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October 20, 2008

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Mackenzie Valley Environmental Impact Review Board  
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Re: Prairie Creek Mine - MVEIRB EA08090-002

Dear Mr. MacDonald,

In response to your letter of August 28, 2008, Parks Canada is pleased to provide the attached comments with respect to the scoping of the environmental assessment for Canadian Zinc Corporation's proposed Prairie Creek Mine (EA08090-002). Thank you for the opportunity to comment. Parks Canada looks forward to continued involvement in this environmental assessment process.

Sincerely,

Chuck Blyth  
Superintendent, Nahanni National Park of Canada

c.c. Ed Coulthard

Canada





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# SCOPING SUBMISSION

MACKENZIE VALLEY ENVIRONMENTAL IMPACT REVIEW  
BOARD

*Prairie Creek Mine Operation – EA0809-002*



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## Introduction to Nahanni National Park Reserve of Canada

Under the *Canada National Parks Act*, Parks Canada is responsible on behalf of the people of Canada, for the protection and presentation of nationally significant examples of Canada's natural and cultural heritage and to foster public understanding, appreciation and enjoyment in ways that ensure their ecological and commemorative integrity for present and future generations.

Nahanni National Park Reserve of Canada was established in 1976 and consists of an area of 4,766 square kilometres. Nahanni National Park Reserve exists within the Dehcho, a traditional homeland of the Dene. The tradition of Aboriginal use continues in the park reserve and is provided for under the *Canada National Parks Act*, Section 40.

Through the Dehcho Process, Parks Canada and the Dehcho First Nations have established a consensus planning team comprised of representatives from both organizations. On August 20, 2003, Parks Canada and Dehcho First Nations signed an Interim Park Management Arrangement that guides park management until the park is established in legislation and outlines a more significant role for the Dehcho First Nations in the management of the park.<sup>1</sup>

### World Heritage Site

Nahanni National Park Reserve was among the first seven World Heritage Sites in the world, and Canada's first site given World Heritage Site status by the United Nations Education, Science and Cultural Organization's World Heritage Convention. World Heritage Sites are examples of natural and cultural heritage that are so outstanding or scientifically significant that their protection and preservation are considered to be of concern to the world community. This status, conferred in 1978, gives international recognition to Nahanni National Park Reserve as a place exhibiting:

- Outstanding examples of major stages in the earth's evolutionary history;
- Significant ongoing geological processes; and
- Superlative natural phenomena, formations and features of exceptional natural beauty.

Parks Canada's mandate and conservation practices reflect the responsibility of this designation in both the protection and presentation of park values.<sup>2</sup>

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<sup>1</sup> Parks Canada. 2004. *Nahanni National Park Reserve of Canada Nah'á Dehé Management Plan*.

<sup>2</sup> Ibid.

## Canadian Heritage River

In 1987, the portion of the South Nahanni River within Nahanni National Park Reserve was designated as a Canadian Heritage River. The Canadian Heritage Rivers System has been established by federal, provincial and territorial governments to recognize Canada's outstanding rivers and to ensure their long-term protection and continued enjoyment by Canadians. The South Nahanni River is recognized as an exceptional example of several natural history themes and provides outstanding recreational opportunities in a wilderness area of great scenic beauty.<sup>3</sup>

## Expansion

In August, 2007, the Government of Canada committed to a significant expansion of Nahanni National Park Reserve. An interim land withdrawal of 28,400 sq km is in place for expansion purposes. Expansion options presented for public consultation include the Nahanni North Karst and the South Nahanni Watershed but exclude an area around the proposed mine site. The final boundary option for expansion purposes is under discussion.

In July 2008, Parks Canada and Canadian Zinc signed a Memorandum of Understanding that acknowledges the interests of both parties with the goal to managing these interests (parks expansion and mine development and access) so that they may co-exist.

## Vision and Goals

The "Nahanni National Park Reserve of Canada Nah?a Dehé Management Plan"<sup>4</sup> describes the vision of the Nah?a Dehé (the Dene name includes Nahanni National Park Reserve and the South Nahanni watershed as a whole). It states:

Nah?a Dehé will protect a wilderness watershed in the Mackenzie Mountains where natural processes such as fires and floods will remain the dominant forces shaping the park's ecosystem. Special features of the park, including waterfalls, hot springs, glaciers, plateaus, canyons, karst landscapes and cultural/spiritual sites will be preserved. Naturally occurring plant communities will thrive and native animal species, including woodland caribou and grizzly bears, will be sustained at viable population levels.

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<sup>3</sup> Parks Canada. 2004. *Nahanni National Park Reserve of Canada Nah?a Dehé Management Plan*.

