



Environmental Protection Operations Directorate
Prairie and Northern Region
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MV2015L2-0003

Jen Potten, Regulatory Officer
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7th Floor, 4922 48th St.
Yellowknife, NT X1A 2P6

Via: online submission

Attention: Ms. Potten

**RE: Environment Canada's Technical Submission
North American Tungsten Corporation Ltd., Cantung Mine
Type A Water Licence Renewal Application (MV2015L2-0003)**

Please find attached Environment Canada's (EC) technical intervention submission to the Mackenzie Valley Land and Water Board with respect to North American Tungsten Corporation Ltd.'s Type A Water Licence (WL) Renewal Application.

In addition, please note that EC will not be appearing in person before the Board at the Public Hearing scheduled on August 26th and 27th, 2015 given that the Department is satisfied that the issues raised can be addressed through a written proceeding for this WL Renewal Application.

Should you require further information, please do not hesitate to contact Ms. Lisa Lowman at 204-984-0668 or via email at lisa.lowman@ec.gc.ca.

Sincerely,

Susanne Forbrich
Regional Director

Cc: Lisa Lowman (A/Section Head, Environmental Assessment – EA South, EC)
Lorna Hendrickson (A/Manager, Environmental Assessment, EC)
EC Internal Distribution



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ENVIRONMENT CANADA'S INTERVENTION TO THE MACKENZIE VALLEY LAND AND WATER BOARD

RESPECTING
THE CANTUNG MINE TYPE A WATER
LICENCE RENEWAL PROPOSED BY
NORTH AMERICAN TUNGSTEN
CORPORATION LIMITED

JULY 14, 2015

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2.0 List of Acronyms

AEMP – Aquatic Effects Monitoring Program
BATEA - Best Available Technology Economically Achievable
CCME – Canadian Council of Ministers of the Environment
CEPA 1999 – *Canadian Environmental Protection Act 1999*
COESWIC – Committee on the Status of Endangered Wildlife in Canada
EC – Environment Canada
EEM – *Environmental Effects Monitoring Program*
EQC - Environmental Quality Criteria
FDP – Final discharge point
GNWT – Government of the Northwest Territories
MMER – *Metal Mining Effluent Regulations*
MVLWB – Mackenzie Valley Land and Water Board
MVRMA – *Mackenzie Valley Resources Management Act*
NATCL – North American Tungsten Corporation Limited
NWT - Northwest Territories
TP – Tailings pond
WL – Water licence

3.0 Plain Language Summary

North American Tungsten Corporation Limited (the Proponent) operates the Cantung Mine (the project) and has submitted an application for Water Licence (WL) MV2015L2-0003 to the Mackenzie Valley Land and Water Board (MVLWB) on April 21 2015 to renew their existing WL MV2002L2-0019, which expires January 16 2016. The purpose of the application is to renew the term and update and modernize the existing WL to allow the Proponent to continue mining and milling. The project is currently undergoing regulatory review by the MVLWB.

While several of Environment Canada's (EC's) concerns regarding the project have been addressed during the technical meetings and discussions, leading up to the hearing a number of minor issues remain outstanding. We note that the Proponent was responsive with providing information throughout the process. EC has reviewed the WL renewal application noting areas where a renewal WL could be strengthened, and has provided comments for the MVLWB to consider.

The scope of EC's review includes the WL renewal application and supporting documentation as submitted by the Proponent.

The recommendations presented in this submission for consideration by the MVLWB are designed to address outstanding issues related to EC's mandate including:

1. Protection of water quality through a collaborative, science-based approach to monitoring the aquatic ecosystem through the *Aquatic Effects Monitoring Program* (AEMP) and *Environmental Effects Monitoring Program* (EEM);
2. The development of a comprehensive combined *Water Management Erosion and Sediment Control Plan* for surface water runoff, including collection, drainage management and treatment if necessary, to ensure water quality in the area is maintained; and
3. Monitoring and mitigating nitrite concentrations in Tailings Pond 5 (TP5) effluent discharge for the protection of the aquatic receiving environment.

EC is of the opinion that the WL renewal application submitted by the Proponent with respect to Cantung Mine provides a good basis to ensure industry best practices are utilized, provided that management and monitoring plans are developed.

