POLARIS MINE

JUNE 24, 2008

REQUEST FOR REDUCTION OF WATER QUALITY MONITORING REQUIREMENTS AND REDUCTION OF RECLAMATION SECURITY

TO
NUNAVUT WATER BOARD
AND
INDIAN AND NORTHERN AFFAIRS CANADA

June 24, 2008

Nunavut Water Board
Box 119
Gjoa Haven, NU X0B 0J0
Attention: Phyllis Beaulieu, Manager of Licensing

Indian and Northern Affairs Canada
P.O. Box 100
Iqaluit, Nunavut X0A 0H0
Attention: Spencer Dewar, Manager, Lands Administration

Dear Ms. Beaulieu and Mr. Dewar;

Re: Polaris Mine – Request for Reduction in Water Monitoring Requirements and Reduction of Reclamation Security

In September 2002, the Polaris Mine permanently ceased production. Starting immediately upon the mine closing, the decommissioning and reclamation program approved jointly by the Nunavut Water Board (Water Board) and Indian and Northern Affairs Canada (INAC) was initiated by Teck Cominco and continued until work was completed in September 2004. As reported, reclamation costs were approximately $68 million. Since reclamation was completed, regular and comprehensive monitoring of the site as required in the Water Licence and the approved Detailed Decommissioning and Reclamation Plan (DDRP) has been on going and reported regularly to both the Water Board and INAC. The monitoring results verify that the reclamation work completed has been performing as predicted and that the site is both physically and chemically stable. The monitoring results are submitted to the Water Board and INAC in detailed reports which are posted on the Water Board's ftp site for review and comment. On an annual basis, site inspections are conducted by INAC, and include other territorial and federal regulators and their inspection reports also confirm that conditions at the site are stable and compliant with the Water Licence and DDRP.

Teck Cominco is requesting the following:

1. A reduction in Water Quality Monitoring Requirements
   The Water Licence and the DDRP both have extensive water monitoring requirements for Garrow Lake and Garrow Creek. The monitoring of Garrow Lake is focused at demonstrating that the vertical stratigraphy of the meromictic lake remains intact and that the concentrations of metals in the water column remain stable or are decreasing. The water quality monitoring of Garrow Creek in the Water Licence mirrors the protocols required by the Metal Mining Effluent Regulations (MMER) which were applicable to the mine at the time of closure.

   The MMER were introduced for three reasons according to backgrounder documents issued by the Government of Canada:

a) To provide more comprehensive and stringent effluent quality standards,
b) To require mines to produce effluent that is non-acutely lethal to rainbow trout, and
c) For all mines to conduct a comprehensive Environmental Effects Monitoring Program

The monitoring requirements in the MMER are standardized across Canada to provide consistent collection of data so that statistical comparisons of data may be performed to evaluate the effectiveness of the new effluent quality standards. This program results in data being collected Canada wide that is useful to meet the MMER program objectives but not are necessarily important for protecting the environment at a specific site. A good example of this is the requirement for monitoring for radium 226 at Polaris where it is not a contaminant of concern but is a requirement for the MMER. The Environmental Effects Monitoring (EEM) program conducted at Polaris under the MMER and the Water Licence has shown that there are no significant environmental effects of the effluent (Garrow Creek) to the receiving environment. Environment Canada has accepted the Final EEM Interpretive report from Polaris and Teck Cominco has subsequently received confirmation that the mine has no further obligations under the MMER in a letter dated July 27, 2006 from Environment Canada (Attachment #1). However, the Water Licence continues to mirror the MMER monitoring requirements.

In 2006 Teck Cominco made presented to Environment Canada detailed analysis of Garrow Lake and Garrow Creek data (refer to Attachments #2 and #3) which demonstrated:

1. Very strong vertical stratification of Garrow Lake between surface and bottom waters with a pycnocline at about 10 m depth;
2. Since active tailings deposition ceased in 2002 there has been a continual decline in zinc concentrations throughout the water column;
3. Consistent seasonal patterns in zinc and salinity in Garrow Creek with no acute toxicity

More currently, the results of the 2007 monitoring program have been reported to both the Water Board and INAC and the data collected continues to support the same conclusions. The purpose of the presentations to Environment Canada was to obtain their support for Teck Cominco's request to the Water Board for reducing both the frequency and the complexity of the water quality sampling required for the site. Given the monitoring results to date and due to the remote location of the site Teck Cominco contends that the water sampling program in the Water Licence should be simplified and the frequency of testing reduced. The high cost of the water monitoring program and the potential safety risks to the personnel conducting the monitoring at this remote site are not justified given the comprehensive monitoring and study results obtained.

In a letter dated December 12, 2006 Environment Canada (Attachment #4) responded to Teck Cominco's presentations saying they supported:

- Ceasing all toxicity testing except for an annual acute test in August for Station 262-7;
- Reducing Garrow Lake sampling to once per month during the summer with the analysis retaining all parameters except for cyanide and radium 226 at Station 262-7;
- Discontinuing measurements of flows in Garrow Creek;
- Discontinuing monitoring of Garrow Bay exposure and reference areas;
- Continue sampling the vertical stratification of Garrow Lake in the maximum and minimum ice thickness conditions (i.e. two times per year).
- Teck Cominco had also requested that the two monitoring stations in Garrow Lake be reduced to one station as the data collected to date confirms that the data collected at the two stations are virtually identical. Environment Canada has not yet comment on this and we assume that they concur with this proposal.

2. Reduction of Reclamation Security Posted
   Currently Teck Cominco has posted reclamation security in the amount of $18 million for the Polaris Mine. As previously stated, by the end of 2004, Teck Cominco had spent approximately $68 million on the decommissioning and reclamation of the site to eliminate reclamation liabilities at the site apart from post-reclamation monitoring requirements. Since completion of the site reclamation, Teck Cominco has demonstrated that the site is stable and is performing as predicted in the DDRP. Annual inspections by INAC and other regulatory agencies have not identified any significant issues of concern at the site.

   The Mine Site Reclamation Policy for Nunavut states that adequate security should be provided to ensure the cost of reclamation, including shutdown, closure, and post-closure, is born by the operator of the mine rather than the Crown. Consistent with this policy Part B, Section 3 of Water Licence NWB1POL0311 provides for requesting a credit adjustment of the reclamation security to recognize remediation work completed. Cost forecasts provided in the 2007 annual reclamation report estimate the monitoring costs through until when the Water Licence and Land Leases expire (in 2011) are less than $1,000,000. Even allowing for a 100% contingency, reducing the reclamation security to $2,0000,000 would provide the public with more than adequate protection for the remaining three years until the Water Licence and Land Leases expire. Consequently, Teck Cominco requests a $16,000,000 reduction in reclamation security for the site.

A CD containing a pdf version of this letter and associated attachments is included as Attachment #5. If you have any questions or comments regarding the above two requests, please do not hesitate to contact me at the contact information provided at the bottom of this letter.

Yours truly,

Bruce J. Donald
Reclamation Manager
Environment and Corporate Affairs
Teck Cominco Limited

Attachments:

1. Translation of letter into Inuktitut
2. Letter from Environment Canada to Teck Cominco dated July 27, 2006
3. Presentation to Environment Canada Titled "Polaris Mine – Water Quality Data Summary 1982 – 2006"
4. Letter and presentation to Environment Canada from Azimuth Consulting Group dated November 8, 2006
5. Letter from Environment Canada to Azimuth Consulting Group dated December 12, 2006
6. CD containing pdf versions of the above letter and documents

ATTACHMENT # 1

Translation of Letter into Inuktitut

ᔫᓂ 24, 2008

ᓄᓇᕗᒥ ᐃᒪᓕᕆᔨᒃᑯᑦ ᑲᑎᒪᔨᖏᑦ
ᑎᑎᖃᓂᐊᕐᕕᐊ 119
ᐅᕐᓱᕐᑑᖅ, ᓄᓇᕗᑦ X0B 0J0
ᐅᒧᖓᖓᔫᖅ: ᕕᓕᔅ ᐱᐅᓕᐅ, ᐊᐅᓚᓯᔨ ᐱᔪᓇᐅᑎᓕᕆᓂᕐᒥᒃ

ᐃᓄᓕᕆᔨᑐᖃᒃᑯᑦ
ᑎᑎᖃᓂᐊᕐᕕᐊ 100
ᐃᖃᓗᐃᑦ, ᓄᓇᕗᑦ X0A 0H0
ᐅᒧᖓᖓᔫᖅ: ᓯᐱᓪᓱ ᑎᕗᐊ, ᐊᐅᓚᓯᔨ, ᓄᓇᓕᕆᓂᒧᑦ ᐸᐃᐸᓕᕆᕕᒃ

ᒥᔅ ᐱᐅᓕᐅᒧᑦ ᒥᔅᑕ ᑎᕗᐊᒧᓪᓗ;

ᐱᔪᑎᓕᒃ: **ᒪᕈᓕᕿ- ᑐᓯᕋᐅᑎᒃ ᒥᑭᓕᒋᐊᕐᑕᐅᕐᑯᓗᒍ ᐃᒪᖓᑕ ᖃᐅᔨᓴᕐᑕᐅᓂᖓᑕ ᒪᓕᑕᐅᔭᕆᐊᖃᓂᖓ ᐊᒻᒪᓗ ᒥᑭᓕᒋᐊᕐᑕᐅᕐᑯᓗᒍ ᖃᓄᐃᑐᓂᕕᓂᖓᓄ ᐅᑎᑎᑕᐅᓂᖓᑕ ᐅᐊᓯᔭᐅᓂᖓ**

ᓯᑎᐱᕆ 2002ᖑᑎᓗᒍ, ᒪᕈᓕᕿᒥᐅᑦ ᐅᔭᕋᓯᐅᓂᖓ ᓄᖃᕕᒃᓗᓂ ᐅᔭᕋᕐᑕᕈᓂᓚᐅᑐᑦ. ᒪᑐᓂᖓᓂ ᐱᒋᐊᑲᐅᑎᒋᓗᓂ ᑕᐃᒪᖓᓂᑦ ᒪᑐᓂᖓᑕ, ᖃᓄᐃᑐᓂᕕᓂᐊᓄᑦ ᐅᑎᑎᑕᐅᓂᖓ ᓇᒪᒋᔭᐅᓗᓂ ᐊᖏᖃᑎᒋᓗᑎᒃ ᐊᖏᖃᑎᒌᓚᐅᑐᑦ ᓄᓇᕗᒥ ᐃᒪᓕᕆᔨᒃᑯ ᑲᑎᒪᔨᖏᓄᑦ ᐊᒻᒪᓗ ᐃᓄᓕᕆᔨᑐᖃᒃᑲᓄᑦ ᐱᒋᐊᕐᑎᑕᐅᓗᓂ ᑎᒃ ᑲᒥᒃᑯᓄᑦ ᐊᒻᒪᓗ ᑕᒪᓇ ᐱᓕᕆᐊᖑᓕᓚᐅᕐᓯᒪᔫᖅ ᐱᔭᕆᑕᐅᖏᓂᓕᒪᖓᓂ ᑎᑭᓗᒍ ᓯᑎᐱᕆ 2004ᒥ. ᑕᐃᒪ ᐅᓂᒃᑳᓕᐊᒥᕐ ᑕᒪᓇ ᓇᓗᓇᐃᕐᓯᒪᒪᑦ, ᖃᓄᐃᑐᓂᕕᓂᖓᓄᑦ ᐅᑎᑎᑕᐅᓂᖓ ᐃᒪᖅ $68ᒥᓕᐊᓴᓚᐅᑐᖅ. ᑕᐃᒪᖓᓂ ᐅᑎᑎᑕᐅᓂᖓᓄ ᖃᓄᐃᑐᖓᑕ ᐱᔭᕆᑕᐅᓚᐅᒪᑦ, ᐊᕿᓱᕐᓯᒪᔪᑦ ᓇᒪᓇᕋᖓᑕ ᖃᐅᔨᓴᕐᑕᐅᓚᐅᓂᓗ ᑕᐃᒪᐃᑕᕆᐊᖃᓯᒪᔪᖅ ᒪᓕᒍᒋᑦ ᑐᓂᔭᐅᓯᒪᔪᑦ ᐅᑯᓇᖓ ᐃᒪᒧᑦ ᐱᔪᓇᐅᑎᒃ ᐊᒻᒪᓗ ᐊᖏᑕᐅᓯᒪᔪᑦ ᐅᓂᒃᑳᓕᐊᖑᓯᒪᒧᑦ ᐃᒍᑎᕐᑕᐅᓂᖓᓄᑦ ᖃᓄᐃᑐᓂᖓᓄᓗ ᐅᑎᑎᑕᐅᓂᖓᑕ ᐸᕐᓇᐅᑎᖓ ᑕᒪᓇ ᑲᔪᓯᔭᕐᑐᖅ ᐅᓂᒃᑳᓕᐊᖑᕝᕕᒃᓗᓂᓗ ᓇᒪᒃᓯᔭᕌᖓᑦ ᑕᒪᐃᓄᑦ ᐃᒪᓕᕆᔨᒃᑯᑦ ᑲᑎᒪᔨᖏᓄᑦ ᐃᓄᓕᕆᔨᑐᖃᒃᑯᓄᓗ. ᐅᐊᓯᔭᐅᖓᓄᑦ ᖃᐅᔨᔭᐅᔫᑦ ᑐᓂᔭᐅᖃᑕᕐᑐᑦ ᐃᒪᓕᕆᔨᒃᑯᑦ ᑲᑎᒪᔨᖏᓄᑦ ᐃᓄᓕᕆᔨᑐᖃᒃᑯᓄᓗ ᑐᑭᓯᓇᓯᑎᓯᒪᓗᑎᒃ ᐅᓂᒃᑳᑦ ᑕᑯᐊᓗ ᑕᑯᔭᓴᐅᓗᑎᒃ ᐃᒪᓕᕆᔨᒃᑯᑦ ᑲᑎᒪᔨᖏᑕ ᖃᓇᑕᐅᔭᑯᕈᓇᐅᑎᖑᒍᑦ ᐃᒥᕈᔭᐅᔫᓇᕐᓗᑎᒃ ᐅᖃᐅᒃᓴᖃᕈᑎᒃᓗ ᐅᖃᕕᒋᔫᓇᑕᖑᒍᑦ. ᐊᕋᒍᑕᒫᑦ, ᖃᐅᔨᓴᑕᐅᖃᑕᕐᑐᑦ ᕿᒥᕈᔭᐅᓗᑎᒃ ᐃᓄᓕᕆᔨᑐᖃᒃᑯᓄᑦ, ᓄᓇᕗᒥᐅᓗ –ᑐᑭ ᑲᕙᒪᑯᓗ ᒪᓕᒐᖏᓂᒃ ᒪᓕᓗᑎᒃ ᐊᒻᒪᓗ ᖃᐅᔨᓴᕐᓂᖏᑕ ᐅᓂᒃᑳᖏᑦ ᓇᓗᓇᐃᓯᖃᑕᕐᑐᑦ ᒪᕈᓕᕿᒥ ᖃᓄᐃᖏᓂᖓᓂᒃ ᐊᒻᒪᓗ ᒪᓕᑎᐊᓂᖏᓂᒃ ᐃᒪᕐᒧᑦ ᐱᔪᓇᐅᑎᖓᓂᒃ ᐊᒻᒪᓗ ᖃᓄᐃᑐᓂᕕᓂᖓᓄᑦ ᐅᑎᑎᑕᐅᓂᖓᑕ ᐸᕐᓇᐅᑎᖓᓂᒃ.

ᑎᒃ ᑲᒥᒃᑯᑦ ᑐᓯᕋᑐᑦ ᐅᒪ ᐊᑕᓂ ᑎᑎᕋᓯᒪᔪᓂᒃ:

1. ᐊᑯᑐᓯᒋᐊᕐᓗᒍ ᐃᒪᒧᑦ ᐱᐅᓂᖓᑕ ᐅᐊᓯᔭᐅᓂᖓᑕ ᒪᓕᑕᐅᔭᕆᐊᖃᓂᖏᑦ
   ᐃᒪᒧᑦ ᐱᔪᓇᐅᑎᒃ ᐊᒻᒪᓗ ᖃᓄᐃᑐᓂᕕᓂᖓᓄᑦ ᐅᑎᑎᑕᐅᓇᓱᓂᖓᑕ ᐸᕐᓇᐅᑎᖏᑦ ᑕᒪᕐᒥ ᑐᓯᕋᓯᒪᔪᑦ ᐃᒪᖓᑕ ᐅᐊᓯᔭᐅᖃᑕᕆᐊᖃᓂᖓᓂᒃ ᒋᐊᕈᑉ ᑕᓯᖓᓂ ᒋᐊᕉᓗ ᑰᖓᓂ. ᑕᒪᓇ ᐅᐊᓯᔭᐅᓂᖓ ᑕᓯᖓᓂ ᐃᓱᒪᒋᔭᖃᓗᐊᕐᑐᖅ ᐃᑎᓂᕐᔭᖓᑕ ᒪᓕᒍᒍ ᑕᕆᐅᖑᓕᕐᐸᓕᐊᓂᖓ ᑕᓯᕐᒥ ᓱᓕ ᑕᐃᒪᐃᑲᓗᐊᒪᖖᒋᑦ ᐊᒻᒪᓗ ᓴᕕᕋᔭᖃᓂᖓ ᐃᒪᖓᓂ ᓱᓂᕐᐊᓕᐊᖏᑲᓗᐊᒪᖖᒋᑦ ᓴᕕᕋᔭᒃᓴᖓᓗᓃᑦ ᒥᑭᓕᕓᓕᐊᒐᓗᐊᒪᖖᒋᑦ. ᐃᒪᖓᑕ ᐱᐅᓂᖓᑕ ᐅᐊᓯᔭᐅᓂᖓ ᒋᐊᕈ ᑰᖓᑕ ᒪᓕᒍᒍ ᐃᒪᒥ ᐱᔪᓇᐅᑎᖓ ᐊᐳᖃᑐᖅ ᒪᓕᒋᐊᖃᑕᖏᓂᒃ ᑭᖑᒪᔭᐅᔪᑦ ᒪᓕᒋᐊᖃᓂᖏᑦ ᓴᕕᕋᔭᖓᓂᒃ ᐅᔭᕋᓯᐅᕐᑏᑦ ᑰᒃᐱᖏᑕ ᒪᓕᒐᖏᓂᒃ ᑕᒪᓇᓗ ᒪᓕᑕᐅᔭᕆᐊᖃᓚᐅᑐᖅ ᑕᐃᓱᒪᓂ ᒪᑐᑎᓗᒍ ᐅᔭᕋᒃᓯᐅᕐᕕᒃ.

   ᓴᕕᕋᔭᖓᓂᒃ ᐅᔭᕋᓯᐅᕐᑏᑦ ᑰᒃᐱᖏᑕ ᒪᓕᒐᖏᑦ ᓴᕿᑕᐅᓚᐅᑐᑦ ᐱᖓᓱᐃ ᐱᔪᑎᐅᓗᑎᒃ ᖃᓄᐃᑐᓂᖏᑕ ᐅᓂᒃᑳᓕᐊᖏ ᓱᓕᔪᑦ ᒪᓕᒍᒋᑦ ᓴᕿᑎᑕᐅᓯᒪᔪᑦ ᑲᕙᒪᑯᖏᓄᑦ ᑲᓇᑕᐅᑉ ᐃᒪᐃᑐᔪᑦ:

ᑎᑎᖃᖅᕕᒃ 2000/ᑭᒻᐸᓕ, ᐹᕿᑦ ᑲᓛᐱᐊ, ᑲᓇᑕ V1A 3E1 · ᐅᖄᓚᐅᑦ: 250-427-8405 · ᓱᑲᔪᑭᑦ: 250-427-8451 · ᖃᕆᑕᐅᔭᒃᑯᑦ ᑐᕋᕈᑦ: bruce.donald@teckcominco.com

i. ᒪᓕᐅᕐᑯᓗᒋᑦ ᐃᓗᓕᖃᓂᓴᐅᔪᑦ ᐊᒻᒪ ᒪᓕᑕᐅᔭᕆᐊᖃᓚᕆᑐᑦ ᑰᒃᐱᐅᔪᑦ ᐱᐅᓂᖏᑕ ᒪᓕᒐᖏᑦ,
ii. ᐅᔭᖅᓯᐅᕐᑏᑦ ᐱᔭᕆᐊᖃᓕᑐᑦ ᑰᖕᓂᒃ ᑰᑎᓯᓗᑎᒃ ᓱᕈᕈᑎᓴᖏᓂᒃ ᐱᑕᖃᖏᓂᒃ ᐃᓘᕐᓄᑦ, ᐊᒻᒪ
iii. ᑕᒪᕐᒥᓕᒫᖅ ᐅᔭᕋᓯᕐᑏᑦ ᐊᕙᑎᒧᑦ ᓱᓅᔭᕐᑐᓂᒃ ᐱᑕᖃᖏᑲᓗᐊᒪᖔᑦ ᐅᐊᓯᔭᐅᖃᑦᕐᓗᑎᒃ

ᑕᒪᓇ ᐅᐊᓯᓂᖅ ᑭᖑᒪᔭᐅᔪᖅ ᑕᕙᓂ ᓴᕕᕋᔭᖕᓂᒃ ᐅᔭᕋᓯᐅᕐᑏᑦ ᑰᒃᕕᖏᑕ ᒪᓕᒐᖏᑦ ᐊᑐᓕᕐᑎᑕᐅᓯᒪᒪᑕ ᑲᓇᑕᓕᒫᕐᒥ ᐊᔾᔨᖑᔪᓂᒃ ᑎᑎᕋᓯᒪᔪᓂᒃ ᓄᐊᑎᕐᑯᓗᒋᑦ ᖃᓄᑎᒋ ᐊᔾᔩᓂᖃᒪᖔᑕ ᑎᑎᕋᓯᒪᔪᕐᑯᑎᒋᔭᐅᔪᑦ ᖃᓄᐃᓕᕙᓕᐊᔪᑦ ᐱᔪᑎᒋᓗᒍ ᖃᓄᑎᒋ ᓱᓂᐅᑎᖃᒪᖔᑦ ᑰᓂᐅᔪᑦ ᓄᑖ ᐱᐅᑎᒋᓕᒪᖔᑕ ᖃᐅᔨᓴᕈᑕᐅᓂᐊᕐᒪᑕ. ᑕᒪᓇ ᐱᓕᕆᐊᖅ ᑕᐃᒪᐃᑐᔪᖅ ᑲᓇᑕᓕᒫᕐᒥ ᓴᕕᕋᔭᖕᓂᒃ ᐅᔭᕋᓯᐅᕐᑏᑦ ᑰᒃᕕᖏᑕ ᒪᓕᒐᖏᑦ ᒪᓕᑲᓗᐊᒪᖔᑕ ᑭᓯᐊᓂ ᐱᒪᕆᐅᑎᒋᖏᑐᑦ ᓴᐳᑎᔭᐅᓯᒪᕐᑯᓗᒍ ᐊᕙᑎᖓ ᐱᓕᕆᕕᖓᓂ. ᐃᔭᒐᓴᑎᐊᕙᐅᔪᖅ ᑕᒪᑐᒧᖓ ᐅᐊᓯᔭᐅᔭᕆᐊᖃᓂᖓ ᐅᖓᓯᓂᖃᓂᕆᔭᖓ 226ᓂᒃ ᒪᕈᓕᕿᒥ ᓱᕈᓇᕐᑐᖃᒪᖔᑦ ᐃᓯᒪᓗᓇᑐᖃᖏᑐᖅᒥ ᑭᓯᐊᓂ ᑕᐃᒪᐃᑕᕆᐊᖃᑎᑕᐅᒪᑦ ᓴᕕᕋᔭᖕᓂᒃ ᐅᔭᕋᓯᐅᕐᑏᑦ ᑰᒃᕕᖏᑕ ᒪᓕᒐᖏᑦ ᒪᓕᓪᓗᒋᑦ. ᐊᕙᑎᐅᑉ ᓱᓂᑕᐅᓂᖏᑕ ᐅᐊᓯᔭᐅᓂᖓ ᑲᔪᓯᑎᑕᐅᔪᖅ ᒪᓕᓪᓗᒋᑦ ᓴᕕᕋᔭᖕᓂᒃ ᐅᔭᕋᓯᐅᕐᑏᑦ ᑰᒃᕕᖏᑕ ᒪᓕᒐᖏᑦ ᐊᒻᒪ ᐃᒪᒧᑦ ᐱᔪᓇᐅᑎᖓ ᓴᕿᑎᓯᔪᑦ ᐱᒪᕆᐊᓗᒥ ᐊᕙᑎᒧᑦ ᓱᓂᑕᐅᔪᕐᒥᒃ ᑰᖓ ᐱᓗᒍ ᐱᑕᖃᖏᑐᖅ (ᒥᐊᕈ ᑰᖓᓂ) ᑕᐅᕙᒃᓱᒪ ᐊᕙᑎᖓᓄᑦ. ᐊᕙᑎᓕᕆᔨᑰᑦ ᑲᓇᑕᒥ ᐊᖏᓯᒪᔪᑦ ᑭᖑᓕᕐᕙᖑᔪᕐᒥ ᐊᕙᑎᒧᑦ ᓱᓂᑕᐅᓂᖓᑕ ᐅᐊᓯᔭᐅᓂᖓ ᖃᓄᐃᑐᓂᖓᑕ ᐅᓂᒃᑳᖓᓂ ᒪᕈᓕᕿᒥᑦ ᐊᒻᒪ ᑎᒃ ᑲᒥᑯᑰᓂᑦ ᒪᓇᐅᔪᖅ ᐱᑎᑕᐅᓯᒪᔪᑦ ᓇᓗᓇᐃᓯᓂᕐᒥᓂᒃ ᐅᔭᖅᓯᐅᕕᕕᓂᖅ ᐱᓕᕆᐊᓴᖃᕆᐊᖃᕈᓂᕐᑐᖅ ᒪᓕᓪᓗᒋᑦ ᓴᕕᕋᔭᖕᓂᒃ ᐅᔭᕋᓯᐅᕐᑏᑦ ᑰᒃᕕᖏᑕ ᒪᓕᒐᖏᑦᓂ ᑎᑎᕋᑕᕕᓂᖅ ᐅᓗᖓ ᔪᓚᐃ 27, 2006ᖑᑎᓗᒍ ᐊᕙᑎᓕᕆᔨᑯᓂᑦ ᑲᓇᑕᒥ (ᐃᓚᒋᐊᕈᑦ 1ᒥ). ᑭᓯᐊᓂ, ᐃᒪᒧᑦ ᐱᔪᓇᐅᑎᒃ ᓱᓕ ᐊᔾᖃᒪᑦ ᓴᕕᕋᔭᖕᓂᒃ ᐅᔭᕋᓯᐅᕐᑏᑦ ᑰᒃᕕᖏᑕ ᒪᓕᒐᖏᑦᓂᒃ ᐅᐊᓯᔭᕆᐊᖃᓂᕋᐃᓗᑎᒃ.

