

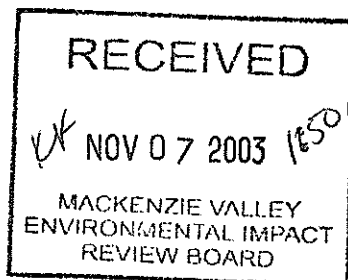


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FILE NO: MV200112-0003DATE: November 7, 2003TO: Alan EhrlichMVEIRBFAX NUMER: 766-7074FROM: Sarah BainesNumber of pages including cover: 22

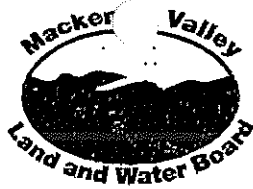
Alan, here are the Reasons for Decision  
for the Canadian Zinc water license.

The first 3 pages constitute a letter  
describing 3 corrections that were  
made to the license.



Cheers,  
Sarah

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**Mackenzie Valley Land and Water Board**

7th Floor - 4910 50th Avenue • P.O. Box 2130

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October 30, 2003

File: MV2001L2-0003

Mr. J. Peter Campbell  
Canadian Zinc Corporation  
Suite 1202 - 700 West Pender Street  
VANCOUVER, BC V6C 1G8

Fax: (604) 688-2043

Dear Mr. Campbell:

**Corrections made to Water License MV2001L2-0003**

The Mackenzie Valley Land and Water Board (MVLWB or the Board) recently prepared the Reasons for Decision for Water License MV2001L2-0003. During this review, two (2) License Conditions were identified as containing incorrect references. It was also determined that one report required under the Surveillance Network Program (SNP) is inconsistent with the restrictions outlined in the License Conditions.

Listed below are the parts of the License that require modification along with rationales for the changes to be made. The corrected versions of each part of the License are provided in bold text.

- (1) Part B, Item 3(a) as currently written in the License: "Attachments 1 and 2 of the Mackenzie Valley Environmental Impact Review Board's Report of Environmental Assessment on the Canadian Zinc Corporation, Underground Decline and Drilling and Metallurgical Pilot Plant Developments; and".

The document referred to in this Condition should not be the "Report of Environmental Assessment..." as none of the commitments made by the Canadian Zinc Corporation during the Environmental Assessment are outlined in this document. The document containing the commitments that are to be adhered to is titled "Attachments to Reasons for Decision," issued by the Mackenzie Valley Environmental Impact Review Board on

.../2

April 15, 2003. As such, the document referenced in this License Condition will be changed as follows:

**Corrected Part B, Item 3a: "Attachments 1 and 2 of the Mackenzie Valley Environmental Impact Review Board's Attachments to Reasons for Decision; and".**

- (2) **Part D, Item 6 as currently written in the License:** "The Licensee shall submit to the Board for approval an Effluent Treatment Options Plan outlining options to meet the effluent quality requirements from Part D, Item 9 for the water discharged from SNP Station 3-4. This plan shall be implemented before discharge of water to Prairie Creek, Harrison Creek, or the Catchment Pond."

The Item referred to in this Condition should not be Part D, Item 9 as this Condition does not describe effluent quality requirements. The effluent quality requirements for SNP Station 3-4 are listed in Part D, Item 5. As such, the Item referenced in this Condition will be changed as follows:

**Corrected Part D, Item 6:** "The Licensee shall submit to the Board for approval an Effluent Treatment Options Plan outlining options to meet the effluent quality requirements from Part D, Item 5 for the water discharged from SNP Station 3-4. This plan shall be implemented before discharge of water to Prairie Creek, Harrison Creek, or the Catchment Pond."

- (3) **SNP, Section 3a, Reports, as currently written in the License:** "The Licensee shall submit to the Board for approval a report outlining options for potential SNP Stations for the monitoring of the Tailings Containment Area to be implemented upon approval of Part D, Item 2 of the License."

Under Part D, Item 2 of the License, the Tailings Containment Area (TCA) is not to be used at all in conjunction with the licensed undertakings; therefore, it is not part of the scope of the License and does not need approval. This reporting requirement then is inconsistent with Part D, Item 2 because the report is for monitoring an approved TCA. **This reporting requirement is to be eliminated from the SNP.**

The MVLWB apologizes for any inconvenience this may have caused and hopes this clarifies any inconsistencies in the original Water License. The changes become effective on the date of this letter and the attached Water License supersedes the version issued in our letter to you dated September 12, 2003.

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If you have any questions, contact Sarah Baines at (867) 669-0506 or email [mvlwbpermit@mvlwb.com](mailto:mvlwbpermit@mvlwb.com).

