Lake

Decommissioning of the freshwater system at Frustration Lake included leaving the jetty largely intact so as not to remove fish habitat. The primary aspect to be monitored is that during open water season that there is no excessive erosion of the jetty which could harm fish habitat.

4.4.1. Geotechnical Inspections:

- The annual geotechnical inspection of the site should include the jetty area for signs of abnormal erosion.

4.4.2. Water Quality:

- On an annual basis, sample Frustration Lake during open water season for total suspended solids.

4.5. Marine Dock and Foreshore Area

The marine dock and adjacent foreshore area was re-contoured to a flat slope to minimize the rate of erosion of the foreshore and to improve its aesthetic appearance. From year to year the change of appearance of the foreshore area is hard to judge without objective monitoring of the changes in the shoreline.

Proposal: To conduct annual topographic surveys along three transects extending from the ocean back up the foreshore for 30 metres. The transects would be initiated at the ocean located at each of the 1000m, 1200m and 1400m section lines shown on Westmar Drawing Nbr. 02-101 Rev. C. These locations are representative of the recontouring work conducted during the reclamation of the foreshore area. Comparing section drawings from year to year will identify any significant changes to the shoreline profile over time. Additionally, photographs of the foreshore at these locations should accompany the annual geotechnical inspection of the marine foreshore.

4.6. Site Roads and Other Surface Disturbances at Site

The objective of monitoring is to confirm that the re-contouring work of roadways and other disturbed areas remain stable and free from erosion with particular attention to areas where natural drainage patterns have been restored.

Proposal: The annual geotechnical inspection of the site should include roadways, areas where site drainage has been restored and general site features that have been re-contoured for aesthetic reasons.

4.7. Former Building Sites

In the Polaris Mine 4th Quarter 2003 Decommissioning and Reclamation Progress Report, Appendix 2 contained the close-out reports for remedial work completed during 2003. Included in Appendix 2 was a discussion of the soil cover placed over residual contamination in the Concentrate Storage Shed area. Reviews of this submission resulted in a request for additional information to be submitted in support of Gartner Lee's opinion that the soil cover placed over this area is sufficient to provide a barrier to eliminate an exposure pathway. At the time of preparing this submission, this response is outstanding but will be submitted with the 2004 reporting.

Proposal: Apart from the technical document from Gartner Lee Ltd. explaining the lack of potential for this to be an environmental concern, to confirm that there is no exposure to humans or wildlife, it is proposed to take two surficial soil samples from the area in question annually during site inspections and to analyze the samples for lead and zinc concentrations.

5. CONTINGENCY MONITORING PLANS

As identified previously, monitoring plans for the site have evolved as work has been completed making some of the monitoring obsolete and as monitoring objectives shift from 'construction work' monitoring to long term 'site stability' monitoring. Work at the site was completed last fall just before winter and this is the first year for the post-reclamation conditions of the site to be exposed to a summer season. This is a year of transition. Each year as data is collected from the site and as site monitoring documents how the site is behaving, it is recommended that on an annual basis there should be a review of the monitoring requirements.

Proposal: That as part of the annual Water Licence report where all of the site monitoring data for the previous year is reviewed, that recommendation for a revisions to the site monitoring program be submitted.