2006ᖑᑎᓗᒍ ᑎᒃ ᑲᒥᑯᑦ ᑐᓂᓯᓚᐅᑐᑦ ᐊᕙᑎᓕᕆᔨᑯᑦ ᑲᓇᑕᑯᓄᑦ ᐅᓂᑳᕐᓯᒪᑎᐊᕐᑐᕐᒥᒃ ᐅᖃᐅᓯᖃᑐᓂᒃ ᐅᑯᓂᖓ ᒥᐊᕈ ᑕᓯᖓ ᐊᒻᒪ ᒥᐊᕈᑉ ᑰᖓ ᑎᑎᕋᓯᒪᔪᖏᓂᒃ (ᑕᑯᓗᒍ ᐃᓚᒋᐊᕈᑦ 2 ᐊᒪ 3) ᐅᑯᓂᖓ ᐅᖃᐅᓯᓖᑦ:

1. ᑕᓇᐅᖑᓕᓇᓂᖓ ᖃᓄᐃᖏᑎᐊᑐᖅ ᒥᐊᕈᑉ ᑕᓯᖓᓂ ᖃᖓᓂᑦ ᐃᖃᖓᓄᑦ ᑎᑭᓗᒍ ᑕᓇᐅᖑᓕᓇᑎᐊᕐᑐᖅ ᑕᓇᐅᓚᓇᐅᓂᖓ 10ᒥᑕᓂᒃ ᐃᑎᓂᓕᒃ;
2. ᑕᐃᒪᖓᓂ ᓴᕕᕋᔭᓴᓕᒥᒃ ᑰᒃᑎᓯᓂᖃᑕᓚᐅᓂᖓ ᓄᖃᓚᐅᒪᑦ 2002ᒥᓂ ᑲᔪᓲᓇᕐᑐᖅ ᓴᕕᕋᔭᖃᓂᖓ ᒥᑭᓕᕙᓕᐊᖏᓇᓕᒫᕐᑐᖅ ᑕᓇᐅᖑᓕᓇᖑᔪᓂ;
3. ᐅᑭᐅᖑᕋᖓ ᐊᐅᔭᕐᒧᑦ ᑎᑭᓗᒍ ᓴᕕᕋᔭᒃᓴᖓ ᑕᓇᐅᖑᓂᖓᓄ ᒥᐊᕈ ᑰᖓ ᐅᕙᕐᓇᕐᑐᒥ ᓱᕈᓇᑐᑕᖃᖏᑐᖅ

ᒪᓇᕋᑕᖑᓂᕐᓴᐅᔪᖅ, ᖃᐅᔨᓴᕈᑎᐅᔪᓂᑦ 2007ᒥ ᐅᐊᓯᓂᐅᔪᖅ ᐅᓂᑳᓕᐊᓂ ᐅᖃᐅᓯᐅᓯᒪᔪᑦ ᑕᒪᐃᓄᑦ ᐃᒪᓕᓇᕈᑦ ᑲᑎᒪᔨᖏᓄᑦ ᐊᒻᒪ ᐃᓄᓕᓇᔨᑐᖅᑯᓄᑦ ᐊᒻᒪ ᖃᐅᔨᓴᕈᑎᐅᓯᒪᔪᑦ ᑎᑎᕋᓯᒪᔭᖏᑦ ᐃᓚᐅᓂᖓ ᑲᔪᓯᔪᖅ ᑕᐃᒪᓇᓗ ᐅᓂᑳᓯᒪᔪᐃᓇᐅᓗᑎᒃ. ᐱᔪᑎᒋᔭᖓ ᐅᓂᑳᓕᐊᖑᔪᑦ ᐊᕙᑎᓕᕆᔨᑯᑦ ᑲᓇᑕᒥ ᐃᑲᔪᑐᐃᔪᑎᒥᒃ ᐱᕕᐅᔪᒪᓗᑎᒃ ᑎᒃ ᑲᒥᑯᑦ ᑐᓯᕋᓂᓇᔭᖓ ᐃᒪᓕᓇᕈᑦ ᑲᑎᒪᔨᑯᓄᑦ ᐊᑯᑐᓂᓴᐅᔪᕐᒥᒃ ᖃᐅᔨᓴᖃᑦᕐᓂᖓ ᐊᒻᒪ ᐊᔾᔨᖏᕈᕈᔭᕐᑐᓂᑦ ᖃᐅᔨᓴᕈᑎᓴᓂᒃ ᐃᒪᕐᒥᒃ ᐱᔪᑎᒋᓗᒍ. ᐅᐊᓯᖃᑦᕐᓂᖓᓂᑦ ᖃᐅᔨᔭᖏᑦ ᒪᓕᓗᒋᑦ ᐅᓗᒥᒧᑦ ᑎᑭᓗᒍ ᐊᒻᒪ ᐱᔪᑎᒋᓗᒍ ᐅᖓᓯᒃᑐᓂᖓ ᐅᐸᑲᐅᑎᒋᔭᒃᓴᐅᖏᓂᖓ ᑎᒃ ᑲᒥᑯᑦ ᕿᓄᔪᑦ ᐃᒪᒧᑦ ᖃᐅᔨᓴᓂᒧᖓᓂᐅᖃᑦᕐᑐᖅ ᐃᒪᒧᑦ ᐱᔪᓇᐅᑎᖓᓂ ᓇᓗᓇᐃᓯᒪᔪᖅ ᐊᔪᓇᖏᓂᓴᐅᓕᑎᑕᐅᕐᑯᔨᓗᑎᒃ ᐊᒻᒪ ᐊᑯᓚᐃᓗᐊᕐᒪᑦ ᐊᑯᑐᓇᐊᐸᓕᕐᑯᓗᓂᔪᒃ. ᐊᑭᑐᔪᐊᓗᓂᖓ ᐅᐊᓯᔭᕆᐊᖃᓂᒧᑦ ᐊᒻᒪ ᐊᑦᕐᓇᑐᕐᒥᑐᐃᓇᕆᐊᖃᓂᖏᓗ ᐃᖃᓇᐃᔭᕐᑐᑦ ᐅᐊᓯᔭᕆᐊᖃᓂᒧᑦ ᑲᔪᓯᑎᓯᒐᔭᕐᑐᑦ ᐃᓄᖃᖏᑐᕐᒥ ᐅᖓᓯᑐᕐᒥᓂᖏᓄᑦ ᑕᕙᓂ ᐅᓂᑲᐅᓯᐅᓚᐅᓯᒪᖏᑐᖅ ᐅᐊᓯᑲᑕᐃᓇᕆᐊᖃᑑᑉ ᒪᓕᑕᐅᕐᑯᔭᐅᓂᖓ ᒪᓕᓗᒍ ᐊᒻᒪ ᖃᐅᔨᓴᓂᒧᑦ ᑲᔪᓯᑎᓯᑎᓗᒋᑦ.

ᑎᑎᕋᑕᐅᓂᑯ ᐅᓗᖓᓂ ᑎᓯᐱᓇ 12, 2006ᒥ ᐊᕙᑎᓕᕆᔨᑯᑦ ᑲᓇᑕᑯᓄᑦ (ᐃᓚᒋᐊᕈᑦ 4) ᑭᐅᓚᐅᑐᑦ ᑎᒃ ᑲᒥᑯᑯᓄᑦ ᐃᒪᓇ ᐅᖃᐅᓯᖃᓚᐅᑐᑦ ᐅᑯᓂᖓ ᐃᑲᔪᕐᑐᐃᓂᕋᓗᑎᒃ:

- ᓄᖃᑎᓗᒋᑦ ᓱᑯᓇᑐᕐᒧᑦ ᖃᐅᔨᓴᕐᓂᐅᔪᑦ ᐊᕋᒍ ᐊᑕᐅᓯᐊᖃᑕᓇᐊᖃᖃᑕᓂ ᑲᔪᓯᓗᓂᐅᒐᓗᐊ ᓱᑯᓇᑐᖃᓗᐊᖏᑲᓗᐊᒪᖔᑦ ᐊᒐᓯᒥ ᖃᐅᔨᓴᕐᕕᒃ 262-7 ᑲᔪᓯᓗᓂ;
- ᒥᐊᕈ ᑕᓯᖓᓂ ᖃᐅᔨᓴᕐᓂᖅ ᐊᑕᐅᓯᐊᕐᑕᑐᐃᓇᓂᓗᓂ ᑕᕿᒧᑦ ᐊᐅᔭᐅᓂᖓᓂ ᐊᑕᖏᕐᓗᒋᑦ ᐃᓚᐅᖏᑐᑐᓗᓂ ᐃᑲᓴᐅᑎᐅᔭᖅ ᐊᒻᒪ ᓱᕈᓇᕐᑐᖅ 226 ᖃᐅᔨᓴᕐᕕᒃ 262-7ᒥ ;
- ᐃᑎᓂᖓ ᑰᓂᖓᑕ ᒥᐊᕈ ᑰᖓᑕ ᖃᐅᔨᓴᕐᑕᐅᔪᓂᕐᓗᓂ;
- ᑲᔪᓯᔪᓂᕐᓗᓂ ᐅᐊᓯᔭᐅᓂᖓ ᒥᐊᕈᑉ ᑲᖏᓱᖓ ᐊᐅᓂᖓ ᓯᑯᖓᑕ ᖃᓄᐃᑐᓂᖓᓄ ᖃᓂᒋᔭᖓ;
- ᑲᔪᓯᓗᓂ ᖃᐅᔨᓴᕐᓂᐅᔪᖅ ᑕᓇᐅᖑᓕᓈᓂᖓ ᒥᐊᕈ ᑕᓯᖓ ᓯᑯᖓᑕᓗ ᐃᔪᓂᖓ ᓯᑯᖃᖏᓂᖓᓄ (ᓱᕐᓗ ᒪᕈᐊᑎᖃᑦᕐᓗᓂ ᐊᕋᒎᑉ ᐃᓗᐊᓂ ᖃᐅᔨᓴᕐᑕᐅᓂᖓ).
- ᑎᒃ ᑲᒥᑯᑦ ᑐᓯᕋᓯᒪᒥᔪᑦ ᒪᕈᐃᖑᔫᑦ ᖃᐅᔨᓴᕕᐅᖃᑦᕐᑐᑦ ᒥᐊᕈ ᑕᓯᖓᓂ ᐅᓄᖏᓂᕐᐸᖑᓗᒍ ᐊᑕᐅᓯᑐᐊᕐᒧᑦ ᑕᒪᑯᐊ ᑎᑎᕋᑕᐅᖃᑦᕐᑐᑦ ᖃᐅᔨᓴᕈᑎᓂ ᓄᐊᑕᐅᖃᑦᕐᑐᑦ ᐅᓗᒥᒧᑦ ᓇᓗᓇᐃᓯᒪᑕ ᑕᑯᐊ ᖃᐅᔨᓴᑕᐅᓂᓇᖃᑕᑕᖏᑦ ᒪᕈᐃᓂᑦ ᐊᔾᔨᖑᖃᑦᕐᒪᑕ. ᐊᕙᑎᓕᕆᔨᑯᑦ ᑲᓇᑕᒥ ᑕᒪᑐᒧᖓ ᓱᓕ ᑭᐅᓯᒪᖏᑐᑦ ᐊᒻᒪ ᐃᓯᒪᔪᑦ ᐊᖏᖃᑎᖃᑐᑦ ᑕᓯᒥᖓ ᑐᒃᓯᕋᐅᑎᑎᓂᒃ.

2. ᒥᑭᓕᒋᐊᕐᑕᐅᓂᖓ ᖃᓄᐃᑐᓂᕕᓂᖓᓄ ᖃᐅᔨᓴᕐᑕᐅᓂᖓᑕ ᑭᓇᐅᔭᓴᖓ
   ᒪᓇᐅᔪᖅ ᑎᒃ ᑲᒥᑯᑦ ᐊᕿᓯᕋᑕᕐᑐᑦ ᖃᓄᐃᑐᓂᖓᑕ ᐅᑎᑎᑕᐅᓂᓴᖓᓄᑦ ᑭᓇᐅᔭᓴᖓᓂ $18ᒥᓕᐊᑕᓚᓂᒃ ᒪᕈᓕᕿᒥ ᐊᑐᕐᑕᐅᔫᒃᓴᕐᒥᒃ. ᑕᐃᒪ ᐅᒪ ᓯᕗᓂᐊᓂ ᐅᖃᓯᒪᓚᐅᒪᑦ, 2004 ᓄᖑᐊᓂ. ᑎᒃ ᑲᒥᑯᑦ ᐊᑐᓚᐅᑐᑦ ᐃᒪᖃ $68ᒥᓕᐊᓪᑖᓚᓂᒃ ᐃᒍᑎᕐᑕᐅᓂᖓᓄᑦ ᐃᒡᓗᐃᑦ ᐊᒪᓗ ᐅᑎᑎᑕᐅᓇᓱᓂᖓᓄᑦ ᖃᓄᐃᑐᓂᕕᓂᖓᑕ ᒪᕈᓕᕿᐅᑉ ᐸᓯᔭᒃᓴᖑᑎᑕᐅᓇᓱᒍᒪᓇᑎᒃ ᖃᓄᐃᑐᓂᕕᓂᖓᓄ ᐅᑎᑎᑕᐅᓇᓱᒃᓯᒪᔪᖅ ᒪᕈᓕᕿ ᐊᕿᓯᓚᐅᖏᓂᖏᓂ ᐅᐊᓯᔭᐅᖃᑕᓂᐊᓂᕐᒥᒃ ᑕᐃᒪᓇ ᓂᕆᐅᕕᐅᒪᑕ ᑕᐃᒪᐃᑕᕆᐊᖃᓕᓯᒪᔪᑦ. ᑕᐃᒪᖓᓂᑦ ᐱᔭᕆᑕᐅᓚᐅᑎᓗᒍ ᖃᓄᐃᑐᓂᕕᓂᖓᓄ ᐅᑎᑎᑕᐅᓚᐅᑎᓗᒍ, ᑎᒃ ᑲᒥᑯᑦ ᓴᕿᔮᕐᑎᓯᓯᒪᔪᑦ ᑕᐅᕙᓇ ᓄᓇᖓ ᖃᓄᐃᖏᑐᖅ ᑕᐃᒪᐃᓂᐊᓂᕋᑕᐅᓚᐅᒪᓗ ᐸᕐᓇᐅᑎᖓᓂ ᐊᕿᓱᐃᓗᑎᒃ ᐊᓱᐃᓛᒃ ᑕᐃᒪᐃᑐᖅ. ᐊᕋᒍᑕᓖᑦ ᖃᐅᔨᓴᑕᐅᖃᑕᕐᓂᖓ ᐃᓄᓕᕆᔮᑐᖃᑯᓄᑦ ᐊᒪᓗ ᐊᓯᖏᓄᑦ ᒪᓕᒐᕐᓂ ᒪᓕᒃᑎᓯᔮᐅᔪᓄᑦ ᓇᓗᓇᐃᓯᓯᒪᖏᑐᑦ ᐅᔮᓇᕐᑐᐊᓗᓂ ᑭᓱᐃᓇᕐᓂᒃ ᐃᓱᓖᓗᑕᐅᔭᕆᐊᓕᓂᒃ ᒪᕈᓕᕿᒥ..

   ᒪᕈᓕᕿᐅᑉ ᖃᓄᐃᑐᓂᕕᓂᖓᑕ ᐅᑎᑎᑕᐅᔭᕆᐊᖃᓂᖓ ᐊᑐᐊᒐᖓ ᓄᓇᕗᒻᒥ ᐅᖃᓯᒪᔪᖅ ᐅᐊᓯᔭᐅᓯᐊᕆᐊᓖᒍᖅ ᐱᔪᑎᒋᓗᒍ ᐊᑭᓕᔪᑎᒋᓯᒪᔭᖓᑦ ᖃᓄᐃᑐᓂᕕᓂᖓᓄ ᐅᑎᑎᑕᐅᓇᓱᓂᖓ, ᐃᓚᐅᓗᓂ ᒪᑐᓂᖓ, ᒪᑐᐃᑲᓂᔭᔪᓂᕐᓂᖓ, ᐊᒪᓗ ᑭᖑᓂᐊᓂ ᒪᑐᓂᖓᑕ, ᐊᑭᓕᕐᓱᕐᑕᐅᒐᓗᐊᒪᖕᖓᑕ ᐅᔭᕋᓯᐅᓂᒥᒃ ᐊᐅᓚᓯᔮᐅᓚᐅᑐᓄᑦ ᕕᑐᕈ ᑲᕙᒪᑯᓄᖏᑐᖅ. ᒪᓕᓂᖓ ᒪᓕᓗᒍ ᑕᓇ ᐊᑐᐊᒐᖅ ᐃᓚᖓ ᐱᒥᑐᖅ, ᐊᒍᕐᑐᕐᓯᒪᔪᑦ ᐱᖓᔪᖓᓂ ᐃᒪᒥ ᐱᔪᓇᐅᑎᖓᓂ ᓇᓴᐅᑎᓕᒥᒃ ᐅᒥᖓ NWB1POLO311ᒥᒃ ᐅᖃᓯᒪᒪᑦ ᐊᕿᒋᐊᑲᓂᕆᐊᖃᓂᖏᓂᒃ ᑭᓇᐅᔭᖃᑎᓯᓂᖓ ᖃᓄᐃᑐᓂᕕᓂᖓᓄ ᐅᑎᑎᑕᐅᓂᖓ ᑭᓇᐅᔭᖃᑎᑕᐅᓯᐊᕋᓗᐊᒪᖕᖓᑦ ᖃᓄᐃᑐᓂᕕᓂᖓᓄ ᐱᓕᕆᐊᖑᔪᖅ ᐱᔭᕆᑕᐅᕐᑯᓗᒍ. ᐃᒪᐃᓗᐊᓂᐊᕐᑯᑐᓯᒪᔪᑏᑦ 2007ᖑᑎᓗᒍ ᐊᕋᒍᑕᓖᑦ ᖃᓄᐃᑐᓂᖓᓄ ᐅᑎᑎᑕᐅᓇᓱᓂᖓᑕ ᐅᓂᒃᑳᖓ ᐅᖃᓯᒪᓚᐅᑐᑦ ᐅᐊᓯᔭᐅᓂᖓ ᖃᓯᕋᓂᐊᕋᓱᒋᔭᐅᒪᖕᖓᑦ ᐃᒪᐅᑉ ᐱᔪᓇᐅᑎᖓ ᓄᓇᒧᓗ ᐊᑐᐊᓂᖓ ᐃᓱᓕᓚᐅᖏᓂᖓᓂ (2011ᒧ ᑎᑭᓗᒍ) ᒥᑭᓂᖅᓴᐅᔪᖅ $1ᒥᓕᐊᒥᑦ. ᐊᒃᑖᓗᓃᑦ 100ᐳᓴᒥᒃ ᖃᓄᐃᓕᔪᖃᑳᓚᒃᐸᑦ ᐅᐸᓗᖓᐃᕐᓯᒪᓗᑕ, ᓇᒪᒃᓂᓴᐅᔪᕐᒥ ᓇᒪᒃᑎᓗᕆᑦ ᓴᐳᑎᔭᐅᓯᒪᓯᐊᕐᑯᓗᒍ ᐊᒥᐊᑯᖏᓄᑦ ᐊᕋᒍᔪᓄᑦ ᐱᖓᓱᓄᑦ ᐃᓱᓕᓚᐅᖏᓂᖓᓂ ᐃᒪᒧᑦ ᐱᔪᓇᐅᑎᒌᑦ ᐊᒪᓗ ᓄᓇᒧᑦ ᐊᑐᐊᕈᑎᒌᑦ. ᑕᐃᒪᐃᓂᖓᓄᑦ, ᑎᒃ ᑲᒥᑯᑦ ᑐᓯᕋᑐᑦ $16ᑕᐅᓴᒥᒃ ᒥᑭᓕᒋᐊᕐᑯᓗᒍ ᖃᓄᐃᑐᓂᕕᓂᖓᓄ ᐅᑎᑎᑕᐅᓂᖓᑕ ᓴᓂᕙᕐᑕᐅᓯᒪᔪᑖ ᑭᓇᐅᔭᖅ ᒪᕈᓕᕿᒧᖓᔪᖅ.