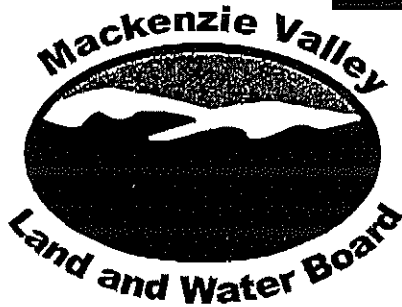
Yours sincerely,



Melody J. McLeod  
Chair

Attachment – Revised Water License MV2001L2-0003

Copied to: Ed Hornby, District Manager, South Mackenzie District, DIAND,  
Yellowknife  
Stephen Mathyk, Regulatory Officer, MVLWB  
Sarah Baines, Regulatory Officer, MVLWB



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### **REASONS FOR DECISION**

**Reference/File Number:** Water License MV2001L2-0003, Type "B"  
**Licensee:** Canadian Zinc Corporation

**Mackenzie Valley Land and Water Board**

### **REASONS FOR DECISION**

Issued pursuant to Section 26  
of the *Northwest Territories Waters Act*, R.S.C. 1992, c.39

### **BACKGROUND AND REGULATORY HISTORY**

Canadian Zinc Corporation (the Licensee) applied to the Mackenzie Valley Land and Water Board (MVLWB or the Board) on March 5, 2001 for a Type 'B' water license, MV2001L2-0003 (the License). The application included underground decline development and metallurgical pilot plant operation among the activities planned for the Prairie Creek minesite, in the Deh Cho Region of the Northwest Territories (NT). The application was first distributed to government agencies, first nations, communities and other organizations in order for the MVLWB to conduct a Preliminary Screening as required by Part 5 of the *Mackenzie Valley Resource Management Act* (MVRMA).

In April 2001, both the Parks Canada agency and Pehdzeh Ki First Nation referred the matter to the Mackenzie Valley Environmental Impact Review Board (MVEIRB) for Environmental Assessment (EA) pursuant to Section 126(2) of the MVRMA. The referral to EA occurred prior to the Board's completion of the Preliminary Screening of the proposed operations. The MVEIRB notified the Licensee on April 14, 2001 that the proposed developments would undergo an EA.

The MVEIRB submitted their Report of Environmental Assessment (EA Report) on February 5, 2002 to the Minister of Indian and Northern Affairs Canada (the Minister). In a letter dated September 3, 2002, the Minister declared that as per Section 130(1)(b)(i) of the MVRMA, the MVEIRB was to give further consideration to unresolved issues in the EA Report relating to the Tailings Containment Area (TCA), and water treatment in general. The MVEIRB submitted their Reasons for Decision document on April 4, 2003, outlining recommended revisions and additions to be made to the recommendations in its February 5, 2002 EA Report. On June 16, 2003, the Minister approved the Reasons for Decision document and directed the MVLWB to proceed with the licensing process.

The Minister's decision required that the proposed development be subject to the following:

1. Measures three (3) to fifteen (15) contained in the MVEIRB's EA Report of February 6, 2002;
2. All commitments made by the Canadian Zinc Corporation in submissions to the MVEIRB; and,
3. Measures one (1) to three (3) contained in the MVEIRB's Reasons for Decision document of April 4, 2003.

Section 62 of the MVRMA requires that the MVLWB incorporate into a water license, to the extent of its authority, any recommendations approved by the Minister.

The water license applied for was a type "B" license and since no stakeholder, affected party or member of the public called for a water licensing hearing once the licensing process began, the MVLWB directed its staff to draft the water license based on an exchange of written documents and a series of meetings with interested parties. These parties included:

- Canadian Parks and Wilderness Society, Northwest Territories Chapter,
- Deh Cho First Nation,
- Department of Fisheries and Oceans,
- Department of Resources, Wildlife and Economic Development, GNWT,
- Environment and Conservation, INAC,
- Environment Canada,
- Nahanni Butte Dene Band,
- Parks Canada,
- South Mackenzie District Office, INAC; and
- Water Resources, INAC.

The preparation of a draft water license was divided into three (3) stages and the interested parties listed above had the opportunity to be involved in all stages. Each of the first two stages involved the development or revision of a draft license and its circulation to all the above interested parties, a review period, and a submission deadline for any written comments from the reviewers to MVLWB

staff. After comments were received, a face-to-face meeting of the parties was held to further discuss the draft. The third stage, as outlined to all parties at the beginning of the licensing process, involved a third round of reviews of the draft license but not a face-to-face meeting. The comments of all reviewers were shared among all the above parties during each stage.

The Deh Cho First Nation (DCFN) identified a problem during the third stage of the drafting of the License. On August 19, 2003, a security deposit estimate was distributed to the above parties and comments were requested by August 22, 2003. One (1) of the two (2) individuals representing the DCFN was missed on the distribution list; therefore, the DCFN requested that the MVLWB allow the DCFN seven (7) additional days to review the security deposit estimate. At the August 26, 2003 Board meeting, the MVLWB deferred their decision on the License to the September 10, 2003 Board meeting in order for the DCFN to have the seven (7) additional review days.

Once this process was complete, staff provided the third draft of the license and all relevant submissions from the interested parties to the MVLWB for its consideration.

Integral to the drafting of the License was the MVLWB's compliance with Recommended Measures five (5) and six (6) in the EA Report that suggest what agencies and documents should be consulted or used to help establish the License terms and conditions. Recommended Measure five (5) directed the MVLWB to obtain the objectives that Parks Canada and Environment Canada have for the water quality monitoring program to be used for the development. Both of these agencies were part of the document exchange and face-to-face meetings held to draft the Surveillance Network Program (SNP), which is the water quality monitoring program for the site.