During the next licence term EC will continue to work with the Proponent, the MVLWB, and other concerned parties to ensure that issues within the departmental mandate are addressed accordingly.

4.0 Introduction

4.1 EC's Responsibility

EC is responsible for leading the implementation of the Government of Canada's environmental agenda and is committed to contributing to the realization of sustainable development in Canada's North. EC's mandate covers the preservation and enhancement of the quality of the natural environment, including water, air, soil, flora and fauna, as well as species at risk and migratory birds. Science plays a fundamental role in enabling EC to deliver on the Department's mandate by contributing to informed decisions, creating environmental regulations and by supporting the delivery of services to Canadians. In the Northwest Territories (NWT), EC provides specialist expertise, information, and knowledge to the MVLWB, in accordance with the expertise that the Department has available, as required under the *Mackenzie Valley Resources Management Act* (MVRMA).

In addition to EC's mandate to conserve and enhance the quality of the natural environment, the Department administers the pollution prevention provisions of the *Fisheries Act*, which prohibits the deposit of any deleterious substance into fish-bearing waters. EC also participates in the regulation of toxic chemicals and the development and implementation of environmental quality guidelines pursuant to the *Canadian Environmental Protection Act, 1999* (CEPA 1999).

4.2 EC's Intervention

This intervention summarizes the results of EC's review of the WL Renewal Application and supporting information provided by the Proponent throughout the review process. The intervention identifies outstanding concerns related to issues the Department has identified, and makes recommendations for consideration by the MVLWB. Should new or additional relevant information be brought forward by the Proponent or be identified during the final public hearings, this submission may need to be re-examined. Within the context of the additional information, any changes in EC's recommendations and position will be brought to the attention of the MVLWB and the Proponent.

A brief summary of some of the legislation from which EC's mandate is derived is provided in Section 5.0. EC's comments related to these topics are found in Section 6.0 of this intervention and finally, a summary of EC's recommendations can be found in Section 7.0. Appendix 1 provides additional context on this legislation as well as other federal guidelines that helped support the content and recommendations found in this intervention.

EC based its analyses on the principle that the WL renewal, if approved, should be permitted in a manner that ensures the highest level of environmental protection so that the well-being of Canadians is enhanced and the natural environment is conserved. To that end, EC has undertaken a science-based review of the various issues of interest to the Department with the aim of assessing if the conclusions and predictions presented by the Proponent are realistic, if the data and analyses upon which they were based are credible, and to provide recommendations to mitigate any potential environmental impacts.

In the completion of its review, the Department was guided by a number of overriding principles or concepts, including:

- The precautionary principle, which recognizes that the absence of full scientific certainty shall not be used as a reason to postpone decisions in the face of the threat of serious or irreversible harm;
- An ecosystem approach to environmental management, which is a method of environmental stewardship that focuses understanding, decision making, and program action on maintaining the capacity of a whole system to produce ecological goods and services by concentrating on the long-term health of ecosystem structure, processes and interactions. The intent is to proactively integrate environmental, economic, and social objectives within ecological scales and timeframes in order to achieve environmental sustainability; and
- The use of Best Available Technology Economically Achievable (BATEA) and best management practices to prevent, reduce or eliminate the direct or indirect release of effluents and substances into aquatic, atmospheric and terrestrial ecosystems.

5.0 EC's Mandate, Roles and Responsibilities

5.1 Introduction

EC's mandate is determined by the statutes and regulations under the responsibility of the assigned Minister of the Environment. In delivering this mandate, the Department is responsible for the development and implementation of policies, guidelines, codes of practice, inter-jurisdictional and international agreements, and related programs.

EC is participating in the review of the WL renewal application in order to provide specialist expertise, information and knowledge to both the MVLWB under the MVRMA and to regulators.

The scope of EC's intervention to the MVLWB is dictated by the Departmental mandate as defined by the *Department of Environment Act* (DOE Act) and through other legislation under which the Minister of the Environment is authorized. Additional information on EC's mandate is found in Appendix 1.

EC's comments and recommendations in this intervention are intended to provide expert advice to the Proponent and decision-makers, in accordance with its program-related responsibilities and associated guidelines and policies. These comments are in no way to be interpreted as any type of acknowledgement, compliance, permission, approval, authorization, or release of liability related to any requirements to comply with federal or territorial statutes and regulations. Responsibility for achieving regulatory compliance and cost-effective risk and liability reduction lies solely with the Proponent.