ᕿᓂᕐᑕᖅ ᖃᕆᑕᐅᔭᑯᑦ ᐅᖃᓖᒐᓴᐅᔪᖅ pdfᒥᒃ ᑕᐃᔭᐅᔪᕐᒧᑦ ᑕᑯᔭᒃᓴᐅᔪᖅ ᑕᓱᒪᓂ ᑎᑎᖃᕐᒥ ᐊᑕᔪᑦ ᐃᓚᓴᔭᖏᑦ ᐅᕙᓂ ᐃᓚᒋᐊᕈᑦ 5ᒥ ᓇᓴᐅᑎᖃᑐᑦ. ᐊᐱᕐᑯᑎᓴᖃᕈᓯ ᐅᖃᐅᓯᒃᓴᖃᕈᓯᒧᓃᑦ ᐅᒪ ᕐᑯᓚᓂ ᑎᑎᕋᓯᒪᔪᑦ ᒪᕉᒃ ᑐᓯᕋᐅᑏᒃᑲᒃ ᐱᔪᑎᒋᒧᒋᑦ ᐅᕙᓄ ᐅᖄᓚᑕᐃᓕᖏᑐᓯ ᑐᕋᕈᑎᖓ ᐅᒪ ᑎᑎᖃᐅᑉ ᐃᓱᐊᓂᑐᖅ.

ᕐᑯᕕᐊᓱᒃᓗᓂ ᑎᑎᕋᑐᖅ,

ᐳᕈᔅ ᔭ. ᑕᓄᓪᑦ
ᖃᓄᐃᑐᓂᕕᓂᖓᓄ ᐊᐅᓚᓯᔨ
ᐊᕙᑎᓕᕆᓂᒧᑦ ᑲᑎᔨᖃᑎᒋᓗ ᐱᓕᕆᐊᖏᓂᒃ
ᑎᒃ ᑲᒥᑯᑦ ᓕᒥᑎᑦ

ᑕᓱᒪᓂ ᐃᓚᐅᔪᑦ::

1. ᑎᑎᖃᖅ ᐃᓄᒃᑎᑐᓕᕐᑎᓯᒪᔪᖅ
2. ᑎᑎᖃᐅᓯᐊᕕᓂᖓ ᑎᒃ ᑲᒥᑯᑦ ᐊᕙᑎᓕᕆᔨᑯᑦ ᑲᓇᑕᑯᓂᑦ ᐅᓗᖓ ᑎᑎᕋᑕᕕᓂᐅᑉ ᔪᓚᐃ 27, 2006
3. ᐅᓂᒃᑳᓕᐊᕕᓂᖅ ᑲᕙᑎᓕᕆᔨᑯᑦ ᑲᓇᑕᑯᓄᑦ ᑕᐃᔭᐅᓗᓂ ""ᒪᕈᓕᕿ - ᐃᒪᒧᑦ ᐱᐅᓂᖓᑕ ᓄᐊᑕᐅᓂᖏᑦ ᑎᑎᖃᐃ ᓇᐃᓕᒋᐊᓯᒪᔪᑦ 1982ᒥᑦ 2006ᒧᑦ"
4. ᑎᑎᖃ ᐅᓂᒃᑳᓕᐊᕕᓃᓗ ᐊᕙᑎᓕᕆᔨᑦ ᑲᓇᑕᒥ ᐊᕿᒧᑦ ᖃᐅᔨᓴᕐᑎᑦ ᑲᑐᔾᖃᑎᒋᖏᓂᑦ ᐅᓗᖓ ᑎᑎᕋᑕᕕᓂᖓᑦ ᓄᕕᐱᕆ 8, 2006
5. ᑎᑎᖃᖅ ᐊᕙᑎᓕᕆᔨᑦ ᑲᓇᑕᑯᓂᑦ ᐊᕿᒧᑦ ᖃᐅᔨᓴᕐᑎᑦ ᑲᑐᔾᖃᑎᒋᖏᓄᑦ ᑎᑎᕋᑕᕕᓂᖓᑦ ᑎᓯᐱᕆ 12, 2006ᒥ
6. ᕿᓕᕐᑕᖅ ᐅᑯᓂᖓ ᐃᓗᓕᓕᒃ pdfᑯᑦ ᐅᖃᓕᒪᒐᓴ ᖃᕆᑕᐅᔭᑯᑦ ᐅᒪ ᕐᑯᓚᓂ ᐊᕿᖓᓂ ᐱᑕᓕ ᓱᓕᔪᓪᓗ ᑎᑎᖃᐃᑦ

ᑎᑎᖃᖃᕐᕕᒃ 2000/ᑭᒻᐳᓕ, ᐳᕿᑎᔅ ᑲᓚᒻᐱᐊ, ᑲᓇᑕ V1A 3E1 · ᐅᖄᓚᐅᑦ: 250-427-8405 · ᓱᑲᔪᑦᑎᑦ: 250-427-8451 · ᖃᕆᑕᐅᔭᑯᑦ ᑐᕋᑦ: bruce.donald@teckcominco.com

ATTACHMENT # 2

Letter from Environment Canada to Teck Cominco Dated July 27th, 2006

Environment Canada | Environnement Canada

Prairie & Northern Region
Environment Canada
Rm 200, 4999 98th Ave.
Edmonton, AB T6B 2X3

Bruce Donald
Bag 2000
Kimberley, BC
V1A3E1

July 27, 2006

Dear Mr. Donald,

RE: Polaris 2005 Annual MMER and EEM Report

The review of the Polaris 2005 Annual Effluent and Water Quality Report, submitted March 31, 2006, has been completed. In general, the 2005 report demonstrates an improvement in the quality of data collection and reporting over previous years. However, some Environmental Effects Monitoring (EEM) information does not appear to have been provided as required under Metal Mining Effluent Regulations (Schedule 5, Part 1). Please see the appended list of deficiencies relating to effluent characterization, water quality monitoring and sublethal toxicity testing for your facility.

If missing information was collected but not included in the above report, we would appreciate the submission of this information. We recognize that there are no future MMER requirements for this facility; however, we would like to have the correct information on file for the final EEM reports.

Please note that laboratories performing sublethal toxicity tests should address all criteria on the Environment Canada checklists found in Annex C of the Metal Mining Guidance Document (http://www.ec.gc.ca/eem/English/Publications/Sublethal/default.cfm). Failure to meet "must requirements" (indicated by bold font on the checklists) may result in test rejection and a request for re-testing.

Please be reminded that guidance is provided on the National EEM Website to assist you, at http://www.ec.gc.ca/eem/English/Publications/web_publication/ec_water/.
If you have any questions, please do not hesitate to contact me, the regional EEM coordinator for your site [(780) 951-8750; jenny.ferone@ec.gc.ca].

Sincerely,

Jenny Ferone, Senior Regional EEM Coordinator

cc Shauna Sigurdson
Barry Briscoe
Ken Russell
James Noble

Polaris (7834-3-37/C263-9)
2005 Annual Effluent and Water Quality Report

Effluent:

- Holding time was exceeded for alkalinity, mercury (June 29th only) and nitrate for June 29th and July 7th sampling events. However, we acknowledge the letter received from ALS Environmental and recognize samples analyzed since this date were as per recommended QA/QC measures.
- For July 7th sampling: Hg was reported as <0.00001mg/L in the emailed copy and as 0.00005mg/L in RISS. Please advise which is the correct value.
- The method detection limits (MDLs) for hardness, alkalinity and total suspended solids exceeded the recommended effluent MDLs for these parameters. Please see the Guidance Document for the Sampling and Analysis of Metal Mining Effluents.

Water Quality:

- It was noted that water quality analysis method detection limits (MDLs) were often the same as those used for effluent analysis. Please see the EEM Guidance Document for recommended MDLs for water quality analysis for various methodologies (Table 6-4 and 6-5).

Sublethal Testing:

- There is summarized information in Appendices C to E for each of the sublethal tests; some of this information on these summaries was not included in the test reports from the testing laboratory. Was this information obtained from the testing lab?

Champia parvula

'Must Requirement' deficiencies:

- None

Other:

- For the first test completed by Stantec, for Plant Mortality Data, is 'Test Completion' the end of the recovery period?
- Please be advised that the EPA reference method was updated October 2002 (EPA-821-R-02-014, Method 1009.0; Third Edition). The reference method given by SRC for the August 6th sample is the second edition (EPA/600/4-91/003, Method 1009.0); and although the actual methods themselves have not changed, SRC should be asked to update their in-house SOPs to reflect the new EPA reference.

  For the August 6th sample for salinity adjustment, SRC referenced the EC guidance document on salinity adjustment – May 2002. Please be advised that this should be December 2002.

Dendraster excentricus

'Must Requirement' deficiencies:

- None

Other:

- Estimated number of sperm per vessel and sperm:egg ratio were not reported for either test.

Atherinops affinis

'Must Requirement' deficiencies:

- In the August 6th sample, average dry weight for the D-control was reported as 0.7692mg. The test is invalid if average dry weight per surviving control larvae does not attain 0.85mg when fish are dried and weighed immediately after test; or 0.72mg if fish are first preserved in 4% formalin or 70% ethanol. Unless there was a reporting error, it appears the test did not meet the "must requirements" of the method and the test has been rejected.

Other:

- In Appendix C, there is "confirmation that larvae are actively feeding and swimbladders are not inflated" upon arrival of imported fish. Please be advised that the requirement is that swimbladders must be inflated.

ATTACHMENT # 3

Presentation to Environment Canada
Titled
“Polaris Mine – Water Quality Data Summary 1982 – 2006”

Polaris Mine – Water Quality Data Summary 1982 – 2006

Contents

- Present an historical summary of limnology, and chemistry (zinc) data from Garrow Lake
- Compare data from Garrow Lake Center (GLC) and South (GLS) stations
- Compare Garrow Lake and Garrow Creek zinc data
- Summarize MMER/EEM data

Objective

- Based on cumulative results from limnology, lake stability, lake chemistry, “effluent” chemistry of Garrow Creek and Garrow Bay receiving environment (EEM results), propose a reduced environmental sampling program at Polaris Mine
- Address Polaris Water License NWB1POL0311 accordingly

Chronology of Mining History at Garrow Lake

- 1981 – Mining began with tailings deposition to lake bottom
- 1985 – A break in the tailings line caused a significant spill of Zn and Pb contaminated tailings into surface waters of Garrow Lake
- 1989 – A second smaller tailings line break occurred
- 1989/1990 – A dam at outlet of lake was installed to raise lake level
- 1990 to 1994 – No discharge; raising lake elevation by 2.5 m
- 1994 – Initiated siphoning of lake over dam as final discharge point
- 1995 to1999 – Routine siphoning of lake to stabilize lake elevation
- 2000 to 2003 – Siphoning rate increased to restore lake level to pre-dam lake elevation
- 2002 – Active mining and tailings deposition to Garrow Lake ends
- 2003 to 2004 – Dam removed during winter; lake ~ 0.3 m above pre-dam elevation
- >2004 – Garrow Creek discharges from lake naturally; all remedial works completed

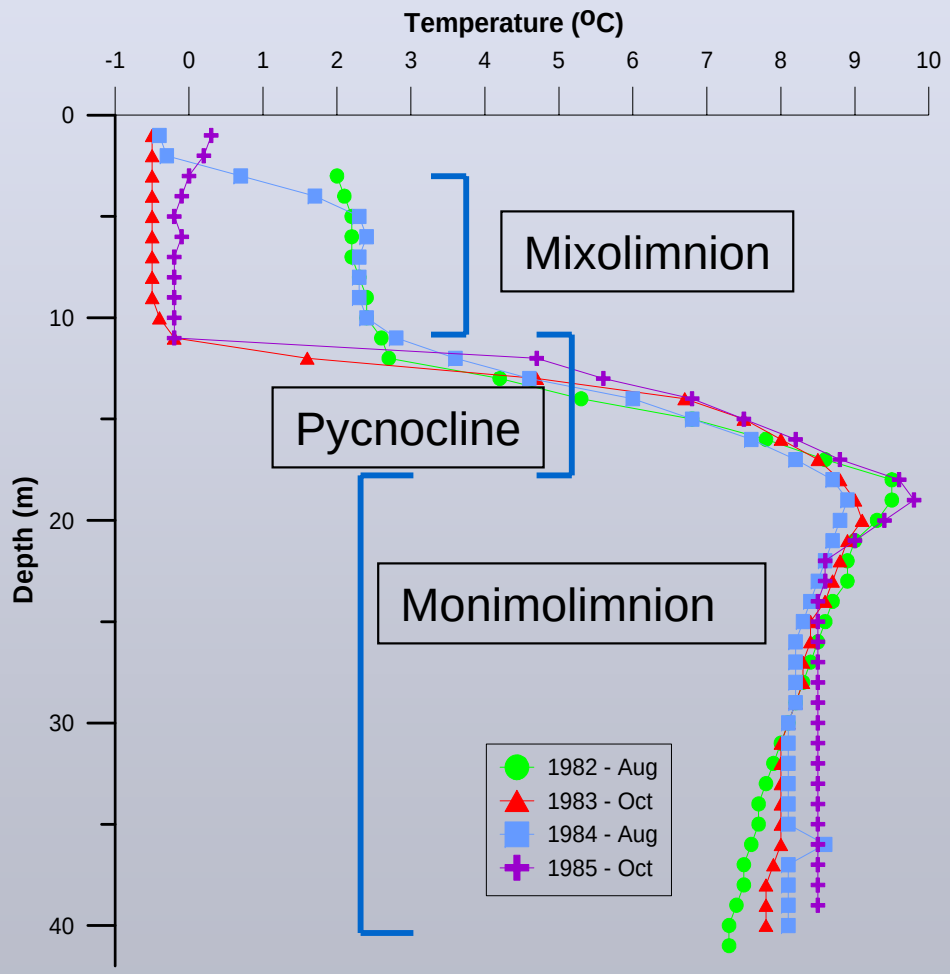
1982 – 2006 Data Summary:

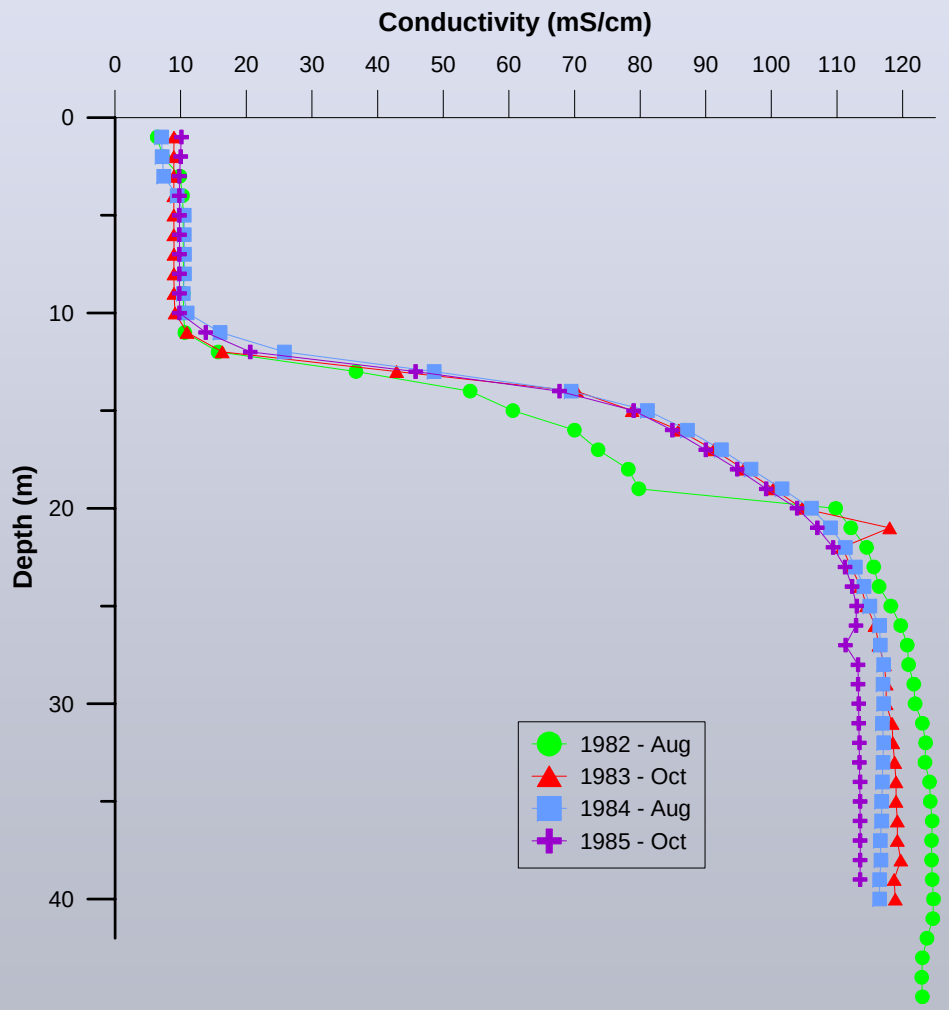
1. Summarize Garrow Lake vertical temperature and conductivity profiles (limnology)
2. Summarize Garrow Lake zinc data
3. Compare Center and South station results
4. Compare Garrow Lake and Garrow Creek zinc concentration data
5. Summarize Toxicity Testing, Receiving Environment Sediment Chemistry, and Clam Tissue results

1) Limnology Data Trends

1982 – 2006

Garrow Lake Temperature/Conductivity: 1982 – 1985

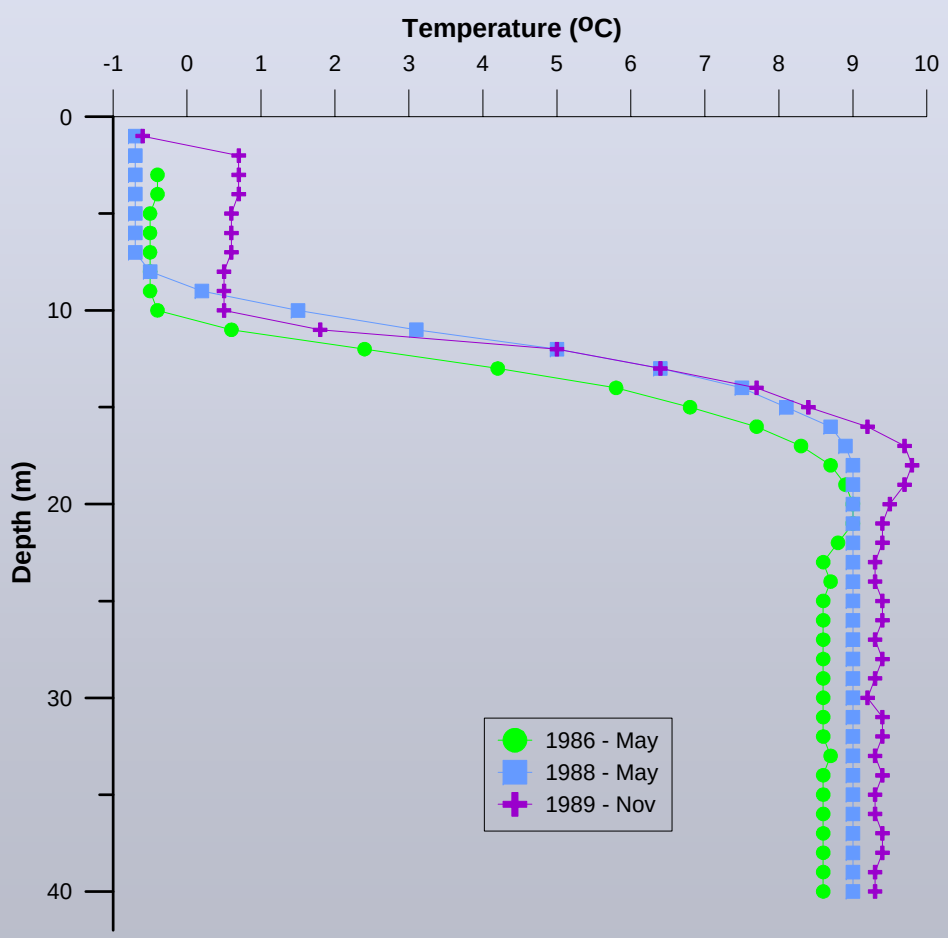


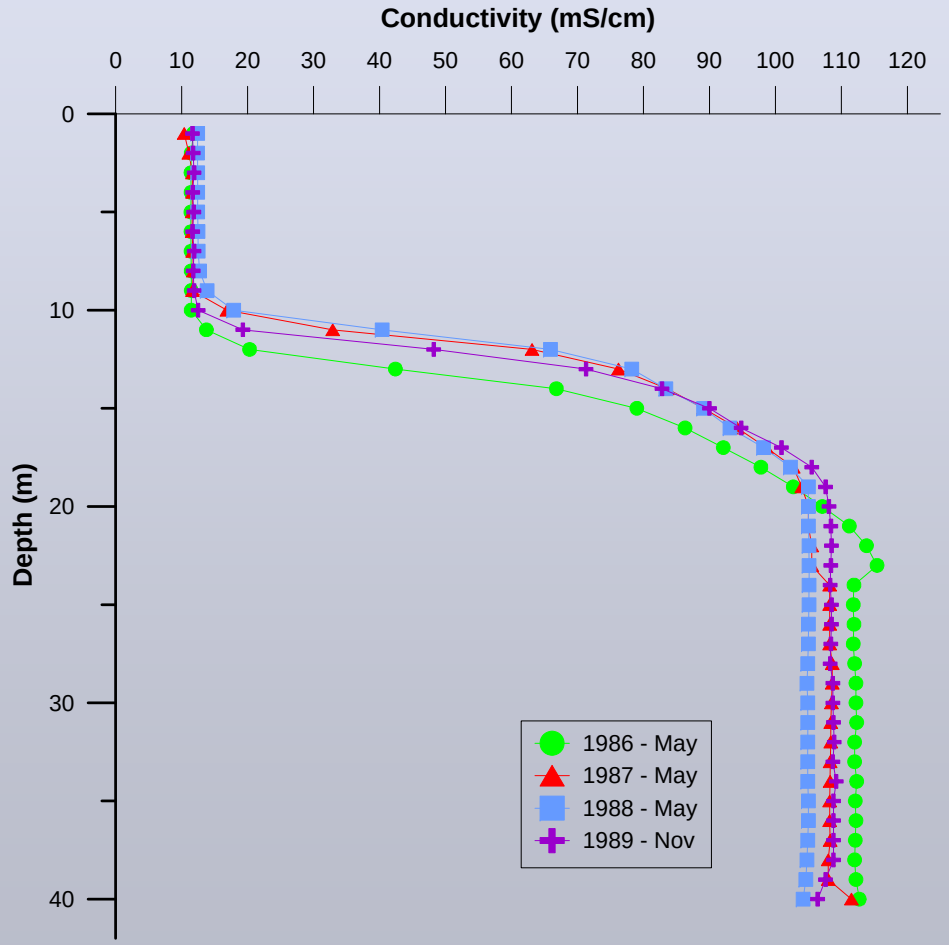


Limnology Data Trends 1982 – 1985

- There is a progression to a uniform conductivity profile in the monimolimnion due to mixing action caused by addition of tailings
- Conductivity of monimolimnion diminishes from ~120 mS in 1982 to ~110 mS in 1985 due to dilution