In the EA Report, Recommended Measure six (6) indicated that the MVLWB was to give serious consideration to including the water quality parameters and objectives found in the report titled "Protecting the Aquatic Quality of Nahanni National Park Reserve, N.W.T. (Environment Canada, December 1998, page 71)". This report was referred to and consulted directly during the face-to-face meetings with interested parties when effluent water quality parameters were being set.

Recommended Measures three (3), four (4), seven (7) to eleven (11), fourteen (14), and fifteen (15) in the EA Report are discussed in the section below titled "Water License MV2001L2-0003 Terms and Conditions" as they all have been incorporated into the License. Recommended Measures twelve (12) and thirteen (13) have been incorporated into the Land Use Permit, MV2001C0023, associated with the License.

During the development of the License, the Board was fully aware of the public concern and sensitivity towards any activity at the Prairie Creek minesite due to

its geographical location. The minesite is situated within the floodplain of Prairie Creek approximately forty-eight (48) kilometers upstream from the confluence of Prairie Creek and the South Nahanni River. That portion of the South Nahanni River flowing through the Nahanni National Park Reserve, a UNESCO World Heritage Site, has been designated a Canadian Heritage River. With the exception of the Prairie Creek minesite and North American Tungsten Corporation Ltd.'s Cantung minesite, the area is largely untouched and pristine. The Prairie Creek minesite is also within the traditional area of the DCFN and is subject to their Interim Measures Agreement. To balance public concern about protecting the Nahanni National Park Reserve and development in the South Nahanni watershed, the Board carefully considered all the available evidence and included stringent terms and conditions in the License.

### GENERAL

The Board has decided to issue Water License MV2001L2-0003 (the License), subject to the conditions set out therein. This License has been issued under separate cover. The Board's Reasons for Decision are elaborated below under the headings contained in the License. The License contains the terms and conditions that the Board feels are necessary to protect the environment, conserve the water resources of the Prairie Creek watershed and provide appropriate safeguards in respect of the Licensee's use of waters and deposit of wastes. It also includes the recommendations approved by the Minister and those suggestions made by the MVEIRB which were recommended to, and approved by the Board.

### SCOPE OF THE LICENSE

Upon review of the application and evidence in the Public Registry, the EA Report and the advice provided by interested parties, the Board has determined that the scope of the undertakings covered by the License will include water use and waste disposal for an advanced exploration operation restricted to the metallurgical pilot plant operation and underground decline development found at the Prairie Creek minesite, NT (Latitude 61° 33' North and Longitude 124° 48' West).

Specifically excluded from the License are provisions that allow the Licensee to use the existing Tailings Containment Area (TCA) at the Prairie Creek minesite. In the original application of March 5, 2001, the Licensee proposed depositing process water from the metallurgical pilot plant to the TCA following treatment of the water in the mill to an acceptable water quality level as defined in the License. Concern about the geotechnical stability and integrity of the TCA was raised by members of the public, and interested governmental and non-governmental agencies during the EA.



In a document dated August 21, 2003 from the Licensee to the MVLWB, the company indicated that they would not use the TCA in conjunction with the proposed undertakings in light of the EA recommendations regarding the use of the TCA accepted by the Minister. The Licensee discussed two other contingencies for treating process water from the metallurgical pilot plant. These two contingencies included total containment and treatment of the pilot plant process water within existing tanks inside the mill, or treatment within a polishing pond that would be constructed once the proposed operations began.

In the event that water quality requirements as outlined in the License cannot be met by these contingencies, the Licensee has committed that the pilot plant operation would cease immediately. Considering the extreme concern that numerous interested parties have registered about the use of the TCA and the alternatives offered by the Licensee for treating process water, the Board decided to eliminate the use of the TCA from the scope of the License.

#### **REQUIREMENTS OF SECTION 14 OF THE NWTWA**

##### **Existing Licensees**

With respect to Paragraph 14(4)(a) of the *Northwest Territories Water Act* (the *Act*), the Board is satisfied that granting the License to the Licensee would not adversely affect, in a significant way, any existing licensee, providing the conditions of the License are met. There are no licensees with precedence.

##### **Existing Water Users**

Paragraph 14(4)(b) of the *Act* prohibits the issuance of a license unless the Board is satisfied that appropriate compensation has been or will be paid by the Licensee to members of the classes of water users and persons listed in that paragraph who have claimed compensation within the period specified in the Notice of the application.

The Board received no claims for compensation either during the prescribed period or afterwards. Provided that compliance with the License conditions is achieved, the Board does not believe that any users or persons listed in Paragraph 14(4)(b) of the *Act* will be adversely affected by the use of waters or the deposit of waste proposed by the Licensee.

##### **Water Quality Standards**

Insofar as Section 14(4)(c)(i) is concerned, the Board is of the view that compliance with the License conditions will ensure that the waste produced by the Licensee will be treated and disposed of in a manner which will maintain the water quality of Prairie Creek.

**Effluent Quality Standards:**

Likewise, under Section 14(4)(c)(ii) of the *Act*, the Board is satisfied that the effluent water quality parameters it has developed and set down in the License as conditions are acceptable and will protect the receiving waters. Reasons for the decisions made for each parameter are discussed in detail in the subsection "Part D: Conditions applying to Waste Disposal" in this document.