5.2 *Fisheries Act* – Pollution Prevention Provisions

Subsection 36(3) of the *Fisheries Act* specifies that, unless authorized by federal regulation, no person shall deposit or permit the deposit of deleterious substances of any type in water frequented by fish, or in any place under any conditions where the deleterious substance, or any other deleterious substance that results from the deposit of the deleterious substance, may enter any such water. Subsection 34(1) of the *Fisheries Act* defines a deleterious substance to include “*any water that contains a substance in such quantity or concentration, or that has been so treated, processed or changed, by heat or other means, from a natural state that it would, if added to any other water, degrade or alter or form part of a process of degradation or alteration of the quality of that water so that it is rendered or is likely to be rendered deleterious to fish or fish habitat or to the use by man of fish that frequent that water*”. Subsection 36(3) makes no allowance for a mixing or dilution zone at the point of deposit.

In the absence of a regulation authorizing the release of a substance, and to the extent that the substance is a prescribed substance or that it can be demonstrated that it is a "*deleterious substance*" as defined in Subsection 34(1) of the *Fisheries Act*, any release from the construction, operation, reclamation or decommissioning stages of the project to any waters frequented by fish, or in any other circumstance set out in Subsection 36(3), may constitute a violation of the *Fisheries Act*.

Compliance with the terms and conditions of any licence or permit does not absolve the Proponent from responsibility for compliance with the requirements of the *Fisheries Act* or other federal legislation. Further, this submission does not constitute an authorization pursuant to Subsection 36(4) of the *Fisheries Act*, and any deposit of a deleterious substance contrary to Subsection 36(3) of the *Fisheries Act* is prohibited and may warrant enforcement action.

- ***Metal Mining Effluent Regulations (MMER)***

The *Metal Mining Effluent Regulations* (MMER) authorizes the proponents of metal mines to discharge deleterious substances into waters frequented by fish provided the discharges do not exceed prescribed limits. The MMER, administered by EC, imposes limits on releases of arsenic, copper, cyanide, lead, nickel, zinc, radium-226 and total suspended solids, and prohibits the discharge of effluent that is acutely lethal to fish. All other substances not regulated under the MMER are subject to the general prohibition contained in Subsection 36(3) of the *Fisheries Act*.

The MMER includes provisions for the monitoring and reporting of effluent quality and quantity, environmental effects monitoring and reporting, and allows the use of natural, fish-frequented waterbodies for mine waste disposal. At some sites, the disposal of mine waste in such waterbodies may be the preferred disposal option for pollution prevention and reduction of long-term environmental risk. A natural, fish-frequented waterbody can only be used for mine waste disposal if the MMER is amended to add that waterbody to the Regulations.

5.3 *Canadian Environmental Protection Act, 1999*

In Canada, the federal government, as well as provincial, territorial and Aboriginal governments, share responsibility for protecting the environment, which demands close collaboration as governments work to support the well-being of Canadians. As a cornerstone of the Government of Canada's environmental legislation, the *Canadian Environmental Protection Act* (CEPA) is aimed at preventing pollution and protecting the environment and human health.

One of CEPA's major thrusts is the prevention and management of risks posed by harmful substances. CEPA also provides for the assessment and/or

management of the environmental and human health impacts of new and existing substances. CEPA manages environmental and human health impacts of products of biotechnology, marine pollution, disposal at sea, vehicle engines and equipment emissions, fuels, hazardous wastes, environmental emergencies, and other sources of pollution.

6.0 EC's Technical Review Comments

Issue 1: Aquatic Effects Monitoring Program (AEMP)

References:

- Water Licence Renewal Application Submission, Appendices E and F

Proponent's Conclusions:

The Proponent has initiated the AEMP study design development with the formation of a Working Group and issuance of an approximate schedule. The next steps involve circulating the AEMP study design Draft 1 for review and commenting by the Working Group.