Garrow Lake Temperature/Conductivity: 1986 – 1989

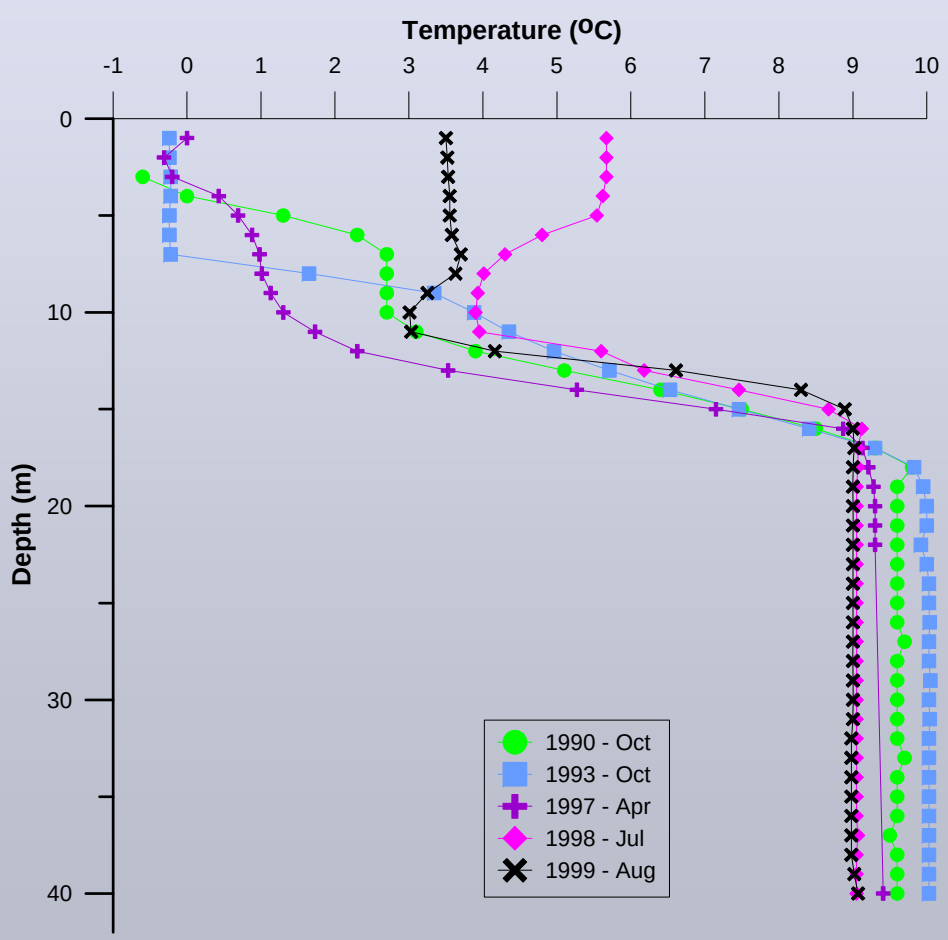


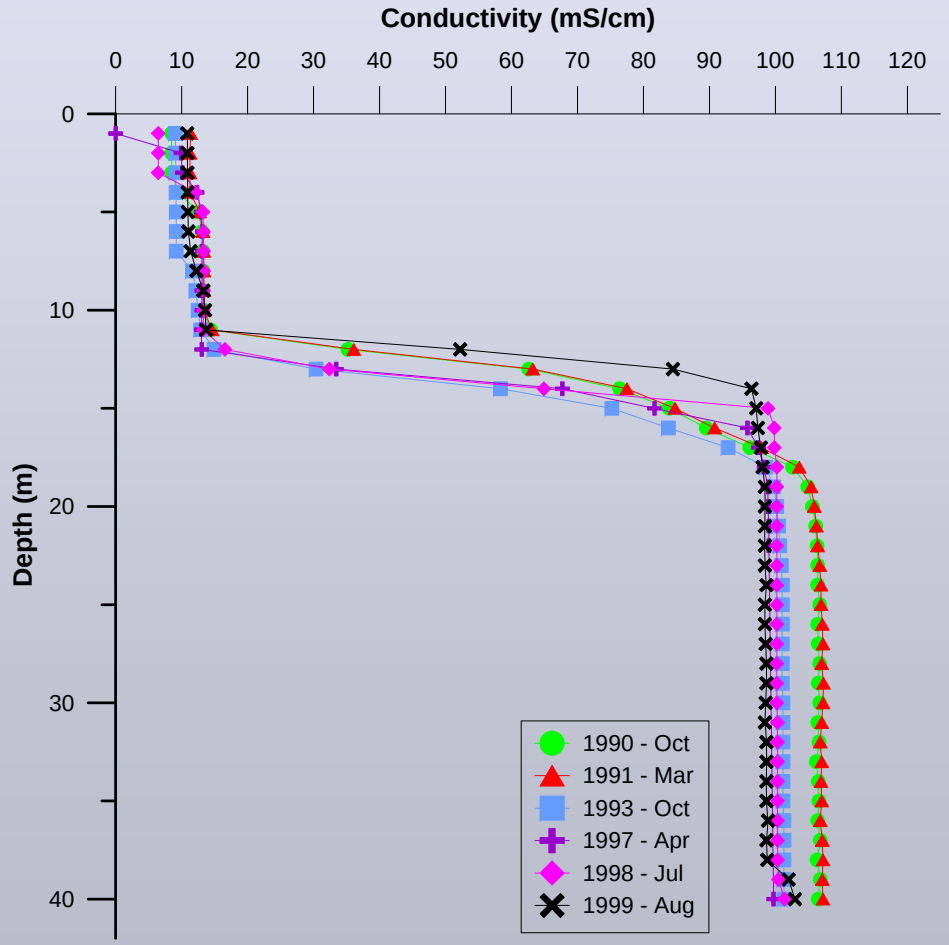


Limnology Data Trends – 1986 – 1989

- In 1985 there was a significant tailings spill in the mixolimnion, resulting in zinc contamination
- Continued small decline in mean conductivity of monimolimnion from ~110 mS in 1986 to ~105 mS in 1989
- The pycnocline diminished in depth from 13 m in 1986 to 12 m in 1989 due to addition of tailings and displacement of water

Garrow Lake Temperature/Conductivity: 1990 – 1999

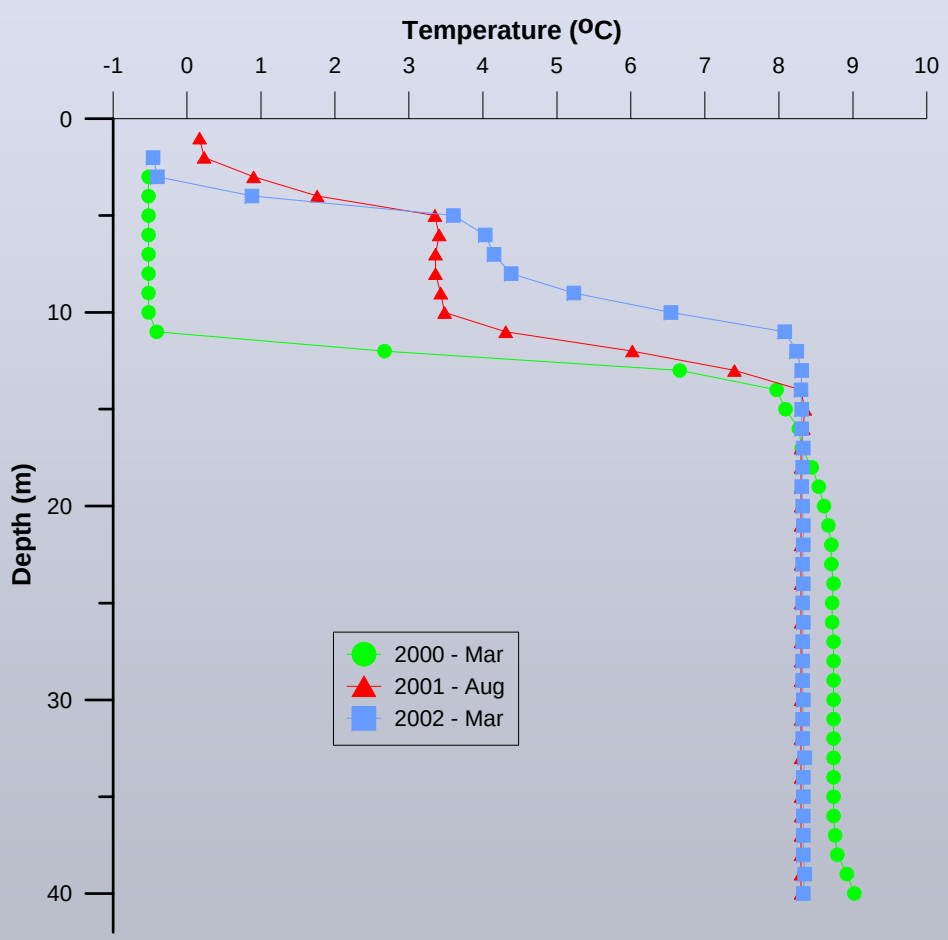


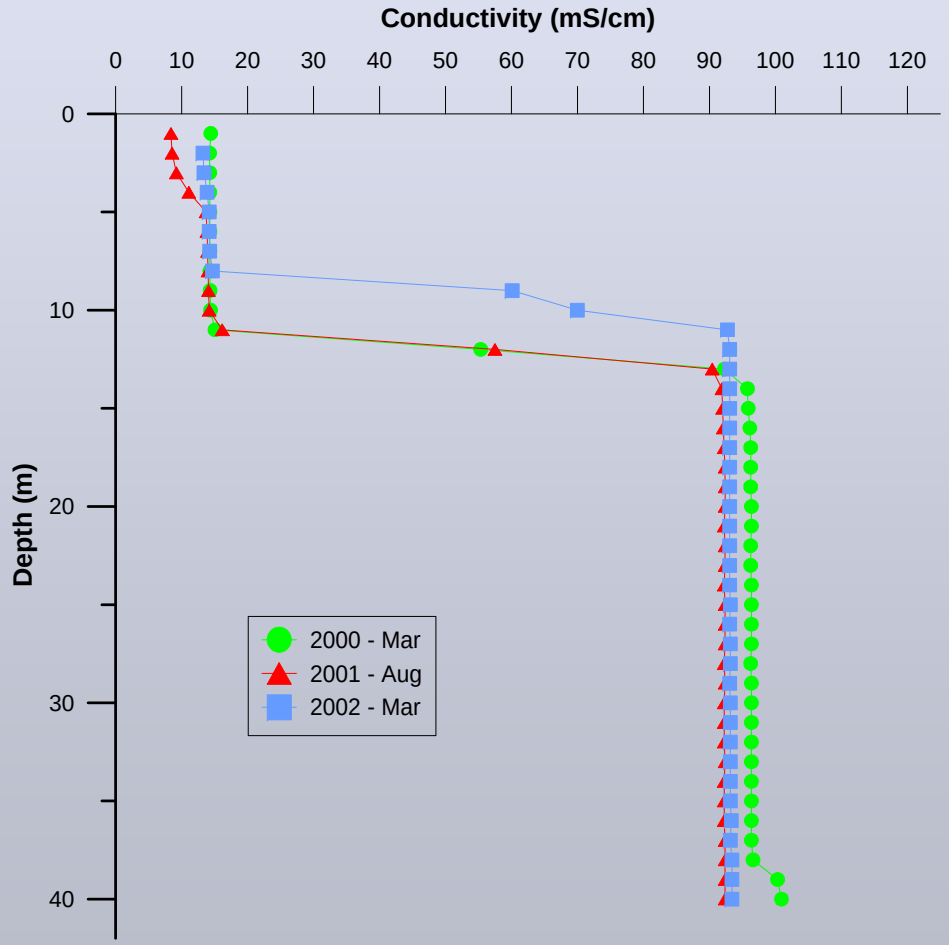


Limnology Data Trends 1990 – 1999

- A continued decline in water temperature in the monimolimnion from 10^{o}C to ~9^{o}C due to addition of cold tailings
- To of pycnocline depth has diminished to 11 m in 1999 from 12 m in 1990, despite rise in water level due to dam installation in 1995
- Depth over which the salinity/temperature gradient occurs has thinned, with a sharper or less gradual change between mixolimnion and monimolimnion layers; occurs over 3 m, not 8 m as in 1985
- Conductivity has continued to decline to 95 mS in 1999 from 105 mS in 1990

Garrow Lake Temperature/Conductivity: 2000 – 2002

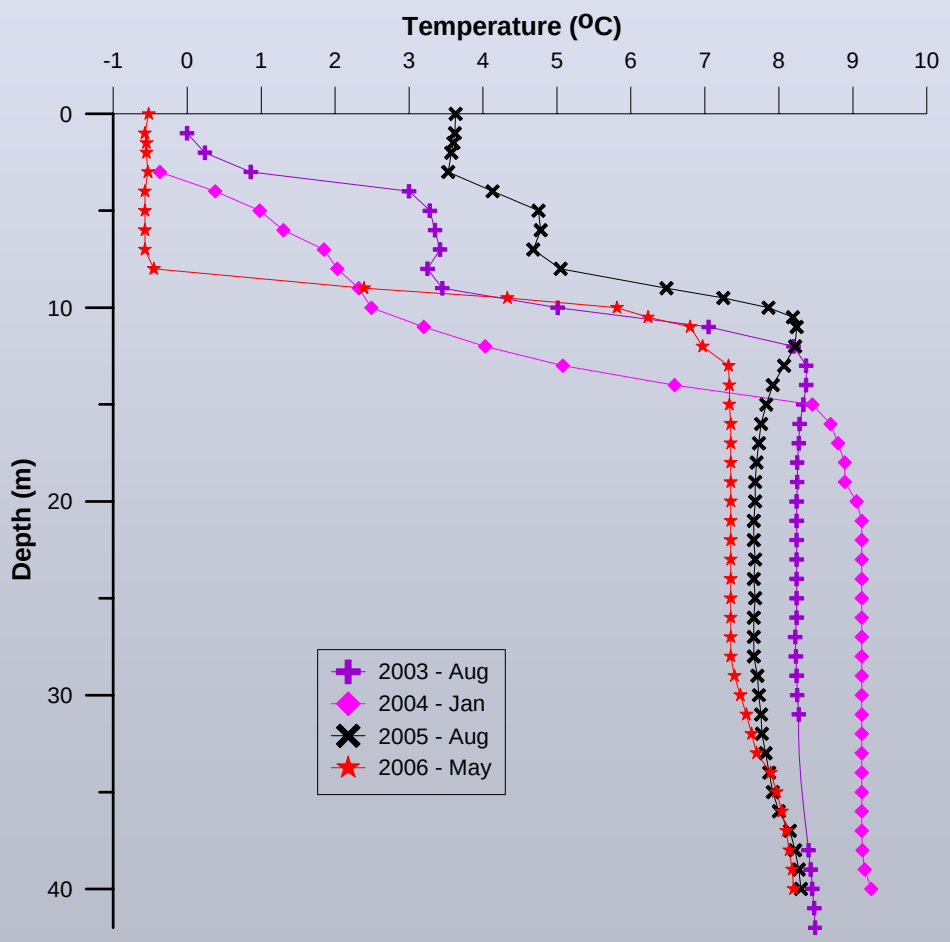


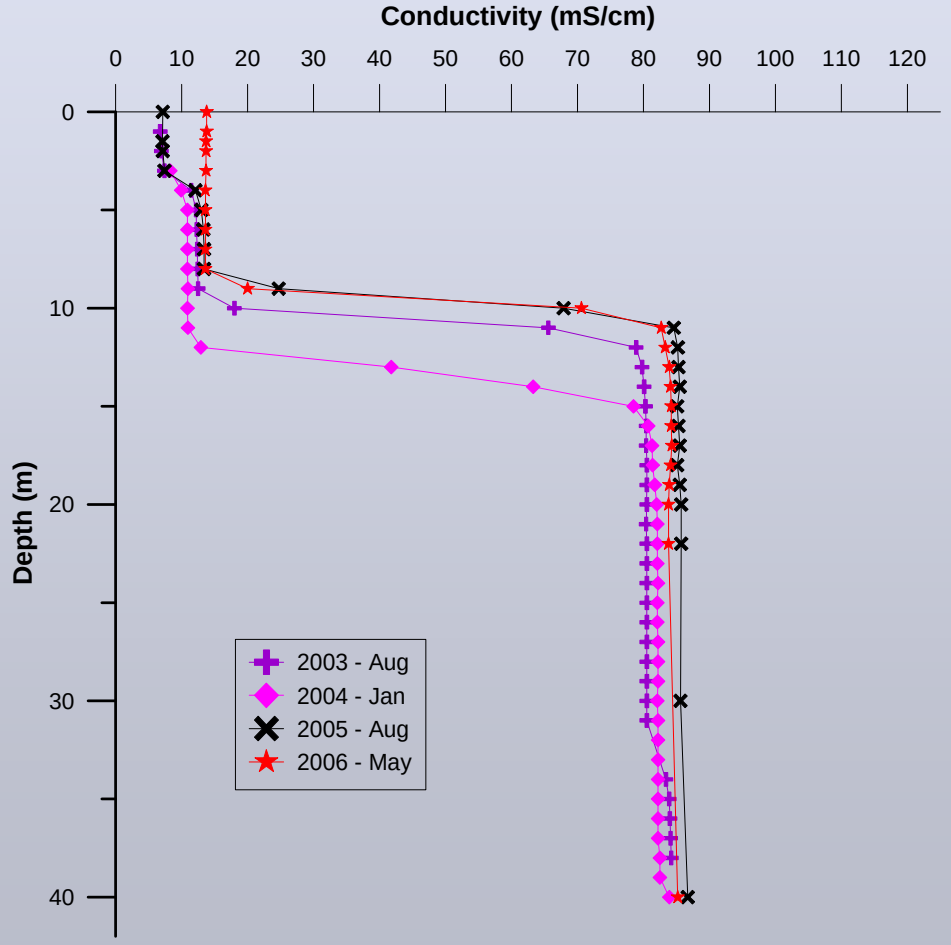


Limnology Data Trends 2000 – 2002

- Very little change in vertical temperature or conductivity profile over the last three years of mine operation
- Very strong stratification and uniform conductivity within mixolimnion and monimolimnion
- Minor differences between years likely due to Hydrolab variation/calibration

Garrow Lake Temperature/Conductivity: 2003 – 2006





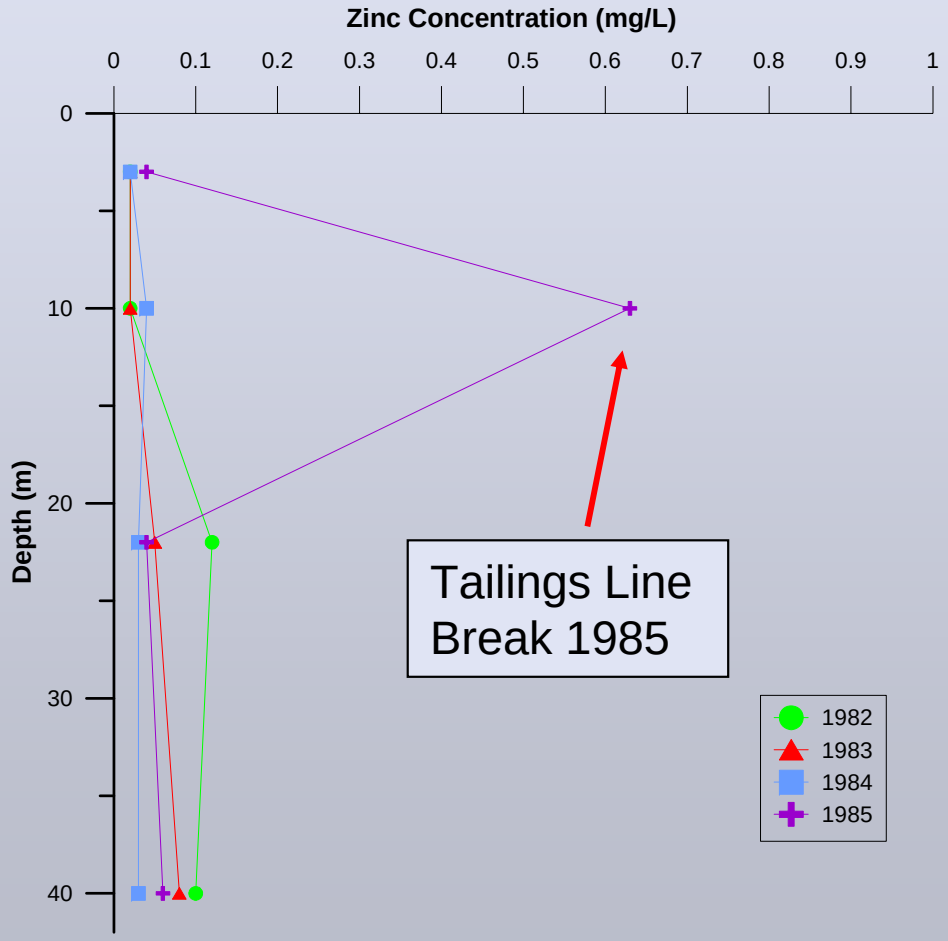
Limnology Data Trends 2003 – 2006

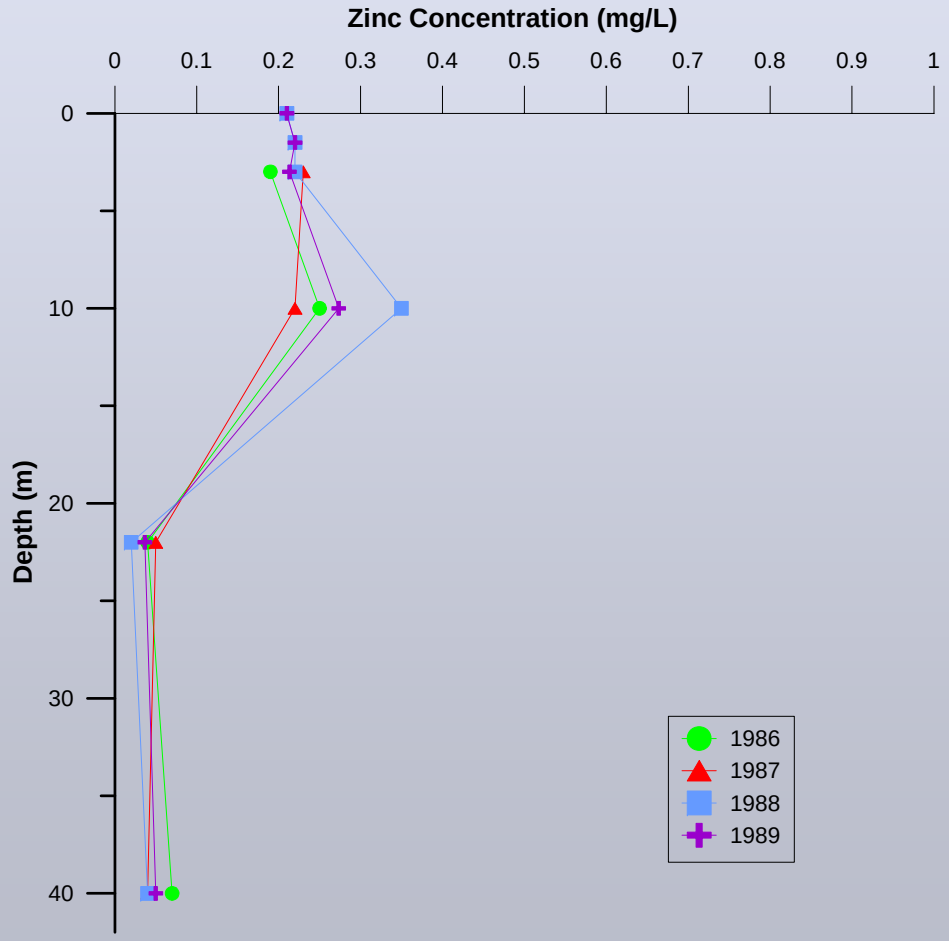
- Tailings deposition to Garrow Lake ceased
- With removal of dam, water level has diminished by 2 m, reducing depth of mixolimnion by same amount
- Thermal/chemical stratification very strong – no change in conductivity from 03 to 06
- Differences in temperature/conductivity of monimolimnion are due to Hydrolab calibration