**Financial Responsibility of the Licensee**

The Board must satisfy itself of the financial responsibility of the Licensee under Paragraph 14(4)(d) of the *Act* before it can issue the License. In this case, the Board is satisfied that Canadian Zinc Corporation is capable of meeting the obligations set out in the *Act* and License.

There is no issue in the Board's view as to the capacity of the Licensee to meet any, or all, financial obligations that arise from water use and waste disposal for pilot plant operation and underground decline development at the Prairie Creek minesite.

**REQUIREMENTS OF SUBSECTION 15(2) OF THE ACT**

With respect to Subsection 15(2) of the *Act*, the Board must minimize any adverse effects the operation may have on other licensees, users, depositors, owners, occupiers, or other rights holders that have interests in the water management area in which the licensed operation is located. These parties are to have the opportunity to notify the Board regarding their concerns about the affects the developments may have on them.

The EA process and the license development process at the MVLWB, which included document exchanges and face-to-face meetings, provided interested parties with the opportunity to express their concerns and comments about the proposed development both orally and in written form. These concerns and comments were reviewed carefully during the development of the License and were incorporated into the License terms and conditions where the Board had the authority to do so. The Board is satisfied that the Licensee's adherence to the terms and conditions of the License will protect parties who have an interest in the water management area in which the Licensee is operating.

## **REQUIREMENTS OF SUBSECTION 17 OF THE ACT**

### **Security**

Pursuant to Subsection 17(1) of the *Act*, the Board may require the Licensee to provide security to the Minister in accordance with the Mackenzie Valley Land Use Regulations (the Regulations). Subsection 17(2) of the *Act* specifies how much security may be applied, including the compensation of persons affected by licensed activities and the reimbursement of the Government of Canada for expenditures made during the course of remedial activities necessary under Sections 37(3) and 39(1) of the *Act*.

Pursuant to Section 30 of the *Act*, a water user adversely affected as the result of the issuance of a license, or the use of water or deposit of waste authorized by the Regulations, is entitled to compensation for that adverse effect, and may sue in court to recover compensation. It is thus clear to the Board that the requirement to post a security deposit may be important to parties who may also be affected by the activities authorized by the License. A security deposit might serve as a deterrent against inadequate or unauthorized work and as an assurance for those who may be adversely affected that their interests have been considered.

The Board considered three (3) approaches to determining the security deposit. These include:

1. security to cover the reclamation of the entire minesite in its present condition;
2. security to cover the reclamation of any currently existing and proposed infrastructure, supplies, and equipment that will be used in conjunction with the licensed undertakings; and
3. security to cover the reclamation of the entire minesite plus any new liabilities associated with the licensed undertakings.

The proposed operations are small scale, short term and limited to advanced exploration; therefore, the Board imposed a security deposit as described in option 2 above. If the Licensee changes the scope of their operation, the Licensee would have to apply for an amendment to their License, or a new water license. At the time of application, the Board would have the opportunity to review the security deposit and change it if necessary.

The Board has imposed a total security deposit of \$100,000 (one hundred thousand dollars) on the Licensee. The Board derived this figure based on evidence prepared by INAC's Water Resources Division using RECLAIM, a reclamation cost estimate model. This figure has been split between the Water License and the associated Land Use Permit, MV2001C0023, with \$70,000 being allocated to the Water License and \$30,000 to the Land Use Permit. A portion of

the security deposit was allocated to the Land Use Permit to cover the land based activities that cannot be claimed against the License. The Land Use Permit was issued September 10, 2003.

### **WATER LICENSE N1L3-0032 TERMS AND CONDITIONS**

The EA recommendations approved by the Minister that are incorporated in the License are discussed in detail below under headings as those found in the License.

#### **Part B: General Conditions**

The general conditions assist in the appropriate administration of the License, including keeping the Board informed of activities on site through a requirement for annual reporting. The annual report is to be submitted to the Board for review and approval, and as part of this process, stakeholders such as first nations, communities, and government and non-governmental agencies will have the opportunity to submit comments on the data contained within each annual report. Before making final decisions on the annual reports these comments will be carefully reviewed by the Board.

**Part B, Item 3:** Following the directive made by the Minister, the MVLWB has stipulated that the Licensee is to adhere to the commitments they made in their submissions to the MVEIRB.

**Part B, Item 4(d):** Although no active exploration or mining will occur in the 870 m portal, groundwater accumulating within the adit as minewater is flowing from it. This water passes over highly mineralized zones, resulting in a high potential for heavy metal contamination. In order for the Board to effectively regulate the treatment and disposal of this water, the Board requires information about the volume of water draining from the 870 m portal. As such the Licensee is required to report the monthly and annual quantities of minewater discharging from the 870 m portal. This also stems from Recommended Measure nine (9) in the EA report approved by the Minister.

**Part B, Item 4(g):** Common to all water licenses is the requirement to submit summaries of the data generated under the Surveillance Network Program (SNP) established for each license. This provides information on how effective the waste water handling, storage and treatment systems at each site are. Based on this data, the Board can make sound regulatory decisions to protect the receiving environment. The Board requires the Licensee to follow this practice and submit SNP data as part of the annual report. Recommended Measure seven (7)(a) in the EA Report approved by the Minister also requires the Licensee to submit this information to the MVLWB.