<sup>4</sup> Ibid.

Dene are inseparable from the land. Traditional subsistence harvesting will continue to be an integral and sustainable part of the ecosystem and will occur in accordance with Dene law and principles. Nah?a Dehé will continue to be revered as a place of mystery, spirituality and healing.

Nah?a Dehé will be a model of cooperative management with First Nations of the DehCho where ecological and cultural integrity is protected, visitor access and enjoyment is encouraged within the limits of ecological integrity and wilderness experience and messages of natural and cultural heritage are communicated with excellence. Nah?a Dehé will also serve as a national long-term ecological research and monitoring site, and will promote excellence in the conduct of science and cooperative resource protection.

The following goals identified in the Nahanni National Park Reserve Management Plan are also of relevance:

Nahanni wilderness will be maintained as an essentially unaltered, primitive and unpolluted corridor, and will be sustained so that Nahanni National Park Reserve will remain a superb wilderness representation of the Mackenzie Mountains Natural Region.

Both the history and ecology of Nahanni National Park Reserve are inextricably tied to water. The water quality of the South Nahanni River watershed has long been considered a key measure of the park reserve's ecological integrity and health.

## **The Environmental Assessment Process and Nahanni National Park Reserve**

Ecological integrity is defined in the *Canada National Parks Act* as follows:

"ecological integrity" means, with respect to a park, a condition that is determined to be characteristic of its natural region and likely to persist, including abiotic components and the composition and abundance of native species and biological communities, rates of change and supporting processes.

This definition does not provide the park specific information required to assess the potential for impacts to ecological integrity. In order to apply this definition within a given ecosystem, the abiotic components, native species and communities, and supporting processes are identified. These elements for ecosystems in Nahanni National Park Reserve are outlined in Appendix 1. It is recommended that this information be used in conducting the environmental assessment to ensure the ecological integrity of Nahanni National Park Reserve is maintained.

Maintaining a quality visitor experience is also an important element for consideration. Visitors come to Nahanni National Park Reserve for a wilderness experience. Key elements of the wilderness experience include such things as solitude and natural views. Adverse impacts to ecological integrity can also directly affect visitor experience. Potential negative impacts to visitor experience as a result of development should be examined in the environmental assessment process.

With any mining operation there are risks that the development or predicted impact will not occur as planned. There is also the operational risk of malfunctions and accidents. The risk of impacts to the ecological integrity, cultural resources and visitor experience of Nahanni National Park Reserve could be greater from these broader risks than from those resulting from day to day operations. The environmental assessment process should include the probability and consequences of accidents and malfunctions on the receiving environment.

The examination of alternatives will assist in determining whether impacts can be avoided or minimized. The environmental assessment process should examine if there are alternative ways to carry out this development that would result in fewer impacts to the environment.

Given the national and international importance of Nahanni National Park Reserve, the ongoing monitoring of this development is important. Parks Canada is working with Canadian Zinc on aquatic monitoring and this work could be expanded to include other aspects of environmental monitoring. The environmental assessment process should consider the need for and elements of a comprehensive monitoring program.

## Scoping

Parks Canada recommends the scope of development for the environmental assessment include all physical works and activities related to mining and milling construction, operation, decommissioning and reclamation at the mine site that are described in Canadian Zinc's Prairie Creek Mine Project Description Report (May, 2008). Specifically, the use of existing infrastructure, and the geotechnical stability and geochemical characteristics of existing infrastructures should be included.

In the Project Description Report, Canadian Zinc Corporation refers to the decision of the NWT Supreme Court exempting the winter road from the application of Part 5 of the *Mackenzie Valley Resource Management Act*. Parks Canada recognizes that the Review Board will need to determine to what extent, if at all, the operation of the winter road should be included in the scope of the development or the scope of cumulative effects, for the purpose of the environmental assessment. In making this determination, the Review Board should consider the relevant sections of the *MVRMA* and the Environmental Impact Assessment Guidelines, as well as the decision of the NWT



Supreme Court in the matter of *Canadian Zinc Corporation v. Mackenzie Valley Land and Water Board*.

Appropriate geographic and temporal scopes should be identified for each valued component that is being assessed. The scopes should be appropriate for all phases of the development, including construction, operation, decommissioning and reclamation. The proponent should provide an adequate rationale for its selection of spatial and temporal scope. Parks Canada supports using the information from previous studies, assessments and hearings as supporting material for the assessment of the development.