2) Zinc (mg/L) Data Trends

1982 - 2006

Garrow Lake Zinc (mg/L) Profiles: 1982 – 1989

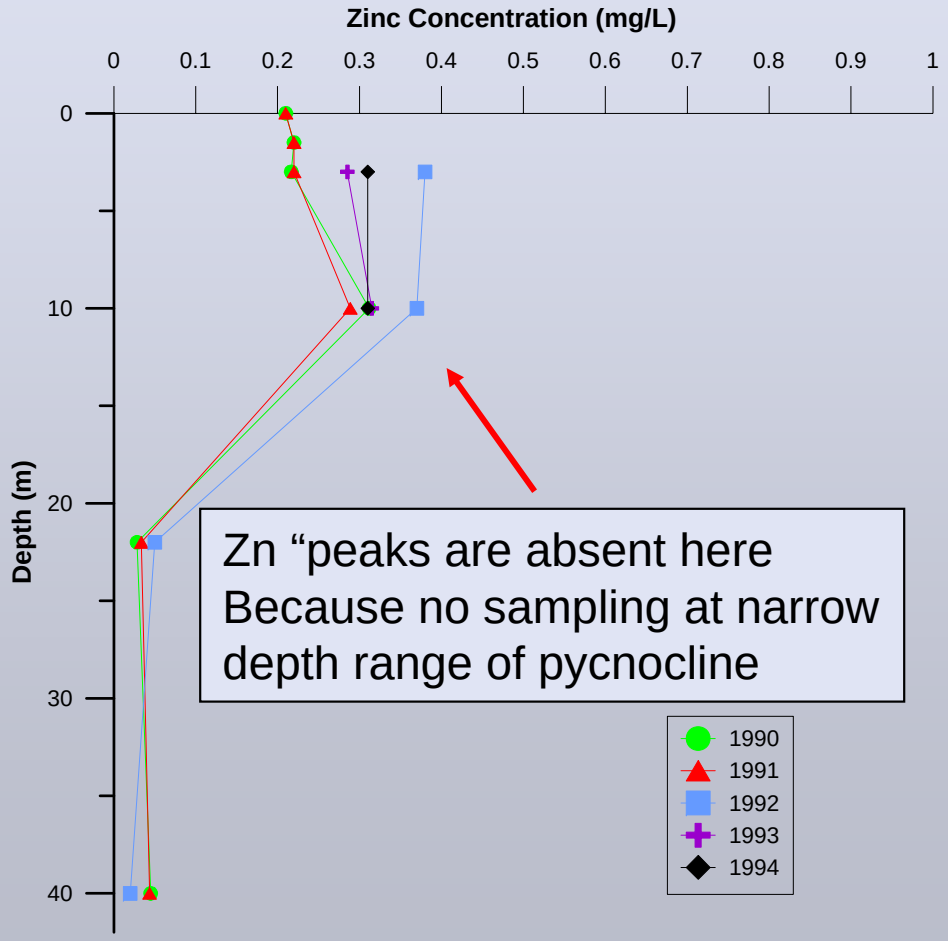


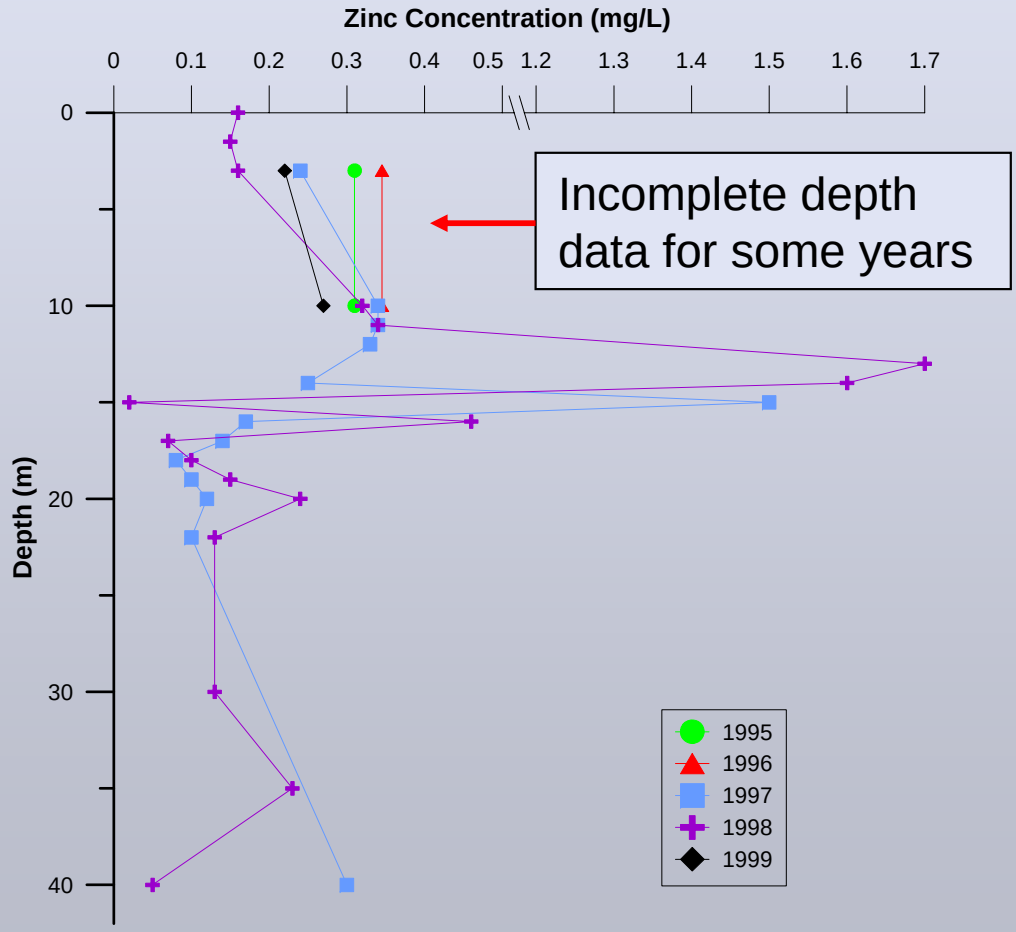


Zinc Data Trends 1982 – 1989

- Zinc concentrations were low (<0.02 mg/L) and uniform in water column in monimolimnion prior to 1985
- A tailings line break in 1985 spilled tailings into the surface waters of Garrow Lake
- Zinc concentrations in mixolimnion increased to 0.2 to 0.3 mg/L
- Zinc is present in low concentrations in monimolimnion because of precipitation by sulfides despite continuous tailings tailings deposition

Garrow Lake Zinc (mg/L) Profiles: 1990 – 1999



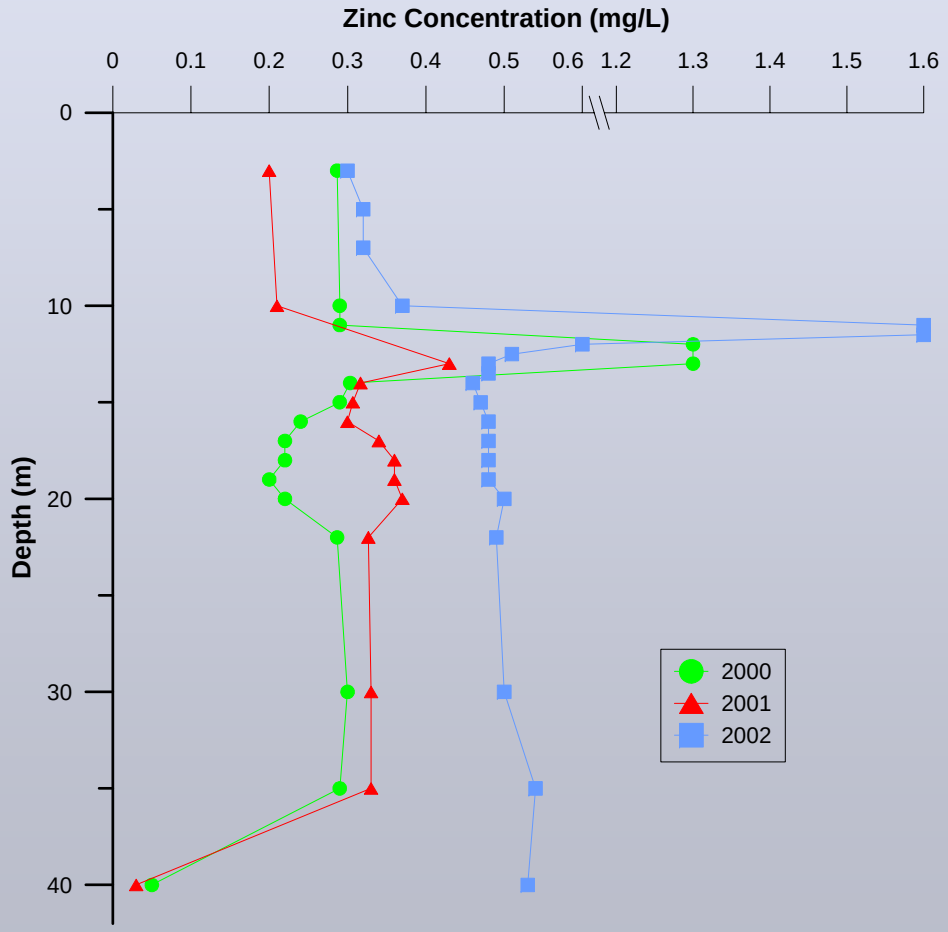


Zinc Data Trends 1990 – 1999

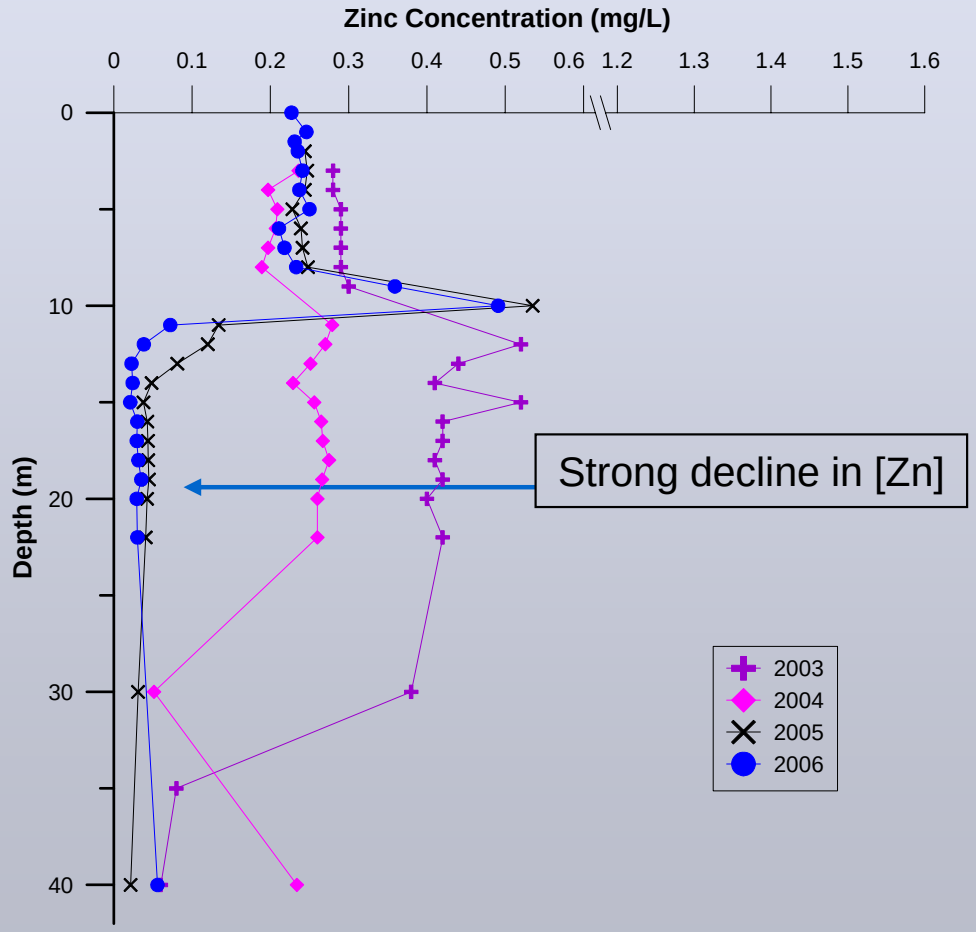
- Zinc concentration in mixolimnion is stable at ~0.3 mg/L
- Through the late 1990s there was a decline in Zn concentration in the mixolimnion with an increase in concentration in the pycnocline; possibly due to accumulation within bacterial tissue accumulated at the top of the density layer

Garrow Lake Zinc (mg/L) Profiles: 2000 – 2006

2000 - 2002



2003 - 2006



Zinc Data Trends 2000 – 2002

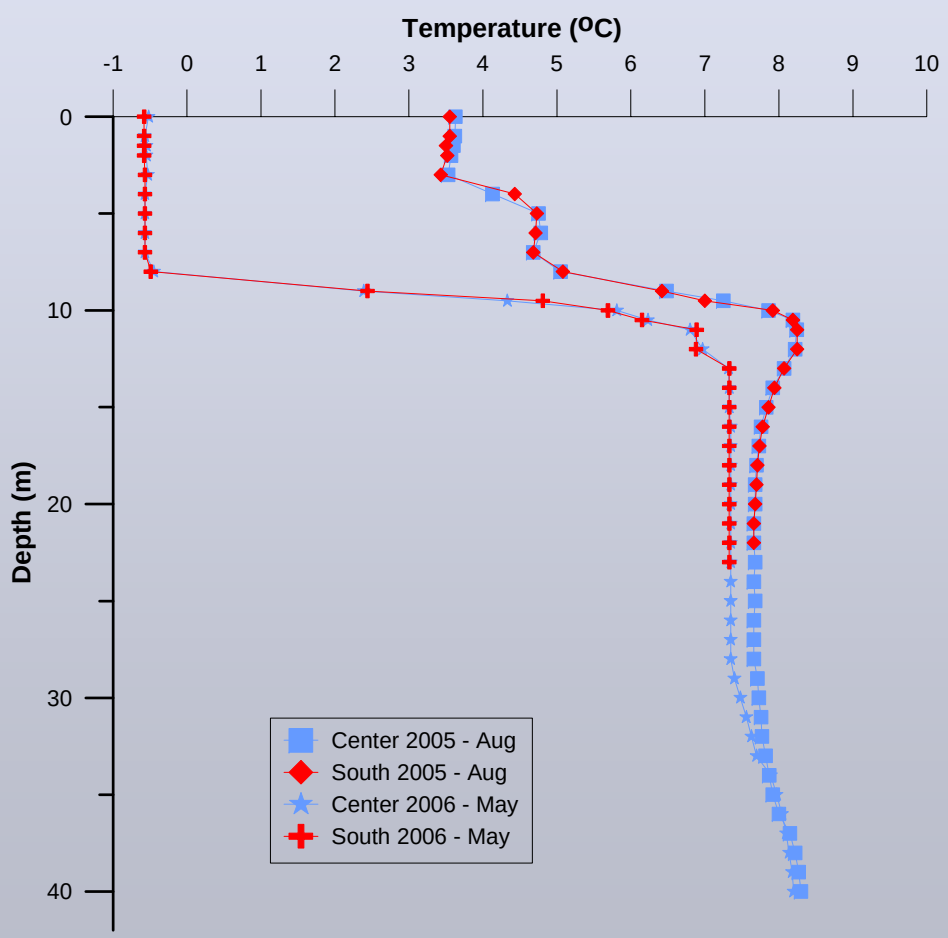
- Zinc concentration in mixolimnion ranged from 0.2 – 0.3 mg/L; 0.2 – 0.5 mg/L in monimolimnion
- Mixolimnion [Zn] is stable at ~0.25 mg/L
- Elevated Zn persists in the narrow pycnocline depth and variable among years
- Higher concentrations in 2002 than in previous two years

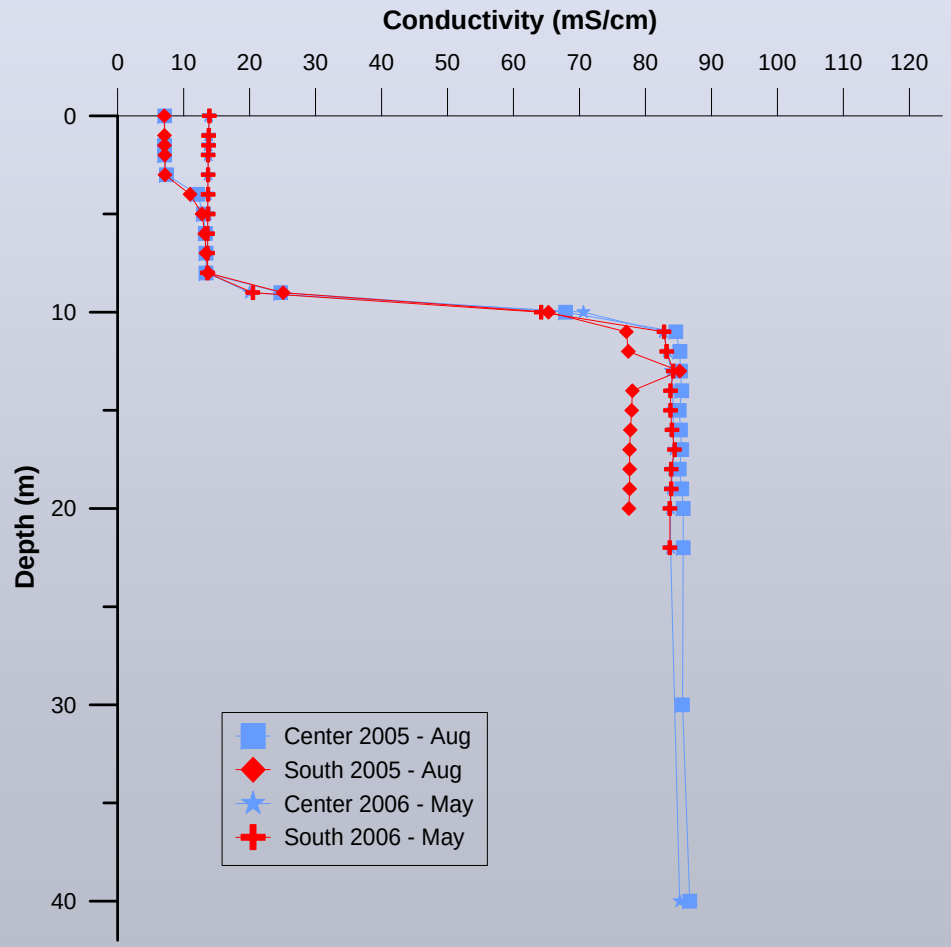
Zinc Data Trends 2003 – 2006

- Zinc concentration in mixolimnion has diminished since mining ceased in 2002
- Elevated Zn persists in the narrow pycnocline depth, probably due to accumulation in plankton and bacteria
- Strong reduction in Zn in monimolimnion from end of mining in 2002 (~0.5 mg/L) to 2005 (~0.04 mg/L) and in 2006 (~0.03 mg/L)

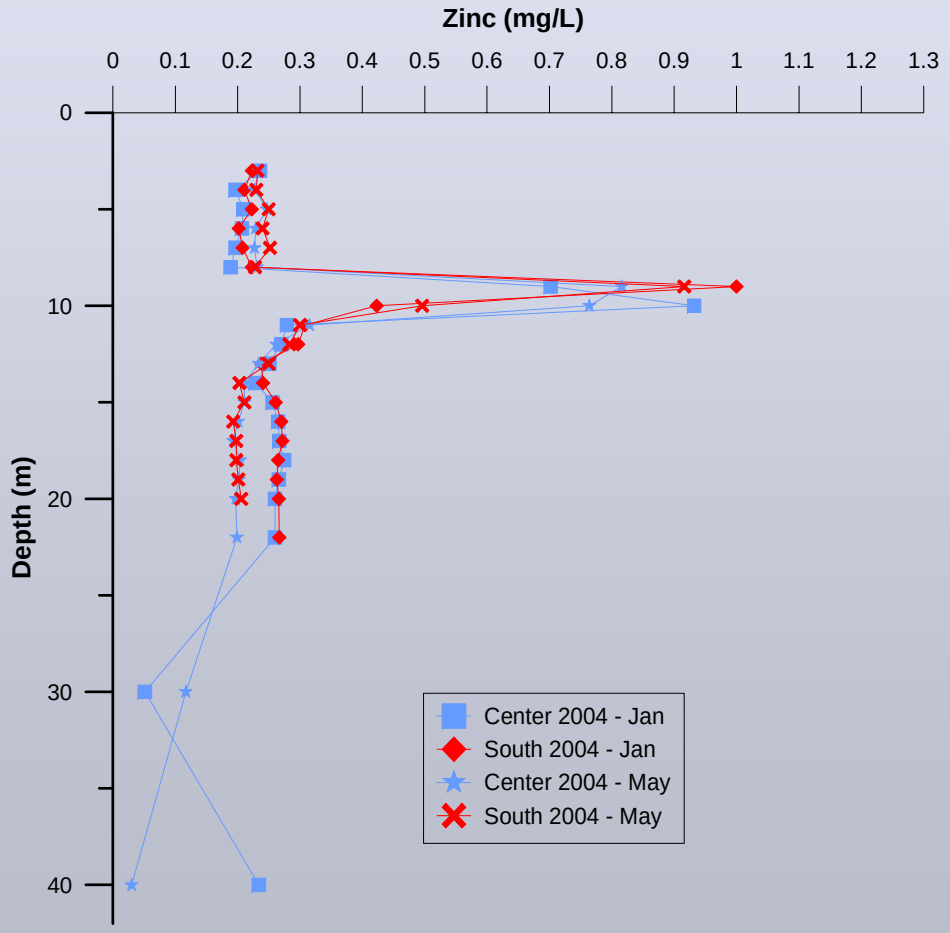
3) Garrow Lake Center versus South Station

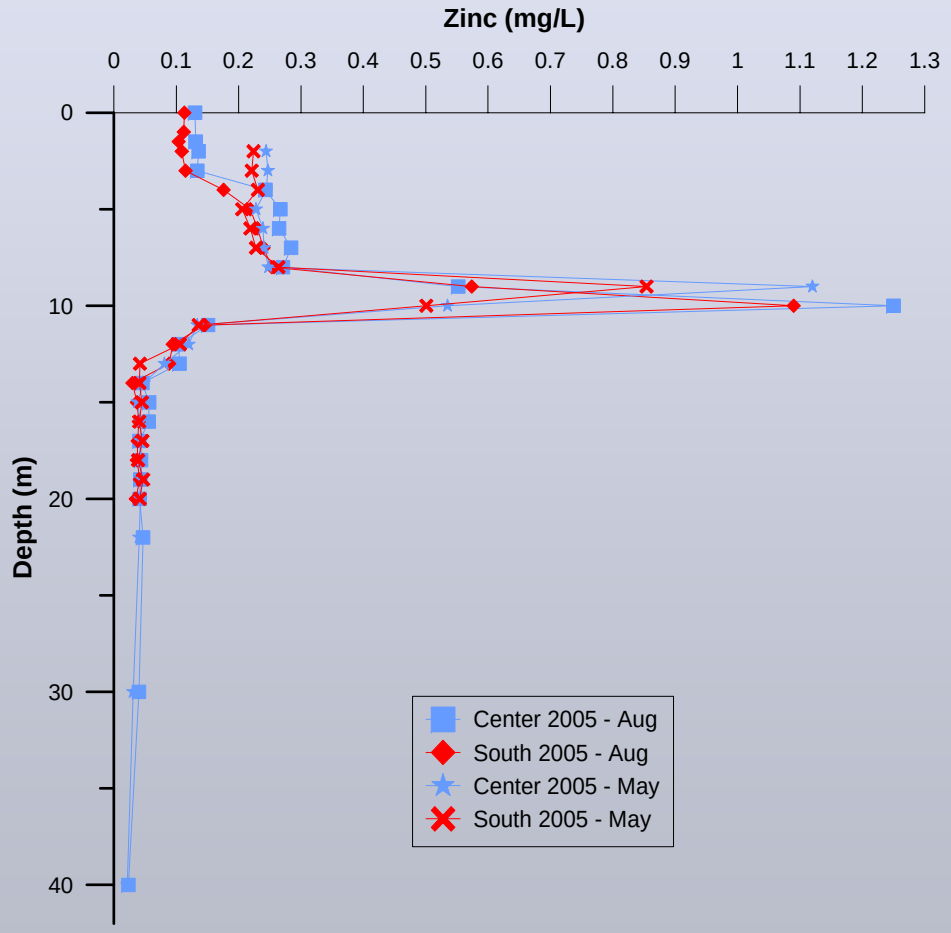
Garrow Lake Center and South: Temperature/Conductivity Profiles