EC's Conclusions:

EC supports the collaborative approach proposed and notes that there will be overlap between the AEMP and monitoring done under the MMER's EEM program. EC notes that the EEM program provides a strong, science-based approach to monitoring the aquatic ecosystem, and expects that the AEMP will build on the monitoring done to date. An AEMP program can strengthen the use of monitoring data through the inclusion of a management response plan linking monitoring results to appropriate action.

EC's Recommendation EC-1:

EC recommends that the renewal WL include terms and conditions for the AEMP development, with incorporation of a management response component to link monitoring results to threshold-based actions.

Issue 2: Water Management Plans

References:

- *Combined Water Management Plan and Erosion and Sediment Control Plan*, Cantung Mine, Tungsten, NT Dec. 2013. Section 4.7.4
- Water Licence MV2002L2-0019 Part F Items F.1. and F.14.

Proponent's Conclusions:

The amended WL requires submission of a *Combined Water Management and Erosion and Sediment Control Plan* prior to construction of any dry stack tailings facilities.

The previous combined plan was issued December 2013. Section 4.7.4 outlines the stations that are sampled for water quality and the various parameters at each.

EC's Conclusions:

Given the change in scope of the amended WL since 2013, the Water Management Plan should be updated to reflect the installation of the wastewater treatment plant, and the upcoming change in tailings management. Use of a site-wide consolidated plan is supported.

An important focus of the management plan will be the collection and monitoring of any runoff from the dry stack tailings facilities. This may utilize a combined approach of drainage ditches, to collect any surface runoff from the stack, and groundwater monitoring wells, to monitor seepage and infiltration.

EC notes that parts of the plan should be updated to align with current MMER requirements. Specifically, Table 6 of Section 4.7.4 should identify station 4-20 / 402-2 (Stinky Pond culvert) as a Final Discharge Point (FDP) and monitoring requirements should reflect this. For example, sublethal toxicity testing at this discharge site would be more environmentally relevant and appropriate than continuing to test at the groundwater FDP 4-28-1.

EC's Recommendation EC-2:

EC recommends that the renewal WL terms and conditions include the requirement to submit an update to the *Combined Water Management Plan and Erosion and Sediment Control Plan* to the Board for approval.

Issue 3: Nitrite Mitigation

References:

- Water Licence MV2002L2-0019 – Circulated June 16, 2015
- Water Licence Renewal Application Attachment 2 – Nitrite Investigation

Proponent's Conclusions:

Under WL MV2002L2-0019, the Proponent is required to evaluate the water quality objectives for nitrite after the high discharge period. The Proponent has identified contributing sources to the higher-than-expected nitrite levels, and links this to reducing conditions in the effluent stream during the under-ice period. The proposed solution is to increase oxygen levels.

EC's Conclusions:

Nitrite is not a regulated parameter; however, water quality objectives have been set in the Flat River of 0.06 mg N/L. These objectives have not been met during the ice-cover period in 2015 (January – early May) with receiving environment concentrations of -0.097 to 0.250 over that period. EC supports the implementation of mitigation to increase oxygen levels in TP5 and effluent discharge, and ongoing analysis of data.

EC's Recommendation EC-3:

EC recommends that there be a condition in the renewal WL with respect to monitoring and mitigating nitrite concentrations in effluent, to ensure receiving environment water quality objectives are met.

Issue 4: Comments on a Draft Renewal WL

References:

- Water Licence MV2002L2-0019 – Circulated June 16, 2015

Proponent's Conclusions:

N/A

EC's Conclusions:

EC has reviewed the plans provided by the Proponent and the recently amended WL and has recommendations on several sections of the WL.

Recommendations EC-4:

Part E.16: Table E-1 Effluent Discharge Criteria – Nickel: Nickel in treated effluent is three (3) orders of magnitude lower than the current Environmental Quality Criteria (EQC) of 1.0 mg/L maximum grab concentration and one to two orders of magnitude lower than limits coming out of the mill. EC recommends a revision of the nickel criteria downward, which would be reasonable and achievable.

Part F 9: An *Integrated Geochemical Load Balance and Risk Assessment Report* of the site is due January 31, 2016. EC recommends that this include an analysis and quantification of the consequences of failure in the risk analysis of the dry stack facility.

SNP B.8: EC is unclear as to why analysis of CN is included.

Errata in amended WL: EC recommends correction of the reference in F15 to requirements specified in Part E, Item 19; this should be Item 22.