### **Specific Issues for Consideration during the Assessment**

The Prairie Creek Mine Site is located approximately 32 kilometres upstream of the current park boundary and could be approximately seven kilometres upstream of the park after park expansion. As a result of the proximity of the mine to the park, the following issues have been identified with additional minor issues listed in Appendix 2. If the Mackenzie Valley Environmental Impact Review Board decides that the use of the winter road be included in the scope of the assessment, Appendix 3 outlines additional potential issues.

### **Mine Closure and Potential for Long-term Impacts**

Issues related to the closure of the mine should be considered, particularly the risk of contamination from the tailings backfilling of the mine and the closed waste rock pile. A risk assessment of this situation should include an examination of mitigation options in the case that predictions about backfilling are incorrect and the potential impacts of natural events such as extreme floods, earthquakes and avalanches after closure. A risk assessment should also consider the consequences on Nahanni National Park Reserve if an incident occurred or a prediction was incorrect. It is recommended that the risks associated with predictions related to tailings back fill and the waste rock pile be evaluated in light of the proximity of a national park. Possible issues for inclusion in the risk assessment are identified in Appendix 4.

### **Water Quality and Quantity**

Aspects of the mining and milling process have the potential to impact the Prairie Creek watershed aquatic ecosystems. Water management, water withdrawals, water treatment, management of run-off and the potential impacts of extreme natural events should be evaluated to ensure that the ecological integrity of the aquatic ecosystem in the Prairie Creek Watershed is maintained. It is recommended that mitigations be identified such that the ecological integrity of the aquatic ecosystem in the Prairie Creek Watershed is maintained in perpetuity.

## Summary of Recommendations

The recommendations made in the previous sections are listed below. Parks Canada recommends that:

- the information describing the ecological integrity of Nahanni National Park Reserve (Appendix 1) be used in conducting the environmental assessment;
- a key line of inquiry of the environmental assessment include the risks associated with the tailings backfilling and the waste rock pile in the context of the nearby national park (possible issues for inclusion in the risk assessment are identified in Appendix 3);
- a key line of inquiry of the environmental assessment include the mitigations to protect the ecological integrity of the aquatic ecosystem in the Prairie Creek Watershed;
- the minor issues identified in Appendix 2 be considered for inclusion in the assessment; and
- the MVEIRB ensure a comprehensive monitoring program is developed as part of the environmental assessment and regulatory processes.

## Appendix 1

Ecological integrity is defined in the *Canada National Parks Act* as follows:

"ecological integrity" means, with respect to a park, a condition that is determined to be characteristic of its natural region and likely to persist, including abiotic components and the composition and abundance of native species and biological communities, rates of change and supporting processes.

In order to apply this definition within a given ecosystem, the abiotic components, native species and communities, and supporting processes need to be identified. These elements of ecological integrity are identified in the sections below for important ecosystems that could be impacted by the proposed development.

### Prairie Creek Watershed Aquatic Ecosystems

It is expected that the ecological integrity of aquatic ecosystems in the Prairie Creek watershed will be maintained when the following ecological management outcomes are realized at relevant ecological scales:

1. In the park, physical processes that influence aquatic ecosystems will operate within the natural range of variation.  
Note: Physical processes include water flow, channel morphology, temperature and chemical processes and regimes.
2. Aquatic invertebrate and algal communities inside the park are characteristic of the natural region.  
Note: Community structures that are characteristic of the natural region would also provide quality habitat for other species.
3. Habitat alteration, disruption and destruction inside or outside of the park in the Prairie Creek Watershed will not result in a permanent loss of habitat for bull trout, Arctic grayling and mountain whitefish.  
Note: These fish species are highlighted because they are likely to move between areas in the Prairie Creek Watershed that are in and outside the park. Furthermore, their populations are likely to function across the whole Prairie Creek Watershed. Therefore, in order for the populations of these species in the park to remain healthy, their habitat must be protected both inside and outside of the park.

4. Fish population structures inside the park are within natural variation of the Greater Nahanni Ecosystem.  
Note: For example, human activities outside of the park, but within the Prairie Creek Watershed, will not affect the structure of bull trout, Arctic grayling and mountain whitefish populations within the park. These species are highlighted because they are likely to move between the park and the non-park areas. Furthermore, their populations are likely to function across the whole Prairie Creek Watershed. Metrics defining population structure include estimates of abundance and size distribution.
5. Important ecological functions and structure of riparian vegetation are unimpaired in the park.  
Note: Riparian vegetation functions include providing shade, organic matter and woody matter to the stream. Riparian vegetation also maintains stable stream banks.
6. Non-native aquatic species are not introduced or allowed to persist in the park.  
Note: This means that the ecological integrity of aquatic ecosystems in the Prairie Creek watershed will be maintained when development does not result in the intentional or unintentional introduction of non-native species.