**Part B, Item 4(p):** The Licensee has proposed to retain solid tailings produced by the pilot plant within the mill tanks so the tailings are available for performance testing in paste or thickened backfill applications. The Board finds this proposal reasonable for the short term but in the long term the tailings will have to be permanently disposed of. By requiring the Licensee to submit a summary of tailings disposal options in the annual report, the Board will be able to make fully informed, sound regulatory decisions regarding tailings disposal. This condition also ensures that the Licensee will begin addressing this issue immediately rather than at the end of the operation. This information is also requested under Recommended Measure seven (7)(c) in the EA Report approved by the Minister.

**Part B, Item 9:** Suggestion nine (9) made by the MVEIRB requested that the Licensee store chemicals "indoors in a secure facility". Cyanide is one of the chemicals currently stored on site. When this suggestion was addressed in the document exchange and face-to-face meetings held to draft the License, significant concern was raised about the safety risk associated with the inspectors entering an enclosed structure housing cyanide. To eliminate this risk, the Board determined that chemicals, including cyanide, must be securely stored to prevent their leaking into water, land and/or air but not necessarily in an enclosed building. The Licensee has been transferring bulk chemicals such as glycols into an enclosed trailer inside the berm surrounding the Tank Farm Facility and will continue to do so as operations progress.

#### **Part C: Conditions Applying to Water Use**

In the original application, the Licensee reported the amount of water needed to carry out the proposed operations. The MVLWB used the proposed quantities to limit water use to 75 cubic meters daily and 4000 cubic meters in total for the entire development. All fresh water to be used for industrial and domestic purposes must be withdrawn from existing groundwater wells fed by the Prairie Creek Valley Aquifer. Recycling of process water in the pilot plant may reduce the total amount of fresh water used by 50%.

#### **Part D: Conditions Applying to Waste Disposal**

The Board has included conditions applying to Waste Disposal and Waste Facilities in Part D of the License. The conditions that stem from the recommendations and suggestions in the EA Report and from the document exchange and meetings held to draft the License are discussed in detail below. The Board is satisfied that these conditions will protect aquatic life and water uses in the receiving environment.

**Part D, Item 1:** Recommended Measure fourteen (14) approved by the Minister requires that the Licensee update its Probable Maximum Flood (PMF) calculations for flood elevations using at least the data available from 1975 to 1990, including data from the weather station at the Virginia Falls hydrometric gauge.

It was reported during the EA that large logs stranded on the gravel bars across from the TCA indicate that Prairie Creek experiences periodic large flows. Based on this evidence and the close proximity of the minesite to Prairie Creek, the Board finds it reasonable to impose Recommended Measure fourteen (14) in the form of a license condition on the Licensee. Recommended Measure 14 states:

"...[the Licensee] update its Probable Maximum Flood (PMF) calculations for flood elevations using at least the data available from 1975 to 1990, including data from the weather station at the Virginia Falls hydrometric gauge."

The Licensee used only five years of data from 1975 to 1980 to complete the PMF calculation. As an additional ten years of data is readily available, and statistically, a larger data set improves the reliability of the results, the Board requires the Licensee to redo the PMF calculations using data from at least 1975 to 1990.

**Part D, Item 2:** During the review of the License application and the EA, numerous concerns were noted about the stability and permeability of the TCA. The concerns included Prairie Creek flowing adjacent to the TCA; the condition of the liner in the TCA; fluctuations in the water level inside the TCA; slumping of the backslope above the TCA; sloughing of the gravel cover on the TCA side of the downstream dam; erosion of the riprap armor on the dam separating the TCA and Prairie Creek; and erosion where riprap has not been placed on the dam.

Given the high level of concern expressed about the TCA and issues related to the stability and integrity of the TCA and potential impacts to Prairie Creek, the Board decided that any use of the TCA would be prohibited in relation to the proposed development.

Measures one (1) and three (3) in the MVEIRB's Reasons for Decision document approved by the Minister state that before the TCA can be used, a geotechnical assessment must establish its stability and integrity. If the geotechnical assessment cannot establish this, then the proposed undertakings are to be rejected completely. By imposing a condition on the Licensee that prohibits the use of the TCA, the TCA does not have to undergo a geotechnical assessment, and Measures one (1) and three (3) are satisfied. In the event the Licensee submits a proposal to the MVLWB to use the TCA, the Licensee will be required to file a favorable geotechnical assessment prior to any proposed operations commencing.

**Part D, Item 4:** Before discharging onto the surface, minewater flowing from the 870 m portal passes over a highly mineralized zone within the adit. As a result, this water may have elevated heavy metal levels but there is no existing program to determine the quality of this water. Due to the questionable nature of this water, the Board has decided that an SNP station must be installed to establish

the quality of this water and that the water must be discharged only to the polishing pond or pilot plant where it can undergo treatment.

**Part D, Item 5:** Effluent quality criteria for discharges to the receiving environment were also included in Part D of the Water License. The parameter values were derived from four (4) documents including:

1. The Water License (N3L3-0932) issued to Cadillac Explorations Limited for the Prairie Creek minesite on July 1, 1982,
2. Canadian Water Quality Guidelines for the Protection of Aquatic Life (CCME 1999),
3. Metal Mining Effluent Regulations (MMER 2002), and
4. The report titled, "Protecting the Aquatic Quality of Nahanni National Park Reserve, N.W.T."