Annex B: Water Quality Objectives: Total iron has a receiving environment objective of 1.3 mg/L; this is substantially above the other objectives which are based on Canadian Council of Ministers of the Environment (CCME) Guidelines, and the rationale for this is not clear.

SNP - Renewal WL: EC recommends that the renewal of the WL Surveillance Network Program (SNP) include sublethal toxicity testing at the second FDP at 4-27-2 (Stinky Pond culvert).

7.0 Summary of Recommendations

The specifics of EC's outstanding issues have been discussed in this intervention; however, for convenience EC's recommendations are listed below:

Issue 1: Aquatic Effects Monitoring Plan (AEMP)

EC recommends that the renewal WL include terms and conditions for the AEMP development, with incorporation of a management response component to link data to threshold-based actions.

Issue 2: Water Management Plans

EC recommends that the renewal WL terms and conditions include the requirement to submit an update to the *Combined Water Management Plan and Erosion and Sediment Control Plan* to the MVLWB for approval.

Issue 3: Nitrite Mitigation

EC recommends that there be a condition in the renewal WL with respect to monitoring and mitigating nitrite concentrations in effluent to maintain receiving environment water quality objectives.

Issue 4: Comments on a Draft Renewal WL

EC recommends a revision of the nickel criteria downward, which would be reasonable and achievable.

EC recommends that the *Integrated Geochemical Load and Balance and Risk Assessment Report* include an analysis and quantification of the consequences of failure in the risk analysis of the dry stack facility.

EC recommends that the renewal WL SNP include sublethal toxicity testing at the second FDP at 4-27-2 (Stinky Pond culvert).

EC recommends errata correction; where F15 refers to requirements specified in Part E, Item 19; this be corrected to Item 22.

APPENDIX 1: Relevant Legislation, Regulations and Guidelines

Introduction

The mandate of Environment Canada (EC) is determined by the statutes and regulations assigned to the federal Minister of Environment by Parliament or by the Government of Canada. Delivering this mandate requires EC, among other things, to develop and implement policies, guidelines, codes of practice, inter-jurisdictional and international agreements and related programs. The following lists specific legislation and national environmental policies and programs administered by EC that influence the content of environmental assessment submissions.

For purposes of reliability and accuracy, and for interpreting and applying regulations or policy, it is recommended that the reader refer to the original document. Official versions of legislation can be found on the Department of Justice website (<http://laws.justice.gc.ca/eng/>).

In environmental assessments (EA), EC generally carries out its responsibilities by providing recommendations, advice and information within its mandate. This is provided to both the proponent and decision-makers and may be used in the development of potential conditions that may accompany an EA approval. This appendix is intended to summarize EC's mandate.

Department of the Environment Act

General responsibility for environmental management and protection is attributed to EC, through the Minister, under the *Department of the Environment Act* (DOE Act). This responsibility extends to and includes all matters over which Parliament has jurisdiction, which matters have not, by law, been assigned to any other department, board, or agency of the Government of Canada relating to:

- the preservation and enhancement of the quality of the natural environment (e.g., water, air, and soil);
- renewable resources including migratory birds and other non-domestic flora and fauna;
- water;
- meteorology; and
- co-ordination of policies and programs respecting preservation and enhancement of the quality of the natural environment.

The DOE Act requires EC/the Minister to advise heads of federal departments, boards and agencies on matters pertaining to the preservation and enhancement of the quality of the natural environment.

Canadian Environmental Protection Act (1999)

The *Canadian Environmental Protection Act* (CEPA) is an important part of Canada's federal environmental legislation aimed at preventing pollution and protecting the environment and human health. The goal of the Act is to contribute to sustainable development. CEPA shifts the focus away from managing pollution (after it has been created) to preventing pollution. CEPA provides the federal government with tools to protect the environment and human health, establishes strict deadlines for controlling certain toxic substances, and requires the virtual elimination of toxic substances which are bioaccumulative, persistent and result primarily from human activity.

When a substance is declared “toxic” under CEPA and is added to the List of (toxic) Substances set out in Schedule 1, tools are proposed to establish preventive or control actions for managing the substance and to thereby reduce or eliminate its release into the environment. These tools may be used to control any aspect of the substance’s life cycle, from the design and development stage to its manufacture, use, storage, transport and ultimate disposal.