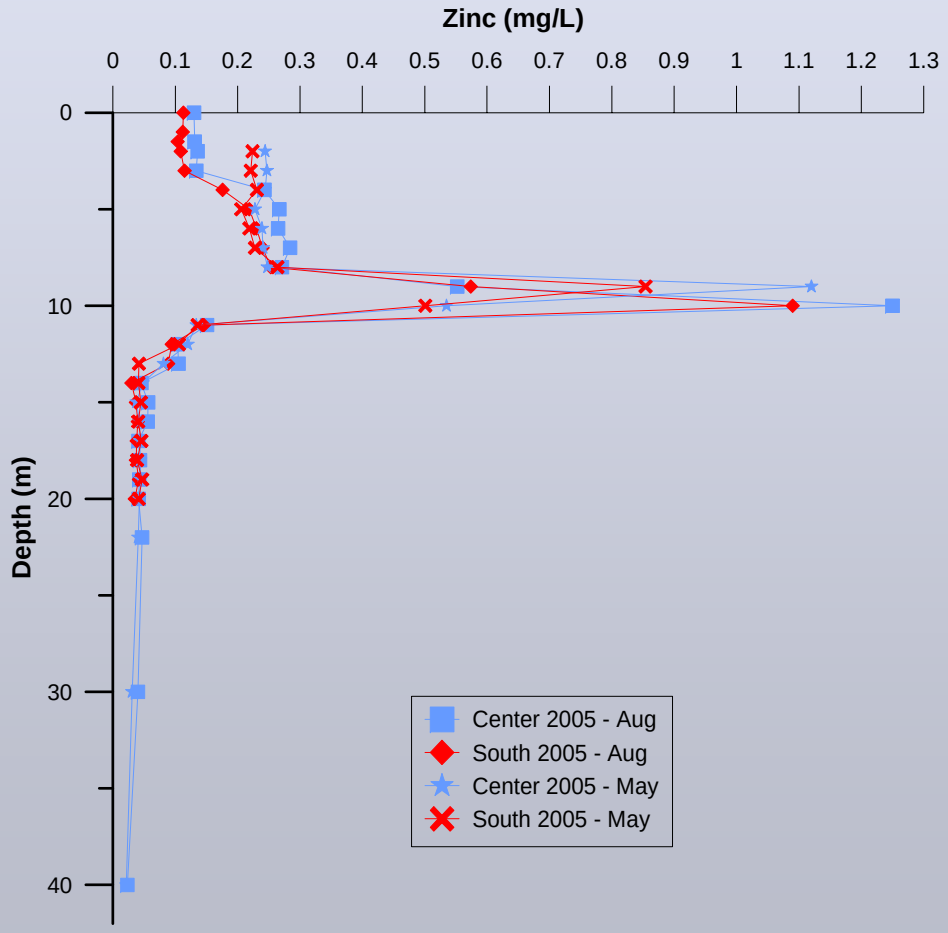


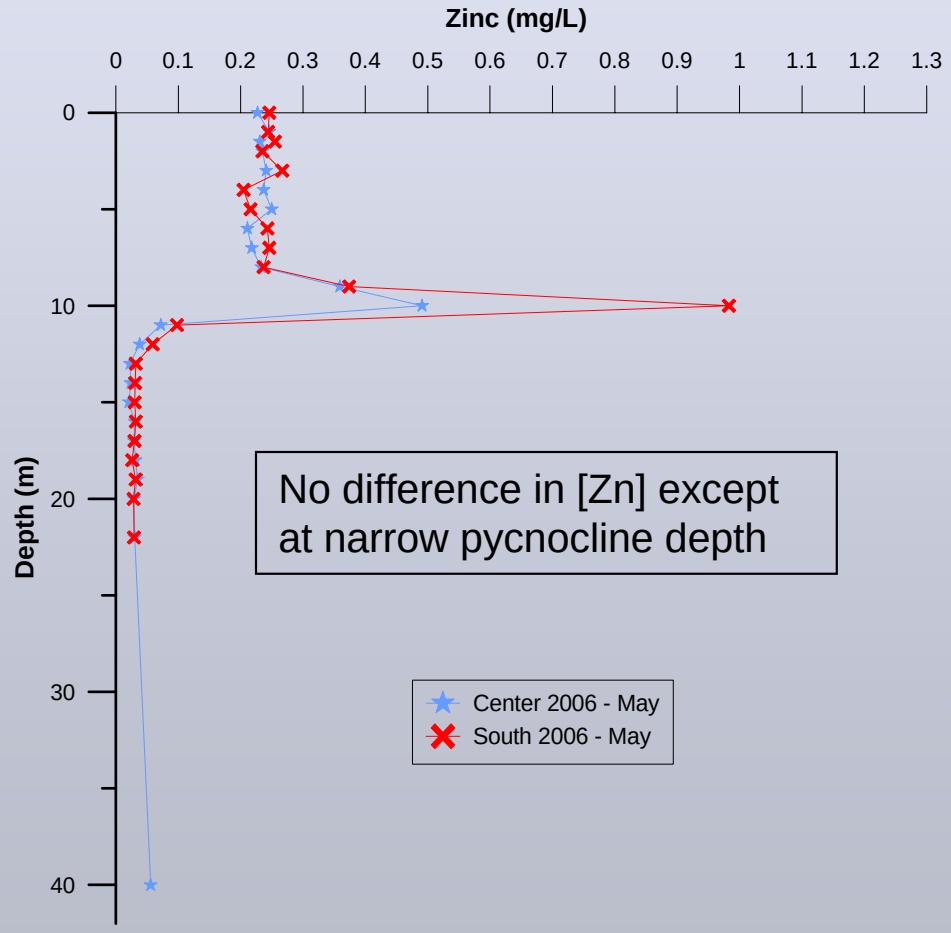
Garrow Lake Center and South: 2004 and 2005 Zinc Profiles





Garrow Lake Center and South: 2005 and 2006 Zinc Profiles





Center versus South Station Results

- There is **no** difference in vertical profiles of temperature, conductivity (salinity) or zinc between the center station (40 m) and the south station (22 m) over recent years – lines overlap
- This pattern is consistent with standard limnology of nearly all lakes
- Sampling the south station is redundant

4) Zinc Data Comparison – Garrow Lake and Garrow Creek

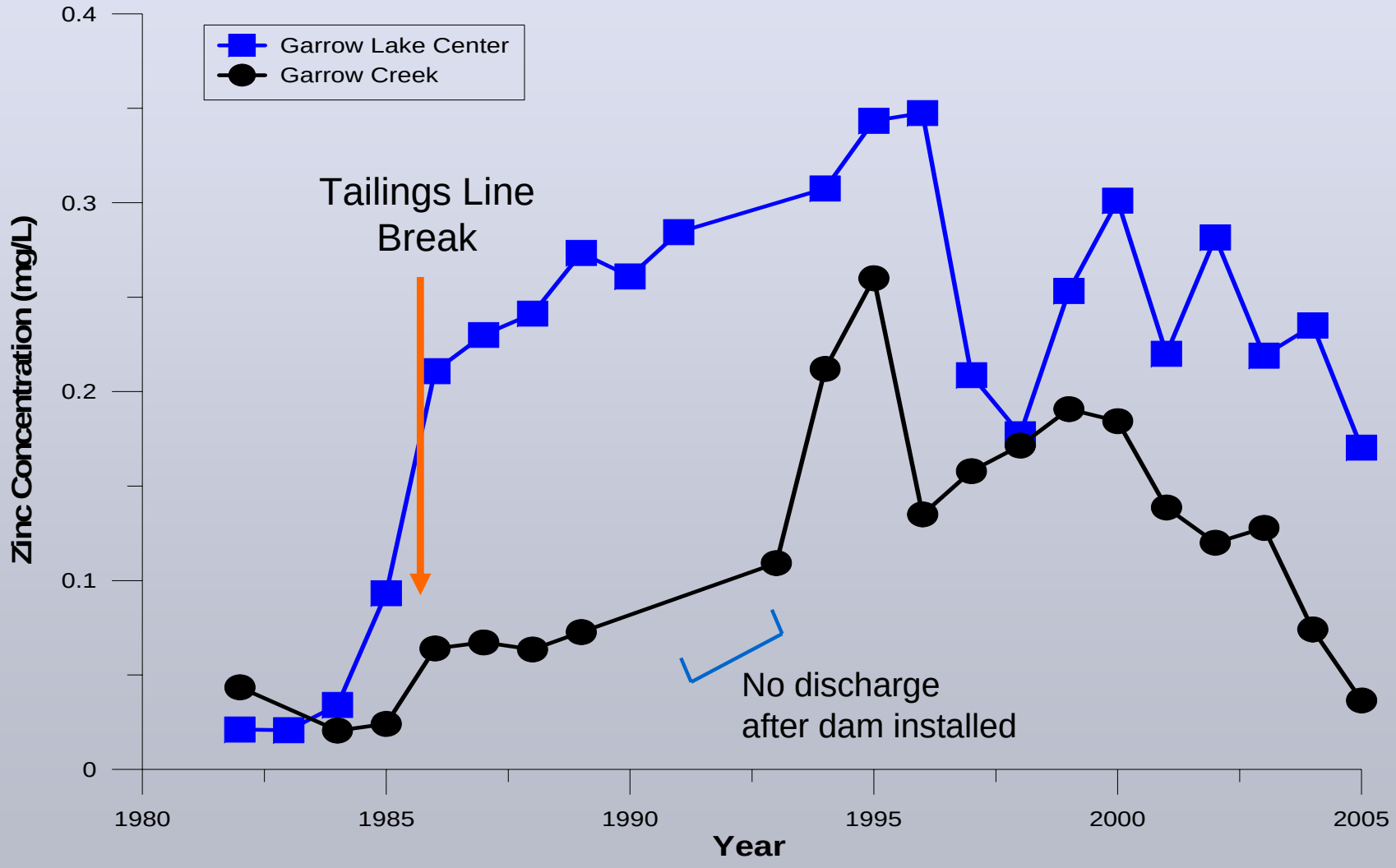
Average Zinc Concentrations in Garrow Lake and Garrow Creek from 1982 to 2005

Zinc Concentration (mg/L)						
	Garrow Lake Center (top 3 m)			Garrow Creek		
Year	Min	Mean	Max	Min	Mean	Max
1982	0.02	0.02	0.05	0.02	0.04	0.35
1983	0.01	0.02	0.03	na	na	na
1984	0.02	0.03	0.04	0.02	0.02	0.03
1985	0.04	0.09	0.20	0.02	0.02	0.04
1986	0.19	0.21	0.34	0.04	0.06	0.12
1987	0.18	0.23	0.28	0.02	0.07	0.14
1988	0.05	0.24	0.34	0.02	0.06	0.12
1989	0.03	0.27	0.40	0.02	0.07	0.28
1990	0.01	0.26	0.49	na	na	na
1991	0.06	0.28	0.42	na	na	na
1992	na	na	0.38	na	na	na
1993	na	na	na	0.05	0.11	0.26
1994	0.29	0.31	0.33	0.10	0.21	0.30
1995	0.31	0.34	0.37	0.09	0.26	0.35
1996	0.35	0.35	0.35	0.08	0.14	0.18
1997	0.19	0.21	0.24	0.09	0.16	0.23
1998	0.15	0.18	0.24	0.07	0.17	0.33
1999	0.22	0.25	0.32	0.02	0.19	0.25
2000	0.29	0.30	0.31	0.06	0.18	0.25
2001	0.20	0.22	0.24	0.05	0.14	0.20
2002	0.26	0.28	0.30	0.05	0.12	0.18
2003	0.13	0.22	0.28	0.05	0.13	0.19
2004	0.23	0.24	0.24	0.03	0.07	0.20
2005	0.13	0.17	0.25	0.01	0.04	0.09

Zinc in Garrow Lake versus Garrow Creek

- Zinc concentration in Garrow Creek is a reflection of zinc in surface waters (top 3 meters) of Garrow Lake
- Concentrations are lower in spring due to ice and snow melt and increase through the summer/fall

Average Zinc Concentrations in Garrow Lake and Garrow Creek from 1982 to 2005



Garrow Lake – Creek Zn Relationship

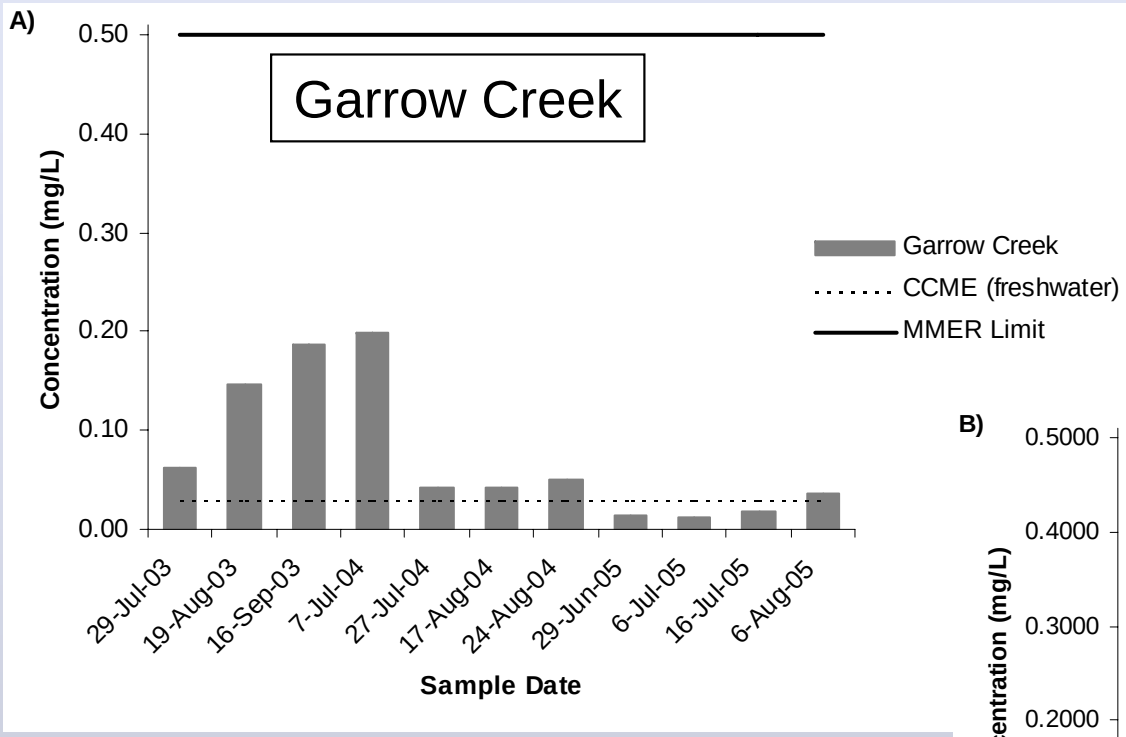
- Zinc concentration in Garrow Creek increased after 1985 tailings line break
- Zinc in Garrow Creek is consistently lower than in the lake because of dilution by ice and snow melt in lake and channel
- The trend of zinc concentrations in the lake and especially the creek are declining
- Mean creek Zn concentration is nearly at pre-mining concentration as of 2005
- Zn in Garrow Creek has never exceeded license value of 0.5 mg/L, even during mining

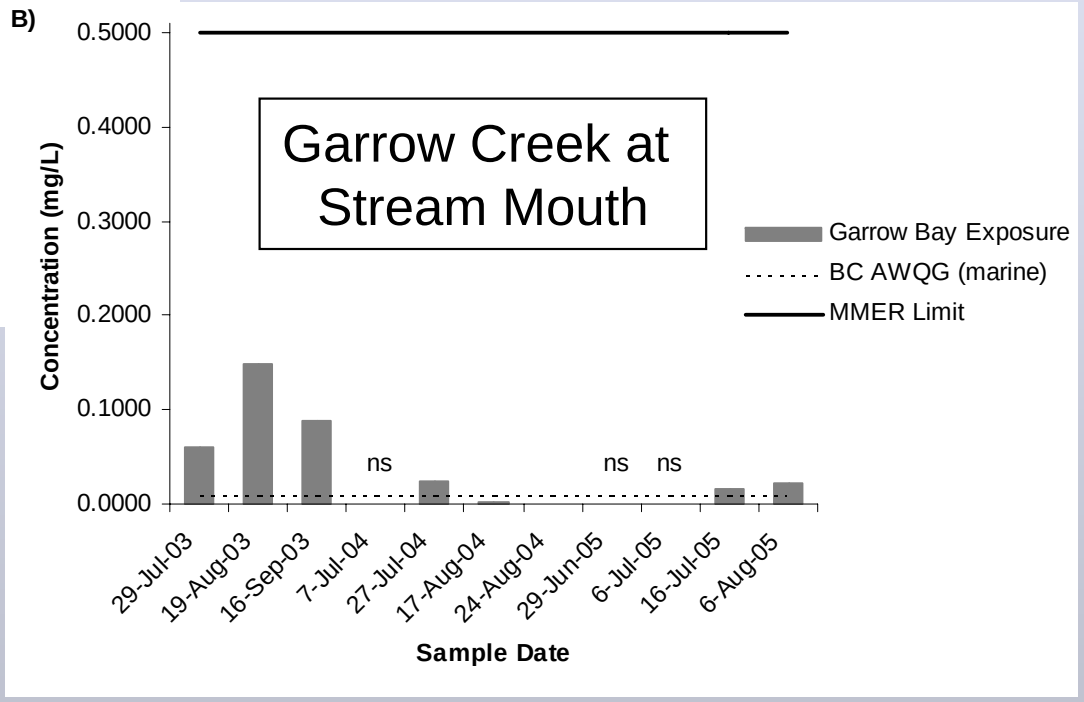
5) Summary of MMER Chemistry, EEM and Receiving Environment Data 2003 – 2005

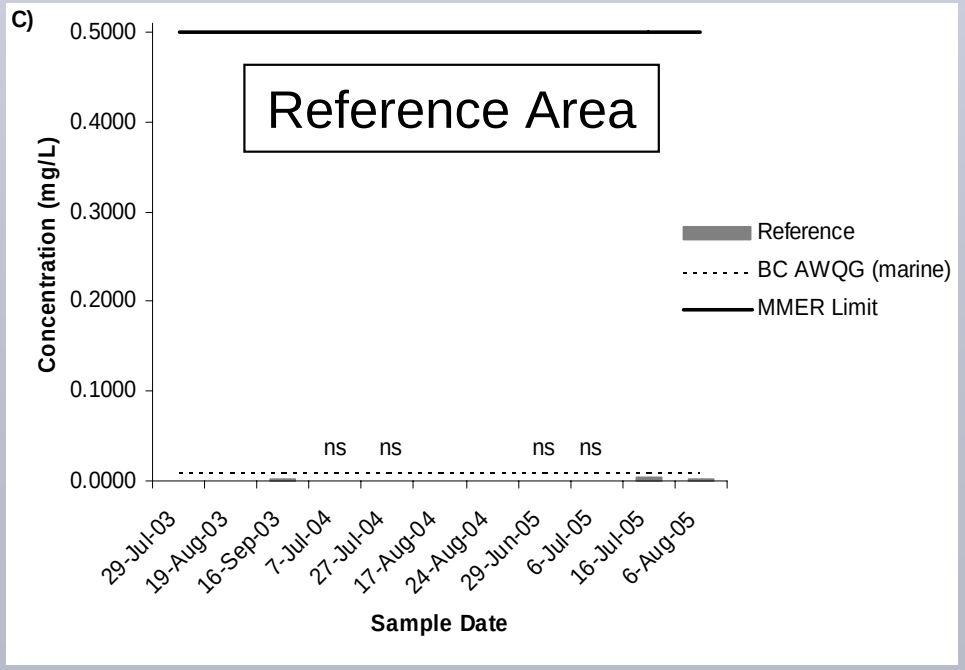
MMER Chemistry – Garrow Creek 2005

		MMER Schedule 4 Limits		Garrow Creek 2005			
Parameter	**Units**	**Column 2 - Monthly mean**	**Column 4 - Max in grab sample**	**29-Jun**	**6-Jul**	**16-Jul**	**6-Aug**
Aluminum	mg/L			<0.10	<0.20	0.0085	<0.20
Cadmium	mg/L			0.000035	0.000034	0.000044	0.000097
Iron	mg/L			0.024	0.012	0.043	0.014
Mercury	mg/L			<0.00001	<0.000010	<0.000010	<0.000010
Molybdenum	mg/L			<0.005	<0.0050	<0.0050	<0.0050
Ammonia	mg/L			0.089	0.036	0.037	<0.020
Nitrate	mg/L			0.038	0.032	<0.050	0.072
Arsenic	mg/L	0.50	1.00	<0.0002	<0.00020	<0.00020	<0.00020
Copper	mg/L	0.30	0.60	<0.0005	0.000240	0.000424	0.000516
Cyanide	mg/L	1.00	2.00	<0.005	<0.0050	0.0444	<0.0050
Lead	mg/L	0.20	0.40	0.00037	0.000166	0.000415	0.000467
Nickel	mg/L	0.50	1.00	0.00075	0.000601	0.000807	0.00166
Zinc	mg/L	0.50	1.00	0.0137	0.0137	0.0137	0.0137
TSS	mg/L	15.00	30.00	<3	4.0	<3.0	<3.0
Radium 226	Bq/L	0.37	1.11	<0.005	0.0050	0.009	<0.0050
pH	pH units	<6.0 or >9.5		7.98	7.49	7.59	7.65

MMER Zinc Data – Garrow Creek, Garrow Creek at mouth and Reference Area







Toxicity Testing 2003 – 2005

Test Date	Species Tested	Test Type	Sample Method	Consultant Laboratory	LC50 (% effluent)
Rainbow Trout 96-hr LC50					
29-Jul-03	*Oncorhynchus mykiss*	Survival	Grab	EVS Consultants, North Vancouver, BC	> 100
19-Aug-03	*Oncorhynchus mykiss*	Survival	Grab	EVS Consultants, North Vancouver, BC	> 100
16-Sep-03	*Oncorhynchus mykiss*	Survival	Grab	EVS Consultants, North Vancouver, BC	> 100
7-Jul-04	*Oncorhynchus mykiss*	Survival	Grab	EVS Consultants, North Vancouver, BC	> 100
27-Jul-04	*Oncorhynchus mykiss*	Survival	Grab	EVS Consultants, North Vancouver, BC	> 100
24-Aug-04	*Oncorhynchus mykiss*	Survival	Grab	EVS Consultants North Vancouver, BC	> 100
16-Jul-05	*Oncorhynchus mykiss*	Survival	Grab	EVS Consultants North Vancouver, BC	> 100
6-Aug-05	*Oncorhynchus mykiss*	Survival	Grab	EVS Consultants North Vancouver, BC	> 100
***Daphnia magna* 48-hr LC50**					
29-Jul-03	*Daphnia magna*	Survival	Grab	EVS Consultants, North Vancouver, BC	> 100
19-Aug-03	*Daphnia magna*	Survival	Grab	EVS Consultants North Vancouver, BC	> 100
16-Sep-03	*Daphnia magna*	Survival	Grab	EVS Consultants North Vancouver, BC	> 100
7-Jul-04	*Daphnia magna*	Survival	Grab	EVS Consultants, North Vancouver, BC	> 100
27-Jul-04	*Daphnia magna*	Survival	Grab	EVS Consultants North Vancouver, BC	> 100
24-Aug-04	*Daphnia magna*	Survival	Grab	EVS Consultants North Vancouver, BC	> 100
16-Jul-05	*Daphnia magna*	Survival	Grab	EVS Consultants North Vancouver, BC	> 100
6-Aug-05	*Daphnia magna*	Survival	Grab	EVS Consultants North Vancouver, BC	> 100