The parameters also reflect technical advice provided during the document exchange and face-to-face meetings held to draft the License. The Board has considered the information provided by these sources, and has decided that the criteria set out in Part D, Item 5 are sufficiently stringent, and technically achievable, to prevent any adverse effects in the receiving environment by the wastes created by these undertakings.

**Total Suspended Solids:** The Board has imposed effluent quality criteria for total suspended solids (TSS) for discharges of waste. The Board has established a maximum average concentration of 15.0 mg/L and a maximum concentration in any grab sample of 30 mg/L for TSS. These effluent quality criteria are intended to protect water users and minimize contamination of the Prairie Creek watershed. In setting these effluent quality criteria, the Board recognized that elevated levels of TSS could adversely affect fish and other aquatic organisms, with the severity of effect dependent on both the concentration of TSS and the duration of exposure to the TSS levels. The Board is satisfied that these effluent quality criteria can be achieved through the application of best management practices. These values are derived from the MMER 2002 for TSS.

**Total Ammonia:** The Board has established a maximum average concentration of 5.0 mg/L and a maximum concentration in any grab sample of 10.0 mg/L for ammonia. These effluent quality criteria are derived from the CCME 1999. The Board recognized that unionized ammonia can be toxic to fish and other aquatic organisms at low levels as well as exerting an oxygen demand that could further stress aquatic life.

**Total Arsenic:** The Board has established a maximum average concentration of 0.5 mg/L and a maximum concentration in any grab sample of 1.0 mg/L for arsenic. These effluent quality criteria are derived from the MMER 2002.

**Total Cadmium:** The Board has established a maximum average concentration of 0.005 mg/L and a maximum concentration in any grab sample of 0.01 mg/L for cadmium. These effluent quality criteria are derived from the MMER 2002.

**Total Chromium:** The Board has established a maximum average concentration of 0.15 mg/L and a maximum concentration in any grab sample of 0.3 mg/L for chromium. These effluent quality criteria are taken from the Water License (N3L3-0932) issued to Cadillac Explorations Limited for the Prairie Creek minesite on July 1, 1982.

**Total Copper:** The Board has established a maximum average concentration of 0.1 mg/L and a maximum concentration in any grab sample of 0.2 mg/L for copper. These effluent quality criteria are taken from the Water License (N3L3-0932) issued to Cadillac Explorations Limited for the Prairie Creek minesite on July 1, 1982.

**Total Lead:** The Board has established a maximum average concentration of 0.15 mg/L and a maximum concentration in any grab sample of 0.3 mg/L for lead. These effluent quality criteria are taken from the Water License (N3L3-0932) issued to Cadillac Explorations Limited for the Prairie Creek minesite on July 1, 1982.

**Total Mercury:** The Board has established a maximum average concentration of 0.02 mg/L and a maximum concentration in any grab sample of 0.04 mg/L for mercury. These criteria were set based on the technical advice submitted by Environment Canada.

**Total Nickel:** The Board has established a maximum average concentration of 0.2 mg/L and a maximum concentration in any grab sample of 0.4 mg/L for nickel. These effluent quality criteria are taken from the Water License (N3L3-0932) issued to Cadillac Explorations Limited for the Prairie Creek minesite on July 1, 1982.

**Total Zinc:** The Board has established a maximum average concentration of 0.3 mg/L and a maximum concentration in any grab sample of 0.6 mg/L for zinc. These effluent quality criteria are taken from the Water License (N3L3-0932) issued to Cadillac Explorations Limited for the Prairie Creek minesite on July 1, 1982 and CCME 1999.

**Total Petroleum Hydrocarbons (TPH):** The Board has established a maximum average concentration of 5.0 mg/L and a maximum concentration in any grab sample of 10.0 mg/L for TPH. These criteria were set based on technical advice from Environment Canada.



**Part D, Item 6:** In order for the Board to remain informed, and to make sound and practical decisions respecting the regulation of effluent treatment, the Board requires the Licensee to submit an Effluent Treatment Options Plan. This plan is to outline the effluent treatment options that allow the Licensee to meet the effluent quality requirements set in the License. This condition also stems from Recommended Measure seven (7)(b) in the EA Report approved by the Minister.

**Part D, Item 7:** The Licensee, in response to the sensitivity surrounding the use of the TCA as part of the waste/mine water treatment system, proposed to treat effluent inside existing mill tanks and in a polishing pond rather than use the TCA. The Board found these contingencies reasonable alternatives to using the TCA and approved the construction of the polishing pond.

The polishing pond is the final step in the effluent/minewater treatment process, therefore it is the final point of control the Licensee has in meeting the effluent quality parameters set out in the License. In recognition of the significance of this, as well as the significance of the minesite being located within the floodplain of Prairie Creek, the Board decided that the polishing pond must undergo a geotechnical assessment by a qualified geotechnical engineer once it has been constructed. This geotechnical assessment is to include the surrounding site as directed in Measure two (2) of the MVEIRB's Reasons for Decision document approved by the Minister. It is the responsibility and in the best interests of the Licensee to ensure they do appropriate planning and consulting prior to the construction of the polishing pond. If the geotechnical assessment on the constructed pond fails to establish integrity and stability, company resources and time have been wasted.