## Appendix 2

The following issues, while minor, could be included in the assessment.

Wildlife – Wildlife could be disturbed by the approach of aircraft and the activity at the site.

Non-native Species – The spread of any existing non-native species is possible via Prairie Creek.

Air – Emissions from the mining and milling operations could affect the air quality of Nahanni National Park Reserve directly or affect the ecological integrity indirectly.

Visitor Experience – The operation of the mine and aircraft flights to the mine could produce noise that disrupts the wilderness experience of visitors to Nahanni National Park Reserve. Furthermore, changes in the water quality of Prairie Creek could negatively impact visitor experience if the water quality was reduced.

## Appendix 3

If the MVEIRB decides to include the use of the winter access road in the scope of development, Parks Canada recommends that the following issues be assessed.

### Karst Landscape

The winter road passes by a number of karst landscape features, including a sinkhole and two poljes. With many outstanding examples of karst formations and some unique features found nowhere else in the world, the Nahanni North Karst area is an internationally outstanding example of karst landscape<sup>5</sup>.

It is expected that the ecological integrity of Nahanni North Karst will be maintained when the following ecological management outcomes are realized at relevant ecological scales:

1. Hydrological processes are maintained within the natural range of variation.  
Note: Hydrological processes include surface water and ground water flow regimes, water physical and chemical processes and their spatial patterns.
2. Landform structure, processes and spatial patterns are unaltered by human activity.
3. Vegetation composition and structure are characteristic of the natural region.
4. All species persist in naturally occurring populations and habitats.

Karst terrain is geologically less stable and may be more vulnerable to collapse or significant erosion with construction on the surface. The vulnerability of karst landscapes, even after past use, has been demonstrated by the sudden collapse of rock under highways, bridges, buildings, vehicles and other structures. Information on the geotechnical stability of the road under different hydrological scenarios for the planned volume and weight of vehicular use through the karst area should be considered as well as mitigation measures to eliminate or reduce impacts to the karst.

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<sup>5</sup> Ford, D.C. 2001. *Postscript to the McMaster University 1974 Report on the Nahanni North Karst*. McMaster University.

## Spills

The proponent has indicated that diesel fuel and other supplies will be transported over the winter road. The winter road travels across extreme topography, a contributing factor to a higher risk of spills. Although in winter frozen water bodies and snow can help to contain spills and reduce effects, the extreme topography along the road could make containment and clean-up difficult. Spills in some locations along this road would drain into the South Nahanni Watershed and have the potential to impact Nahanni National Park Reserve.

In addition, the karst area (approximately kilometre 43 to 83) is more vulnerable to pollution than other underground aquifers for three reasons. First, the rocks are more permeable than other rocks allowing the direct filtration of water and pollutants into the ground. Second, depressions, sinkholes and other openings allow for pollutants to go directly into the ground. Third, underground streams can move the pollutants quickly over a large distance. A spill could potentially contaminate water underground for a couple of kilometres north and/or 20-30 km south<sup>6</sup>.

It is recommended that a spill risk assessment be conducted, and that appropriate spill prevention and preparedness mitigations, and spill contingency procedures be identified.

The risk assessment should evaluate and map along the length of the road the factors that can increase the probability of a spill including, but not limited to:

- Grades
- Turns
- Speeds
- Passing other trucks

The risk assessment should map and evaluate the consequences of the spill along the whole length of the road, including but not limited to:

- Water courses
- Karst
- Key wildlife habitats
- Drainages into the South Nahanni River

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<sup>6</sup> Brook, G.A. & Ford, D.C. 1976. *The Karstlands of the South Nahanni Region, Mackenzie Mountains, N.W.T.* McMaster University, Hamilton.

These elements are then combined to create a total risk assessment for the whole length of the road.

### **Wildlife**

Indirect (disturbance from habitat) habitat loss could occur in the winter when the road is in use. Also, vehicle collisions may kill or harm wildlife and the road may facilitate increased hunting due to improved access. Although all of these issues should be addressed, likely the issues of greatest concern are the impacts of road traffic on Dall sheep, caribou, moose and species listed under the *Species at Risk Act*.



## Appendix 4

The risk assessment could examine issues such as:

- Error margins with respect to quantity and timing of tailings backfill.
- Error margins associated with geochemical predictions for waste rock facility.
- Error margins associated with tailings backfill geochemical, hydrological and environmental impact predictions.
- Options for mitigation if predictions for waste rock facility are incorrect.
- Options for mitigation if predictions for tailings backfill are incorrect.
- Impacts of earthquakes, other extreme events and climate change on any of the above.