Historic Metal Concentrations in Marine Sediment – Garrow Bay

	CCME Sediment Quality Guidelines[1,2]		Pre - Mine Development	Post - Mine Development			
			Fallis 1984 Thomas & Erickson 1983 BC Research 1978,1981	BC Research 1988	AXYS 1991	Gartner Lee 1999	Azimuth 2003
			Subtidal	Subtidal	Subtidal	Subtidal	Subtidal
Metals (mg/kg)	**ISQG**	**PEL**					
Lead	30.2	112	6.0 - 11.6	4.6 - 7.6	3.8 - 4.5	7.5	7 - 11
Zinc	124	271	21 - 45	32 - 41	30 - 37	38	29 - 39

[1]Canadian Council of the Ministers for the Environment Interim Sediment Quality Guideline

[2]Canadian Council of the Ministers for the Environment Probable Effects Level Guideline

Historic Metal Concentrations in Clam Tissue – Garrow Bay

	Pre - Mine Development		Post - Mine Development						
	Fallis 1984[a]	BC Research 1978[b,c]	AXYS 1991[b,c]		Gartner Lee 1999[b,c]	Azimuth 2003[b,c]			
Metal (mg/kg ww)	n=8	n=33	n=2	Ref (n=1)	n=2	Site 1 n=3	Site 2 n=4	Site 3 n=4	Ref n=3
Lead	0.14	0.19	0.05	0.14	<0.1	0.12	0.11	0.25	0.08
Zinc	9	16.6	14.8	24.2	21	26.5	24.8	29.2	25.0

[a] 1981 Data; converted to wet wt using 85% moisture; depurated clams

[b] Non-depurated clams

[c] Reflects composite from larger number of clams (typically > 5 individuals)

MMER/EEM Data Summary

- All chemistry parameters in Garrow Creek ("effluent") are well below MMER/Water License
- Zinc concentrations in Garrow Creek, Garrow Bay and reference area are low
- No acute toxicity to rainbow trout or *Daphnia* in all testing since 2003
- No change in sediment metals since pre-mining
- No difference in clam tissue metals between exposure and reference areas in 2003
- Allowing for differences due to moisture, depuration of clams, no difference between pre-post-mining

Overall Conclusions

1. Vertical stratification of Garrow Lake persists and is very strong; AXYS (2001) modeling indicates no risk of breakdown
2. As of 2006, zinc concentrations in mixolimnion and monimolimnion water column are low and near pre-mine values
3. No difference between Center and South sampling stations
4. [Zn] of Garrow Creek is always less than in Garrow lake and has never exceeded licensed limit; [Zn] in lake and creek are near pre-mine values in 2005

Overall Conclusions
(Consult Interpretive Report for Details)

5. MMER / EEM Results
   - Garrow Creek chemistry well below MMER/Water License value
   - [Zn] marginally above BC Marine AWQG at creek mouth in ice-scour zone
   - No acute toxicity 2003 – 2005
   - No change in metals in sediments or clam tissue; this combined with plume delineation study demonstrates no exposure
   - There is a healthy biological community and fish population in the mixolimnion of Garrow Lake

Current Status of Polaris

- Mine has achieved recognized closed mine status and Environment Canada requires no further MMER monitoring
- All limnology, chemistry and exposure data (MMER) indicates Garrow Lake is healthy. There is no risk to receiving environment
- Water License stipulates MMER / EEM type monitoring – data indicate this is not necessary nor warranted

Suggested Changes to Monitoring Program at Polaris (1) – Part H

- Discontinue all toxicity testing of creek
- Discontinue routine weekly/monthly water chemistry sampling of creek in open water
- Discontinue requirement to measure “effluent” flow, volume and metals loading
- Drop all EEM requirements for Garrow Bay exposure area and Reference Area (water quality, benthos). The final Interpretive Report provides scientific justification for absence of effects

Suggested Changes to Monitoring Program at Polaris (2) – Part H

- Reduce monitoring of vertical stratification of Garrow Lake to once annual (late May) from lake center station only

- Shift to opportunistic water quality monitoring of Garrow Creek ~ 2 – 3 x per summer maintaining conventional (pH, salinity, alkalinity etc.) and monthly MMER parameters (except radon, cyanide)

ATTACHMENT # 4

Letter from Azimuth Consulting Group to Environment Canada Dated November 8th , 2006

Azimuth Consulting Group Inc.
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Canada V6K 2G8

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Fax: 604-739-8511
www.azimuthgroup.ca

Our File #: TC-06-01

November 8, 2006

Steve Harbicht
Anne Wilson
Environment Canada
5204 50th Ave. Suite 301
Yellowknife NWT X1A 1E2

Dear Mr. Harbicht and Ms. Wilson

Re: 2006 Update of Polaris Mine Environmental Data

The purpose of this letter is to fully update the water quality data at Polaris Mine with the recently collected August 2006 data and to reiterate our desire for Environment Canada's support of Teck Cominco's forthcoming request of the Nunavut Water Board to reduce their monitoring requirements at the mine site.

Updated water quality data presented here consists of:

- Vertical temperature and conductivity profiles in Garrow Lake Center (GLC) and south (GLS) stations;
- Vertical profiles of zinc concentrations in Garrow Lake Center (GLC) and South stations (GLS);
- Comparison of temperature, conductivity and zinc concentration data between Garrow Lake South (GLS) and Center (GLC);
- Zinc and salinity concentrations in Garrow Creek; and
- Toxicity testing results from Garrow Lake Center (GLC).

This update builds on previous information presented by Randy Baker and Bruce Donald to Environment Canada in Yellowknife in May 2006. Given that Polaris has achieved closed mine status and MMER monitoring is no longer required, we wish to reduce the monitoring requirements of the Nunavut Water License (which mirror MMER) for this abandoned site, given the stable limnological parameters, low metals chemistry and consistent lack of toxicity. We seek the support of Environment Canada in this. Details of the updated limnology and chemistry are as follows.

Temperature and Conductivity Profiles in Garrow Lake Center

Temperature and conductivity depth profiles for Garrow Lake Center for 2002 to 2006 are presented in Figures 1 and 2, respectively. As evident from the profiles, there is very strong stratification within Garrow Lake. The mixolimnion (from surface to approximately 9 m) and monimolimnion (from approximately 12 m to the bottom) have uniform conductivity, at 10-15 mS/cm and 80-95 mS/cm, respectively. Temperature is uniform in the monimolimnion (7 – 9°C), but varies in the mixolimnion with time of year (-1 in winter to 4°C in summer). Variations in temperature and conductivity are due to differences in Hydrolab calibration. The August 2006 data show exactly the same profiles as all previous sampling episodes since the mine closed in 2002.

Zinc Concentrations in Garrow Lake Center

Vertical zinc concentration profiles for Garrow Lake Center from 2002 to 2006 are shown in Figure 3. Zinc concentrations in the mixolimnion were uniform across all years, ranging from 0.1 to 0.3 mg/L. Concentrations rise at the pycnocline or the top of the density layer where we believe that zinc has accumulated in tissues of phytoplankton and bacteria. Data from August 2005 (1.3 mg/L) through August 2006 (0.3 mg/L) also show a diminishing trend, so perhaps this phenomenon is breaking down.

Beneath the pycnocline, there is a strong reduction in zinc through the monimolimnion from the end of mining in 2002 (approximately 0.5 mg/L) to 2004 (approximately 0.2 mg/L) and 2005/2006 (approximately 0.03 mg/L). The August 2006 data confirm that since mining has ceased, zinc concentrations throughout the water column (except the narrow pycnocline) have diminished considerably and reached pre-mine concentrations, even in deep waters of the tailings deposition area.

Temperature, Conductivity and Zinc Concentrations in Garrow Lake South Compared to Garrow Lake Center

Vertical temperature, conductivity and zinc profiles for Garrow Lake South and Center stations in 2005 and 2006 are presented in Figures 4, 5 and 6, respectively. There are no differences in vertical profiles of temperature, conductivity or zinc concentrations between the two sampling locations. The August 2006 data confirm previously observed trends. As expected, there should not be any differences in physical or chemical limnological parameters at discrete depths from different geographic locations of this lake.

Zinc and Salinity Concentrations in Garrow Creek

Seasonal trends in zinc and salinity concentrations in Garrow Creek from 2002 to 2006, are presented in Table 1 and Figure 7. All data show that zinc concentration

and salinity are low in July and gradually increase throughout the summer open-water season. Low zinc and salinity are typically observed soon after the stream channel opens, due to snowmelt and ice melt on Garrow Lake. Concentrations increase as surface waters of Garrow Lake are discharged and reflect the diminished influence of snow and ice melt and mirror limnological and chemical conditions of the Garrow lake mixolimnion. Zinc and salinity data from 2004, especially in spring and fall are elevated because of active lowering of Garrow Lake elevation to pre-mine levels during removal of the outlet dam.

Toxicity Test Results from Garrow Creek "effluent"

2006 acute toxicity testing results from Garrow Creek are presented in Table 2. Three independent acute tests on rainbow trout (96 hour LC50) and *Daphnia magna* (48 hour LC50) showed no acute toxicity. These results are consistent with all previous toxicity tests conducted on Garrow Creek "effluent".

Summary

August 2006 limnology and chemistry data from Garrow Lake and Garrow Creek show identical patterns to previous sampling episodes.

- Very strong vertical stratification between surface and bottom waters with a pycnocline at about 10 m depth.
- Low zinc in surface waters and a diminishing zinc concentration in bottom waters (monimolimnion) and in the pycnocline.
- Since active tailings deposition ceased in 2002 there has been a progressive decline in zinc concentrations throughout the water column, with a return to pre-mine concentrations, while maintaining stable vertical stratification.
- Consistent seasonal patterns in zinc and salinity in Garrow Creek with no toxicity.

Given that August 2006 data show consistent identical patterns to data collected since 2002 and cessation of mining, we would not expect these patterns to change in the future. Although no further monitoring is required by Environment Canada, the Water License for the site basically mirrors MMER requirements. In light of these data, Teck Cominco seeks support from Environment Canada to reduce the monitoring requirements of the Water Board license requirements as follows:

- Discontinue all toxicity testing of Garrow Creek
- Discontinue "routine" weekly/monthly water chemistry sampling of Garrow Creek during open water
- Discontinue the requirement to measure flow, volume and metals loading
- Drop all EEM requirements for monitoring Garrow Bay exposure and reference areas. Pre- and post-mining studies have shown that there has

been no change in metals concentrations in sediment and biota of Garrow Bay.

- Reduce monitoring of vertical stratification of Garrow Lake to **once** annual during spring and **only** from the deep center station. Should something unusual be observed, this provides ample time to undertake further investigation during summer if necessary.
- Opportunistic sampling of Garrow Creek (2 – 3 times per summer), maintaining monthly" sampling parameters, except radon and cyanide.

We would appreciate a written response to this letter with your comments on the data and whether or not you believe our forthcoming request of the Nunavut Water Board to be reasonable. Please do not hesitate to contact Bruce Donald of Teck Cominco Metals or myself if you have any questions regarding this request.

Sincerely,
Azimuth Consulting Group Inc.

Randy Baker, M.Sc., R.P.Bio.