**Part D, Item 8:** During the EA issues regarding the stockpiling of waste rock and/or ore at the minesite and runoff water from those piles were not fully resolved. The Licensee reported that they are not concerned about the quality of runoff from the piles because the volume of stockpiled material is small, runoff volume is low, the results of past Acid Base Accounting tests on local rock units indicate the potential for acid drainage generation is low, and the proposed operations do not include an ore stockpile. INAC expressed concern that heavy metal contamination data for the runoff water from the existing stockpile was not provided during the EA. Due to the uncertainties that still exist about the waste rock/ore stockpiles, the Board requires the Licensee to submit a Waste Rock/Ore Pile Monitoring Plan before the deposit of any waste rock or ore. Recommended Measure four (4) in the EA Report approved by the Minister also directs the Licensee to submit a monitoring plan for the waste rock/ore piles.

**Part D, Items 9 and 10:** Numerous parties during the EA questioned the integrity of the tank farm facility and the Licensee's practice of decanting water collected inside the tank farm berm directly to the receiving environment. The reasoning behind this is the age of the tanks and the hydrocarbon staining within the bermed area that indicates deterioration of tanks, improper handling or storage of fuel, or occurrence of spills. The Licensee does monitor the condition of the

tanks and tank farm facility as part of their routine care-and-maintenance activities but the Board concluded that a geotechnical engineer must certify the integrity of the tank farm facility and associated containment structures to eliminate the uncertainties surrounding its use. This condition also stems from Recommended Measure three (3) in the EA report approved by the Minister.

The hydrocarbon staining indicates that water decanted from inside the tank farm berm may have been contaminated with hydrocarbons. The Board requires the Licensee to determine the concentration of total petroleum hydrocarbons in the water prior to decanting water captured within the tank farm berm. Discharge to the receiving environment can only occur if average concentrations are below 5.0mg/L and grab sample concentrations are below 10.0mg/L. These limits were set based on the recommendations made by Environment Canada during the drafting of the License. Recommended Measure eight (8) in the EA Report approved by the Minister also stipulates that this testing must be completed.

**Part D, Item 12:** Concern was raised during the drafting of the License about the volume of minewater produced possibly exceeding the combined storage capacity and water treatment rates of the treatment system located within the mill and the polishing pond. In a letter dated August 21, 2003 from the Licensee to the Board, the Licensee states that in the event that a "...catastrophic inrush [of water] takes place..." and the volume of minewater exceeds the capacity of the treatment system inside the mill and the polishing pond, equipment will be removed from the underground decline and it will be allowed to flood. To encourage the Licensee to undertake contingency planning and to consider all available options to mitigate this type of event, the Board requires the Licensee to submit a Minewater Treatment Contingency Plan.

**Part D, Item 13:** Water from the polishing pond that meets the effluent quality requirements specified in the License is to be discharged to the catchment pond. The catchment pond drains directly into Harrison Creek and currently there is no structure in place regulating this flow. The suggestion to install a discharge control structure between the catchment pond and Harrison Creek was made during the face-to-face meetings held to draft the License. The Board decided to accept this suggestion in order to control the flow of treated effluent to the receiving environment.

All plans and the geotechnical assessment of the polishing pond required under Part D of the License are to be submitted for review and approval by the Board before they can be implemented. As part of the MVLWB review process, the plans will be distributed to stakeholders that may include first nations, communities, and government and non-government agencies. This provides the stakeholders with the opportunity to submit publicly registered written comments regarding the plans to the Board for careful consideration during the decision process. If the Board finds the plans to be incomplete or unacceptable in any way, the plans will be rejected and the Licensee will have to submit new plans addressing the concerns.

**Part E: Conditions Applying to Modifications**

The conditions applying to modifications are included to allow for smaller-scale changes in the structures of the proposed undertakings. As per the definition of 'Modification' under Part A of the License, a modification does not include an expansion nor does it allow for an alteration of the purpose or function of the work conducted. It should therefore be noted that the Board is not in any way authorizing any amendments to the requirements of the License by virtue of the inclusion of this section. Any such requests for amendments must be undertaken pursuant to the terms of the Act.

**Part F: Conditions Applying to Spill Contingency Planning**

The Board has imposed conditions requiring the Licensee to undertake ongoing contingency planning in order to make the Licensee and the Board more aware of the uncertainties that may arise during the operations. The Licensee is to provide plans that detail how the Licensee will prepare for and deal with unexpected situations and how the Licensee will mitigate any effects resulting from unexpected situations. It should be noted that the Board requires the Licensee to review the Spill Contingency Plan on an annual basis and modify as necessary to reflect changes in operation, technology, and staffing.

**Part G: Conditions Applying to Abandonment and Restoration**

Section 15 (e) of the Act authorizes the Board to include in a license, conditions relating to any future closing or abandonment of infrastructure associated with the licensed undertakings. These conditions have been appended to the License and associated Land Use Permit, MV2001C0023, (the Permit) because the infrastructure requirements of both overlap. The Abandonment and Restoration Plans for the Permit and License do not have to include duplicate information.

The Board recognizes the unique situation at the Prairie Creek minesite with respect to the existence of full production mining infrastructure at the site where only advanced exploration is taking place. Full abandonment and restoration, once the licensed undertakings have ceased, may not be practical because the infrastructure may be needed in future operations. If no future operations are to take place at the site, full abandonment and restoration is required. The Licensee is to provide to the Board a list of all facilities and infrastructure that may be needed in future operations in order for the Board to make sound regulatory decisions about the abandonment and restoration of the site.

**Surveillance Network Program**

The requirements for monitoring water and waste associated with the Licensee's mining and milling undertakings are described in the Surveillance Network

Program (SNP), which is attached to the License. The SNP was initially developed by the INAC Water Resources Officer and the Licensee and then modified during the document exchange and face-to-face meetings held to draft the License. The SNP calls for extensive and ongoing sampling and analysis to be conducted at the stations identified below. The number of stations, the sampling frequency, and the list of variables reflect the information that was considered necessary to monitor potential downstream effects on the receiving environment.

**Station 3-1** was established to monitor the quality of the freshwater used for drinking and other domestic purposes.

**Station 3-2** was established to monitor the quality of water pumped from the underground decline prior to being treated in the mill or polishing pond.

**Station 3-3** was established to monitor the quality of effluent produced by the milling process being tested in the pilot plant. The effectiveness of any water treatment undertaken in the mill will also be monitored at Station 3-3.

**Station 3-4** was established to monitor the quality of the effluent being discharged to the receiving environment. This station marks the last point of control for effluent quality and is the point of compliance for the License.

**Station 3-5** was established to monitor the quality of water discharged directly to Harrison Creek from the catchment pond. The catchment pond is the receiving basin for water discharged from the last point of control for effluent quality (polishing pond) and for natural runoff from the site.

**Station 3-6** was established to monitor the quality of water entering Prairie Creek through Harrison Creek. The 905 m portal, the reagent storage area, the landfill and the catchment pond are within the Harrison Creek drainage area.

**Station 3-7** was established to monitor the quality of water flowing from the 870 m portal prior to being pumped to the pilot plant or polishing pond.

**Station 3-8** was established to monitor the quality of runoff flowing across the reagent storage area. The reagent storage area is the point source for cyanide.

**Station 3-9** was established as a control point to measure the quality of water upstream from the reagent storage area.

**Station 3-10** was established as a control point to measure the quality of water in Prairie Creek upstream from any possible sources of contamination from the minesite.

**Station 3-11** was established to monitor the overall downstream impacts the mining and milling undertakings may have on Prairie Creek.

The Board decided to remove from the SNP the stations for monitoring the polishing pond and catchment pond influents. The influent, where it enters the polishing pond, does not need to be monitored because there are SNP stations at all sources of the influent. The catchment pond influent does not have to be monitored because the source of the influent, the polishing pond, is already monitored at Station 3-4.

The Board did not require the Licensee to install multiple SNP stations downstream from the minesite because Environment Canada already has an established monitoring program that extends to the Nahanni National Park Reserve boundary.

Stations 3-2 to 3-7 and 3-9 to 3-11 are to be sampled twice during the summer months following the cessation of operations. The Board considers this adequate because the sources of minewater and effluent will be reclaimed prior to the expiry of the License. If the Licensee proposes to not reclaim the entire site in order to undertake further operations, a new water license would have to be applied for. At the time of application, the Board would review the proposed plans to treat and monitor effluent and minewater sources. Monitoring at Station 3-6 is also limited by the intermittent flow in Harrison Creek which is frozen for much of the winter and dry for much of the summer.

Stations 3-9 to 3-11 are to be sampled monthly and not weekly because the monitoring stations at the sources of effluent are to be sampled weekly and will be more effective at detecting contamination.

The Board believes that the conditions specified in the SNP will ensure that adequate monitoring data are collected to characterize waters and wastewaters, to assess compliance with the effluent quality criteria, and to evaluate the water treatment options. The SNP also contains Stations to monitor water at the locations listed in Recommended Measure ten (10) in the EA Report approved by the Minister. These locations are the mine portals, the inflow point for the catchment pond, and inside the tank farm berm.

### **DECISION**

The Board has decided to issue Water License MV2001L2-0003 for a term of five (5) years commencing September 10, 2003 and subject to the conditions set out therein. Upon review of the application, the EA Report and the technical advice provided during the document exchange and face-to-face meetings held to draft the License, the Board determined that the License should be issued for metallurgic pilot plant operation and underground decline development.

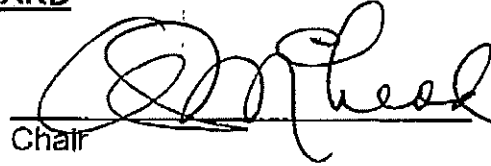
The License contains the conditions that the Board feels are necessary to provide appropriate safeguards in respect of the Licensee's use of waters and deposit of wastes.

SIGNED THE 30<sup>th</sup> DAY of October 2003 on behalf of

MACKENZIE VALLEY LAND AND WATER BOARD



Witness



Chair