cc Bruce Donald, Teck Cominco Metals

Figure 1: Garrow Lake Center Temperature Profiles: 2002-2006

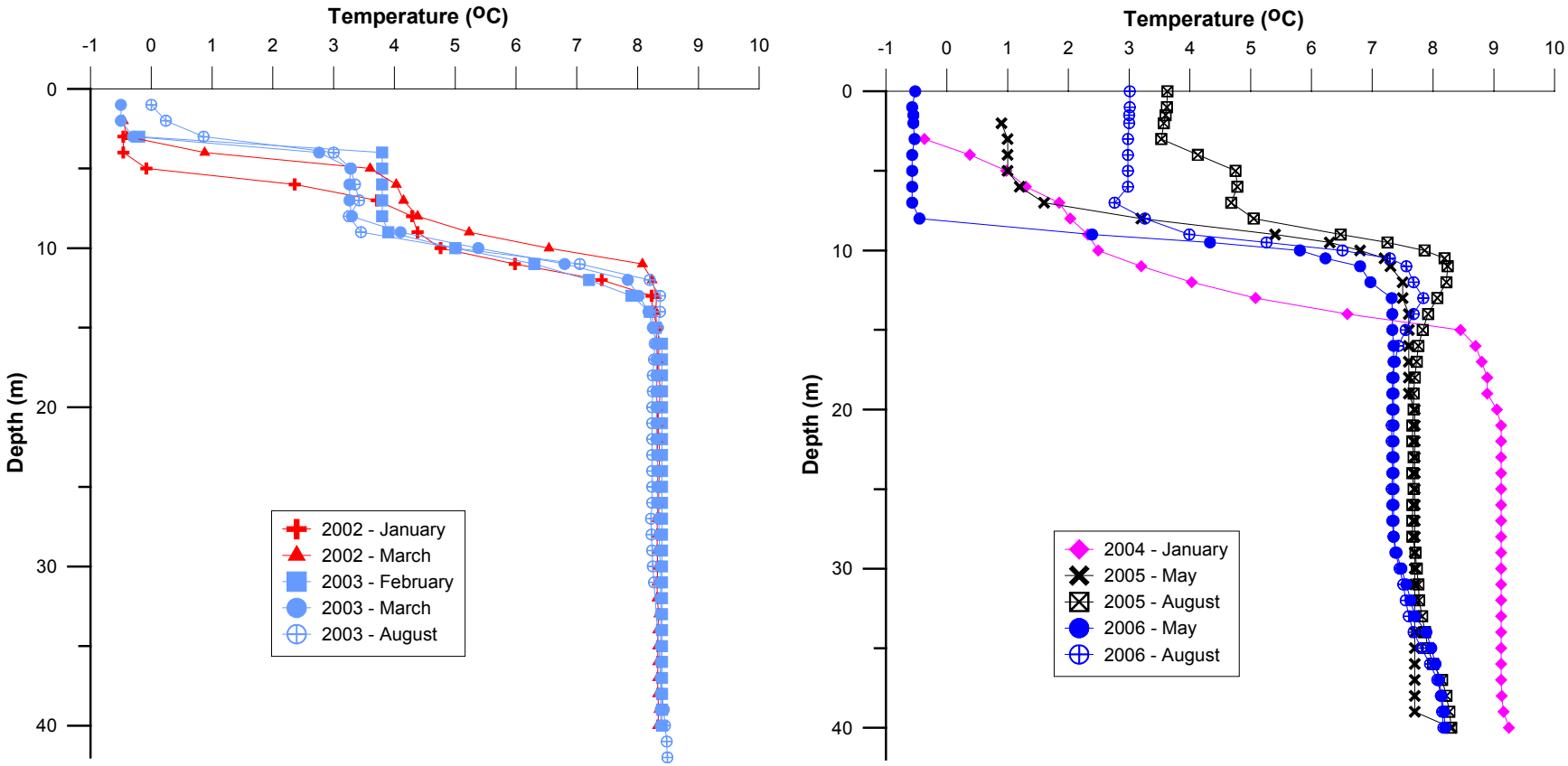


Figure 2: Garrow Lake Center Conductivity Profiles: 2002-2006

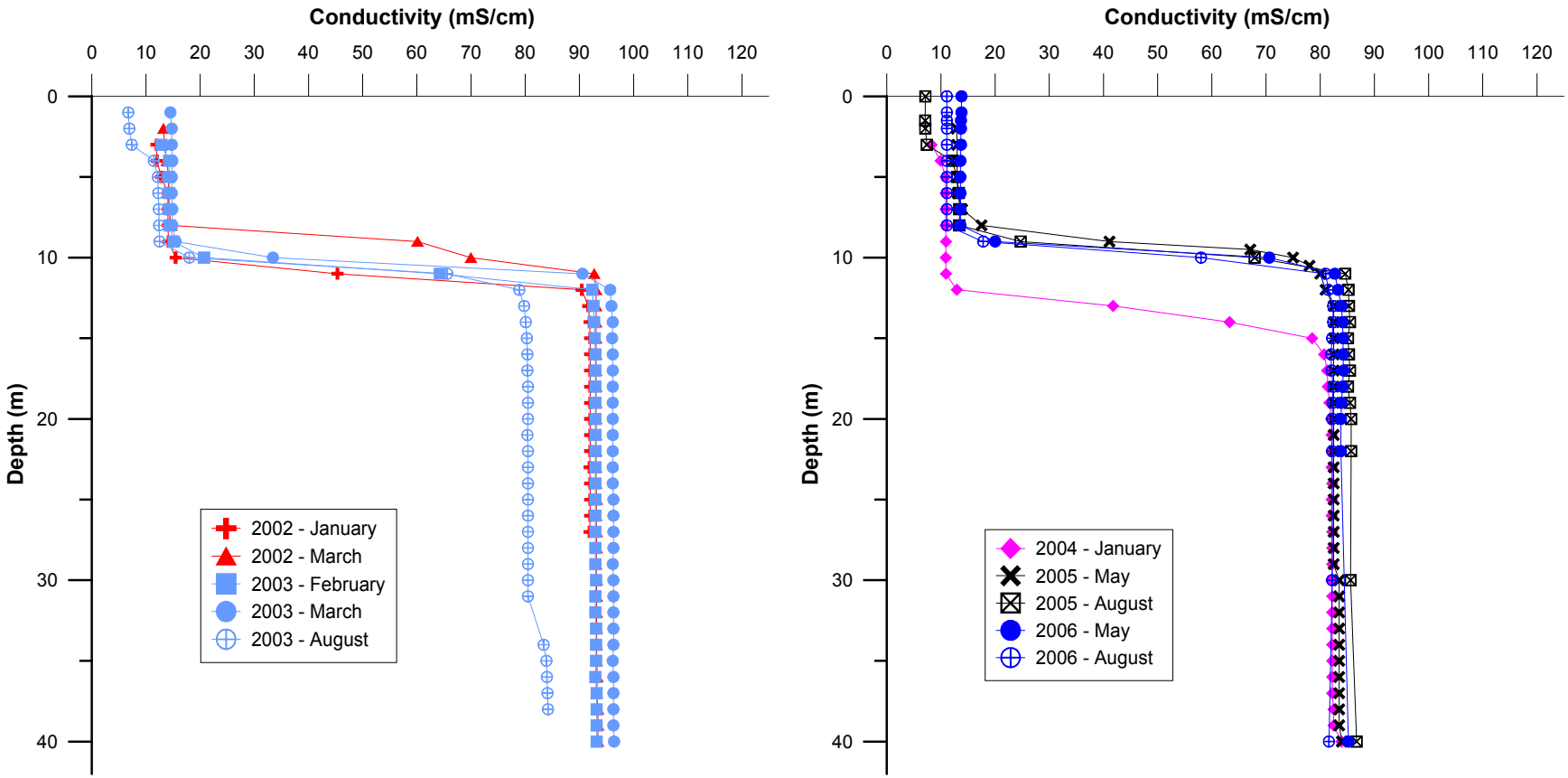


Figure 3: Garrow Lake Center Zinc Concentrations: 2002-2006

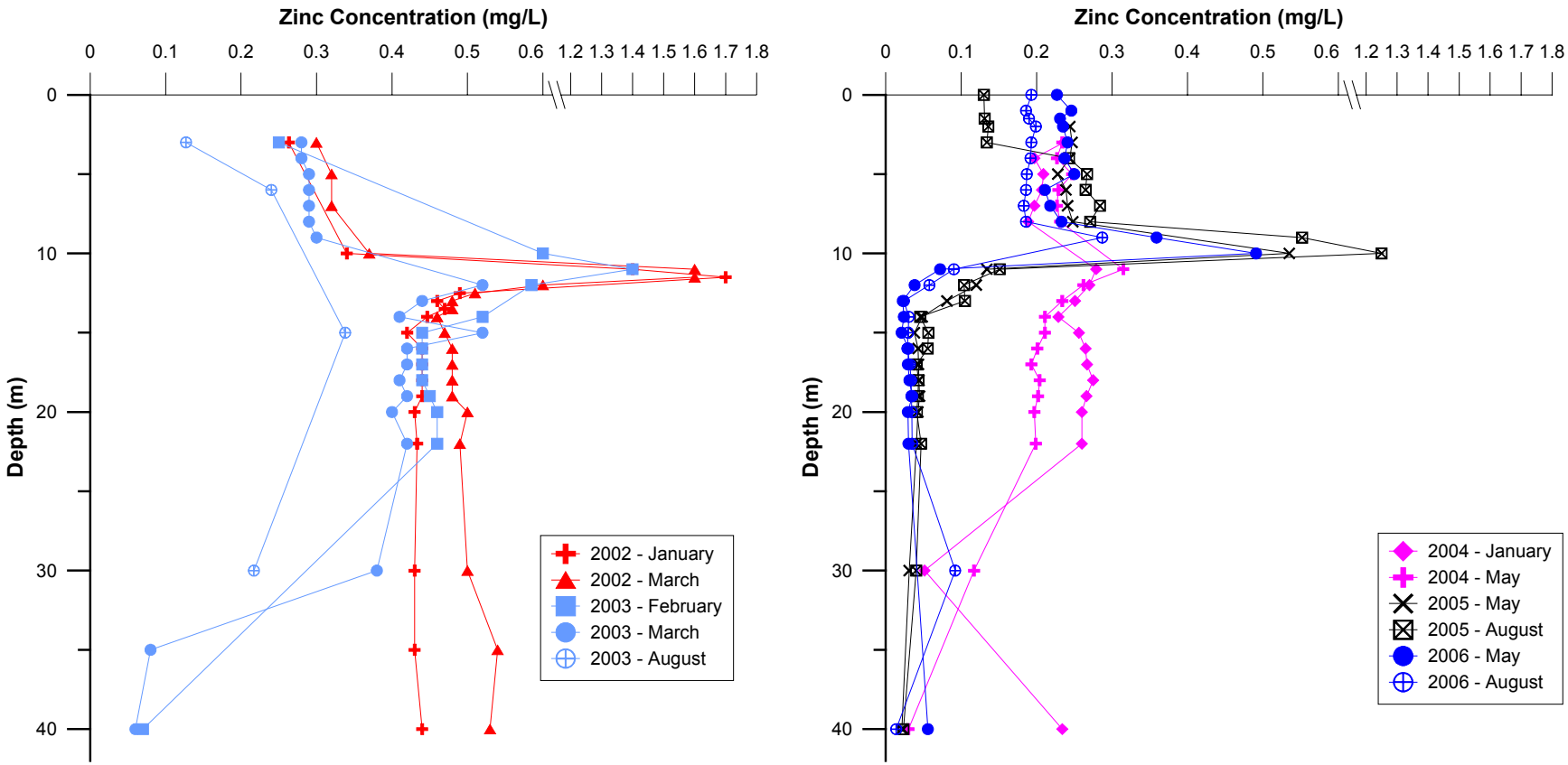


Figure 4: Garrow Lake Center vs. South Temperature Profiles

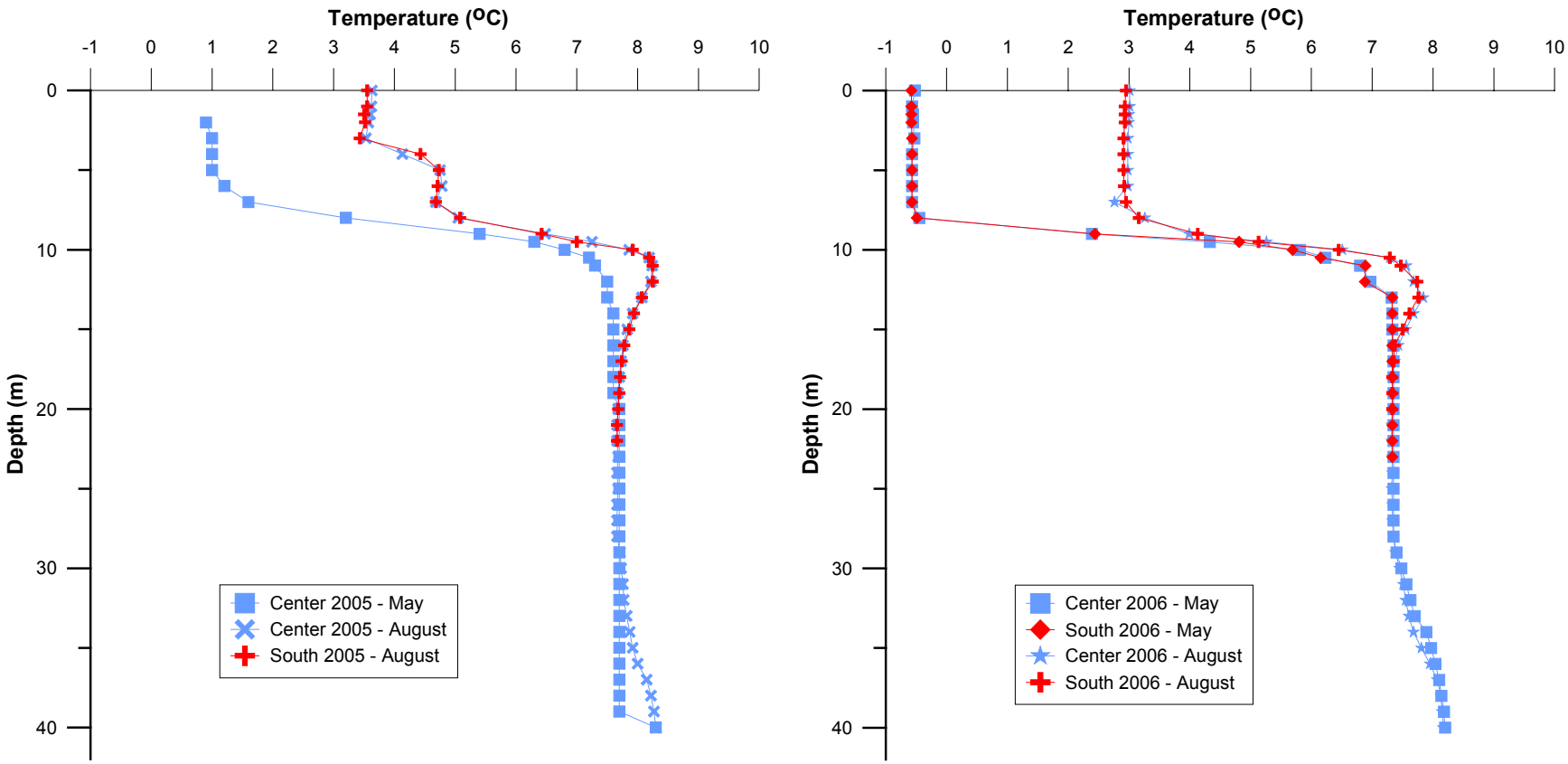


Figure 5: Garrow Lake Center vs. South Conductivity Profiles

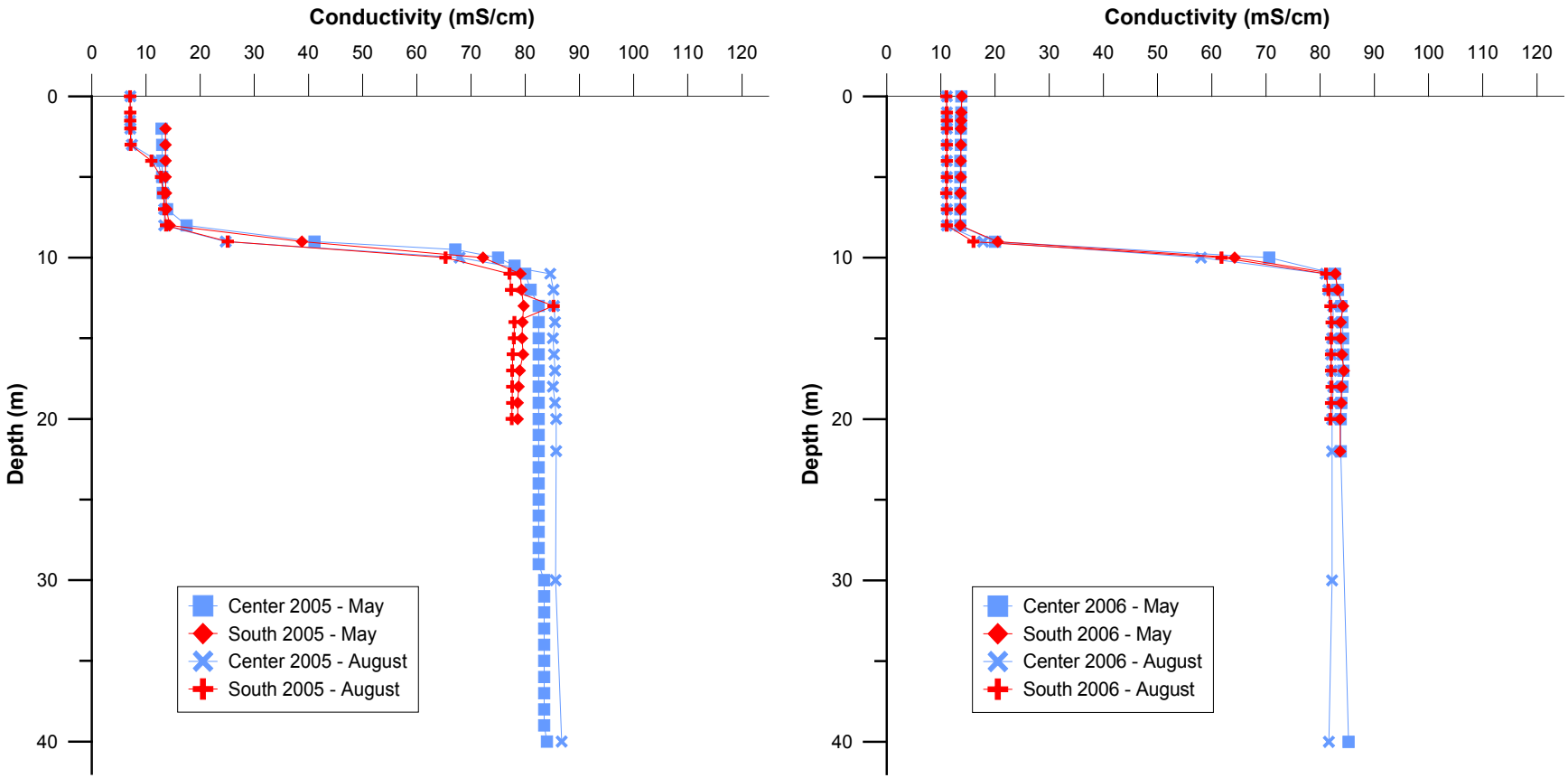


Figure 6: Garrow Lake Center vs. South Zinc Concentrations

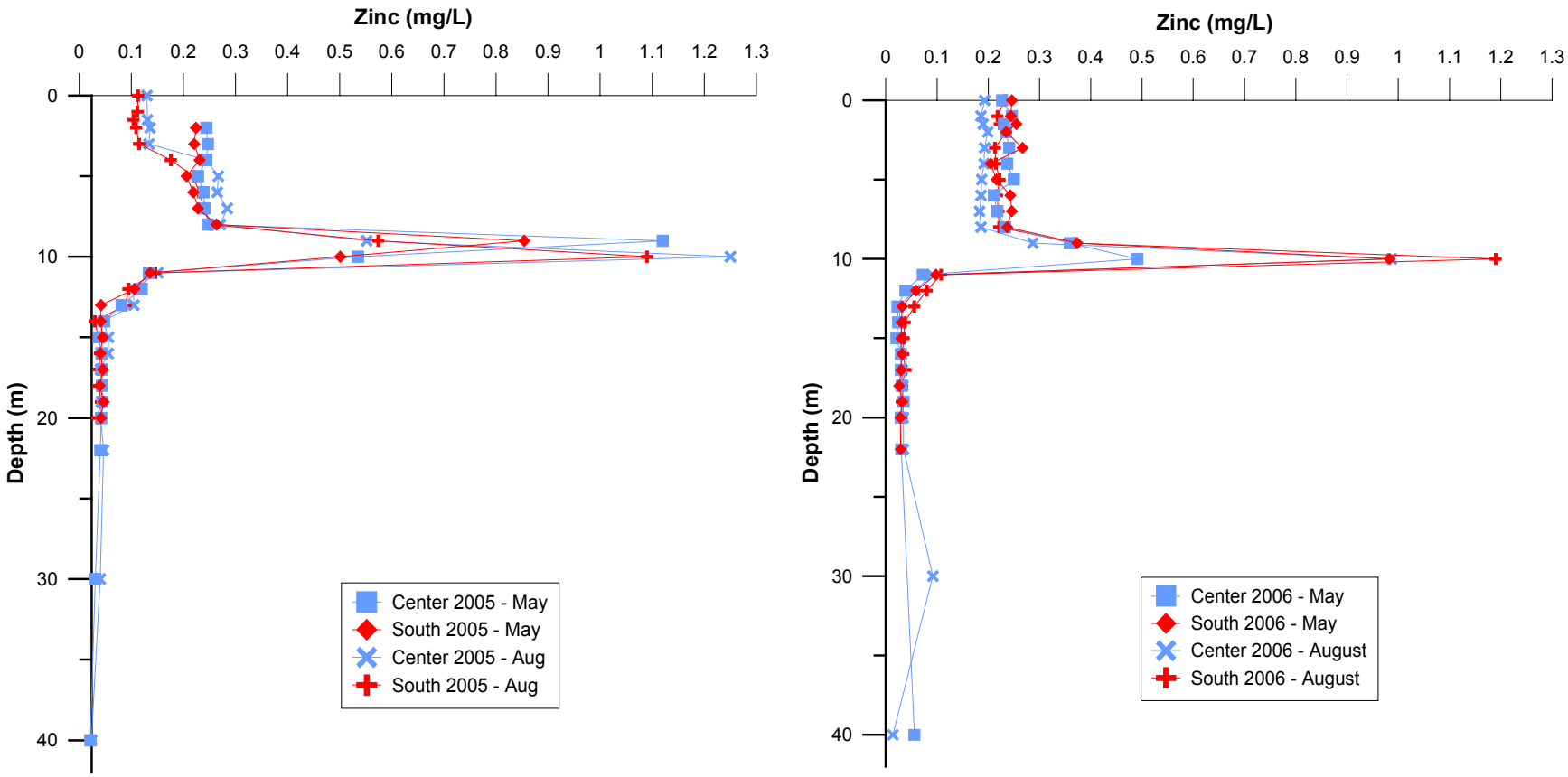
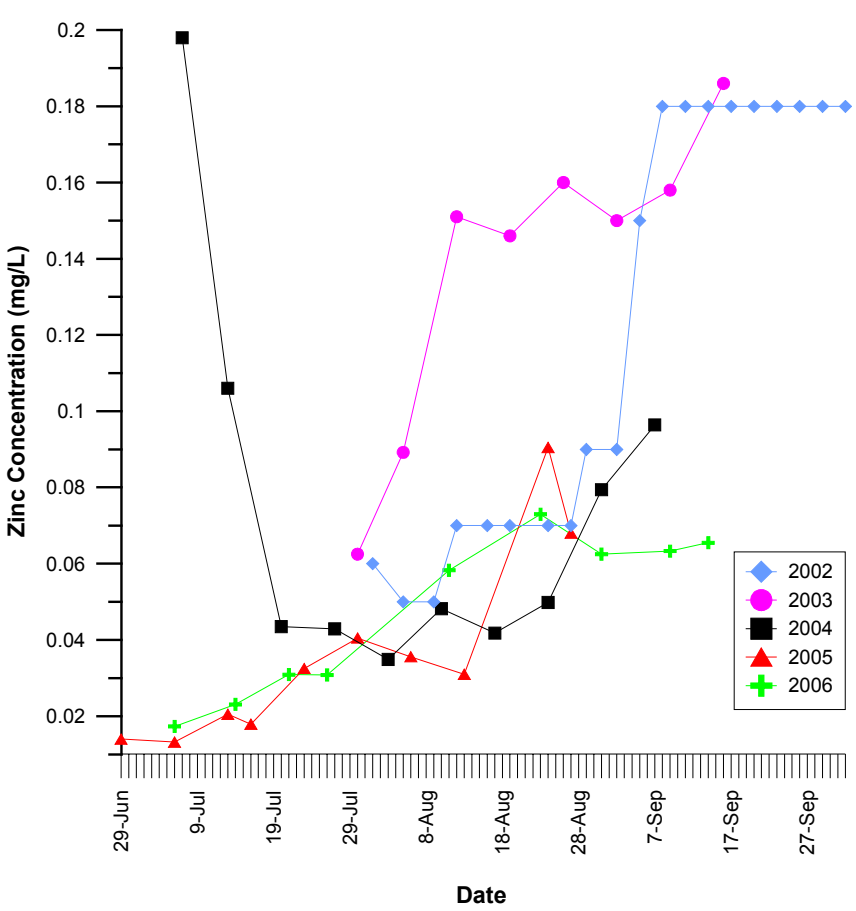


Figure 7: Garrow Creek Zinc and Salinity Concentrations: 2002-2006



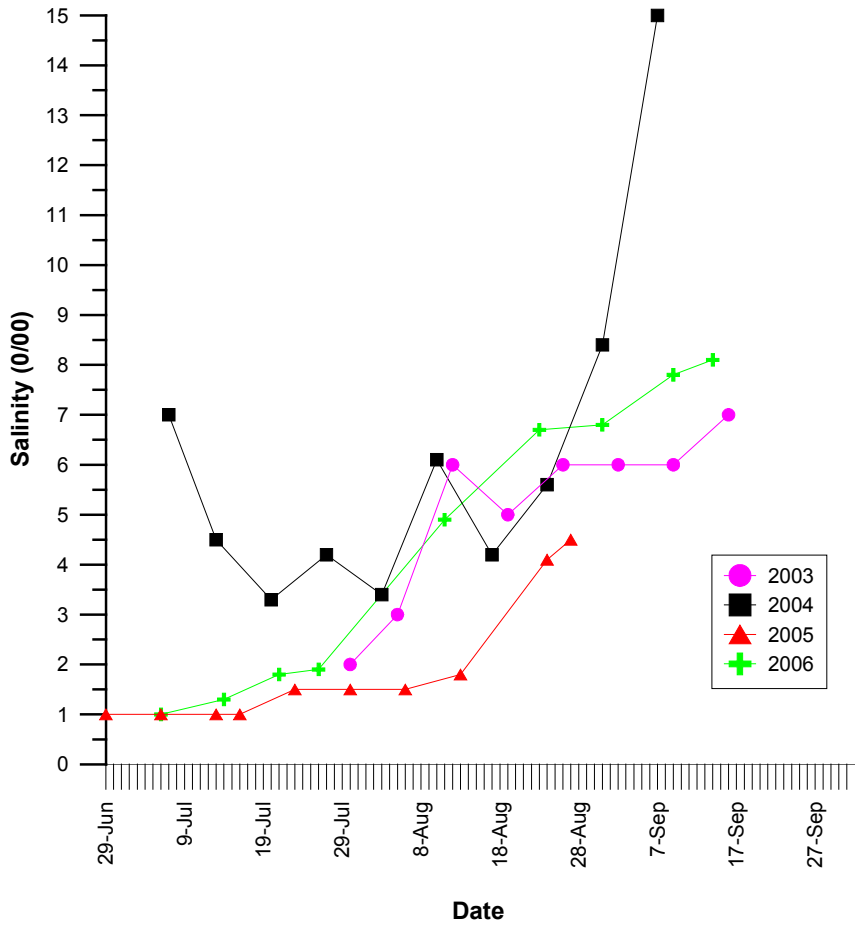


Table 1: Garrow Creek Zinc and Salinity Concentrations - 2002 to 2006

2002			2003			2004			2005			2006		
Date (d-mth)	Zinc (mg/L)	Salinity (o/oo)	Date (d-mth)	Zinc (mg/L)	Salinity (o/oo)	Date (d-mth)	Zinc (mg/L)	Salinity (o/oo)	Date (d-mth)	Zinc (mg/L)	Salinity (o/oo)	Date (d-mth)	Zinc (mg/L)	Salinity (o/oo)
29-Jul	0.06	NA	25-Jul	0.048	2	7-Jul	0.198	7	29-Jun	0.014	<1.0	6-Jul	0.017	<1.0
1-Aug	0.06	NA	30-Jul	0.063	2	13-Jul	0.106	4.5	6-Jul	0.013	<1.0	14-Jul	0.023	1.3
5-Aug	0.05	NA	5-Aug	0.089	3	20-Jul	0.044	3.3	13-Jul	0.021	<1.0	21-Jul	0.031	1.8
9-Aug	0.05	NA	12-Aug	0.151	6	27-Jul	0.043	4.2	16-Jul	0.018	<1.0	26-Jul	0.031	1.9
12-Aug	0.07	NA	19-Aug	0.146	5	3-Aug	0.035	3.4	23-Jul	0.033	1.5	11-Aug	0.058	4.9
16-Aug	0.07	NA	26-Aug	0.160	6	10-Aug	0.048	6.1	30-Jul	0.041	1.5	23-Aug	0.073	6.7
19-Aug	0.07	NA	2-Sep	0.150	6	17-Aug	0.042	4.2	6-Aug	0.036	1.5	31-Aug	0.063	6.8
24-Aug	0.07	NA	9-Sep	0.158	6	24-Aug	0.050	5.6	13-Aug	0.031	1.8	9-Sep	0.063	7.8
27-Aug	0.07	NA	16-Sep	0.186	7	31-Aug	0.079	8.4	24-Aug	0.091	4.1	14-Sep	0.066	8.1
29-Aug	0.09	NA				7-Sep	0.096	15.0	27-Aug	0.068	4.5			
2-Sep	0.09	NA												
5-Sep	0.15	NA												
8-Sep	0.18	NA												
11-Sep	0.18	NA												
14-Sep	0.18	NA												
17-Sep	0.18	NA												
20-Sep	0.18	NA												
23-Sep	0.18	NA												
26-Sep	0.18	NA												
29-Sep	0.18	NA												
2-Oct	0.18	NA												

Table 2: Garrow Creek Toxicity Testing Results - 2006

Test Date	Species Tested	Test Type	Sample Method	Consultant Laboratory	LC50 (% effluent)	Test Validity
Rainbow Trout 96-hr LC50						
15-Jul-06	*Oncorhynchus mykiss*	Survival	Grab	EVS Consultants, North Vancouver, BC	>100	invalid - temperature control unit failure
23-Aug-06	*Oncorhynchus mykiss*	Survival	Grab	EVS Consultants, North Vancouver, BC	>100	valid
9-Sep-06	*Oncorhynchus mykiss*	Survival	Grab	EVS Consultants, North Vancouver, BC	NA	invalid - control sample failure
***Daphnia magna* 48-hr LC50**						
15-Jul-06	*Daphnia magna*	Survival	Grab	EVS Consultants, North Vancouver, BC	>100	valid
23-Aug-06	*Daphnia magna*	Survival	Grab	EVS Consultants, North Vancouver, BC	>100	valid
9-Sep-06	*Daphnia magna*	Survival	Grab	EVS Consultants, North Vancouver, BC	>100	invalid - sample exceeded holding times

ATTACHMENT # 5

Letter from Environment Canada to Azimuth Consulting Group Dated December 12, 2006

Environment Canada
Environnement Canada

Environment Canada
Prairie and Northern Region
#301 - 5204 - 50th Ave
Yellowknife, NT X1A 1E2
Ph. (867) 669-4700

December 12, 2006

Our File: 4705 037 POLA

Azimuth Consulting Group Inc.
218-2902 West Broadway
Vancouver, BC V6K 2G8

Attention: Randy Baker

By email: rbaker@azimuthgroup.ca

Re: Monitoring of Garrow Lake and Garrow Creek

Environment Canada (EC) staff have reviewed the 2006 update of Polaris Mine environmental data which you provided to our office November 8, 2006, and evaluated the frequency of monitoring which we feel would be appropriate at this stage. Following are the specific requests from your summary, along with our recommendations for each:

1. *To discontinue all toxicity testing of Garrow Creek.*
   EC recommends retention of annual acute toxicity tests as a means of confirming that there are no problems with the water quality. Further toxicity testing is recommended due to the limited data set currently available as a result of test validity problems with previous samples. Samples would continue to be drawn from Station Number 262-7 until the end of the license period, and should be collected once during the August sampling event or thereafter, for trout and daphnia tests.

2. *Discontinue "routine" weekly/monthly water chemistry sampling of Garrow Creek during open water.*
   The last bullet in the summary section (Page 4) states that opportunistic sampling of Garrow Creek (2-3 times per summer) would be done, for "monthly" sampling parameters excluding radium 226 (not radon) and cyanide. Rather than discontinuing all routine weekly/monthly water chemistry sampling of Garrow Creek, EC recommends that sampling be done on a monthly frequency for the full suite of parameters for Station Number 262-7 as shown in page 33 of Water Licence Table 1, except cyanide and radium 226. This should be approximately the same frequency that was contemplated for the opportunistic basis, but we would like to formalize the timing. The purpose would be to extend the data record until 2011 to cover a greater range of hydrometric conditions which may be expected to occur, prior to final abandonment.

3. *Discontinue measurement of flow, volumes and metals loading*.

EC concurs with this request.

4. *Discontinue any further measurement of Garrow Bay exposure and reference areas*. EC concurs with this request, given that upstream monitoring will continue as recommended above, and that there is reasonably low environmental risk in this receiving environment.

5. *Reduce monitoring of vertical stratification of Garrow Lake to once annually in spring, and only from the deep center station.*
   EC has concerns with this approach, as there is unlikely to be much change in stratification during the ice cover period. We would like to see the maintenance of twice-yearly monitoring, with an open-water period included. It is noted that the profiles for May and August for conductivity and for zinc are reasonably close, with minor variation in the epilimnion, but the period of record is very short. Again, it would be prudent to monitor over a longer open water period, when mixing would be more likely to occur. Therefore, EC recommends that monitoring of vertical stratification occur twice per year, once at maximum ice thickness (in the spring) and once during the open water period. This monitoring should occur until the end of the license period. We need to ensure enough data are collected to try and confirm whether the lake will be stable in perpetuity.

EC looks forward to receiving your formal request for changes to the monitoring program for the Polaris Mine from the Nunavut Water Board. Please do not hesitate to contact Steve Harbicht at 867-669-4735 or myself at (867) 669-4733 with any questions or comments regarding the foregoing.

Yours truly,

Anne Wilson
Water Pollution Specialist
Environmental Protection Branch

cc: Stephen Harbicht (Head, EA - North, EPOD)
Colette Spagnuolo (EA Specialist, Iqaluit, EPOD)
Jenny Ferone (Regional EEM Coordinator, Edmonton)

ATTACHMENT # 6

CD of Letter and Attachments