Examples of preventive and control instruments include:

- regulations;
 - pollution prevention plans;
 - environmental emergency plans;
 - environmental codes of practice;
 - environmental release guidelines; and
 - pre-notification and assessment of new substances (chemicals, biochemicals, polymers, biopolymers, and animate products of biotechnology).
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- **Environmental Emergencies**
Part 8 of CEPA 1999 on environmental emergencies (sections 193 to 205) provides various authorities to address the prevention of, preparedness for, response to and recovery from environmental emergencies caused by uncontrolled, unplanned or accidental releases and to reduce any foreseeable likelihood of releases of toxic or other hazardous substances listed in Schedule 1 of the *Environmental Emergency (E2) Regulations*. EC provides advice regarding emergency plans for projects it reviews to ensure they are consistent with the requirements of CEPA 1999.
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- **National Pollutant Release Inventory Reporting Requirements**
Under the authority of Section 46 of CEPA, the National Pollutant Release Inventory (NPRI) collects information on the quantities of certain substances that are released, disposed of or transferred off-site for recycling by industrial facilities in Canada. Facilities must report quantities of NPRI substances that are released to air, water or land; that are disposed of on- or off-site, including substances in tailings and waste rock, and that are transferred off-site for treatment prior to final disposal or for recycling. NPRI reporting requirements

are published in the Canada Gazette, Part I every two years. Facility reports must be submitted annually by June 1st. Information submitted to the NPRI is published on the NPRI website. EC can provide advice and guidance on NPRI substances and on monitoring and reporting.

Fisheries Act - Pollution Prevention Provisions

EC administers Section 36 of the *Fisheries Act*, the purpose of which is to prevent pollution by prohibiting the deposit of harmful substances into waters frequented by fish, unless authorized by regulations under the Act or other federal legislation. The “general prohibition” in this section states, in part, that *no person shall deposit or permit the deposit of a deleterious substance of any type in water frequented by fish, unless authorized by, and deposited in accordance with, regulations under the Fisheries Act or other federal legislation.*

Meeting the requirements of the *Fisheries Act* is mandatory, irrespective of any provincial regulatory or permitting system. The release of substances with the potential to be deleterious, as identified in Subsection 34(1) of the *Fisheries Act*, from the construction, operation, reclamation or decommissioning stages of the project in any waters frequented by fish, may constitute violations of the *Fisheries Act*.

- **Metal Mining Effluent Regulations (MMER)**

The *Metal Mining Effluent Regulations* (MMER) authorizes the proponents of metal mines to discharge deleterious substances into waters frequented by fish provided the discharges do not exceed prescribed limits. The MMER, administered by EC, imposes limits on releases of arsenic, copper, cyanide, lead, nickel, zinc, radium-226 and total suspended solids, and prohibits the discharge of effluent that is acutely lethal to fish. All other substances not regulated under the MMER are subject to the general prohibition contained in Subsection 36(3) of the *Fisheries Act*.

The MMER includes provisions for the monitoring and reporting of effluent quality and quantity, environmental effects monitoring and reporting, and allows the use of natural, fish-frequented waterbodies for mine waste disposal. At some sites, the disposal of mine waste in such waterbodies may be the preferred disposal option for pollution prevention and reduction of long-term environmental risk. A natural, fish-frequented waterbody can only be used for mine waste disposal if the MMER is amended to add that waterbody to the Regulations.

- **Environmental Code of Practice for Metal Mines (2009)**

The primary purpose of EC's *Environmental Code of Practice for Metal Mine* is to support the MMER; however, it also includes other subjects not dealt with via the MMER that may influence the environmental impact of mining operations. The Code identifies and promotes recommended best practices to

facilitate and encourage continual improvement in environmental performance of mining facilities throughout all phases of the mine life cycle. EC uses the code to guide standard advice on EAs for metal mines.

- **Guidelines for the Assessment of Alternatives for Mine Waste Disposal**
These guidelines describe the process that must be undertaken when a proponent is considering using a natural water body frequented by fish as a tailings impoundment area (TIA) such that a regulatory amendment to the *Metal Mining Effluent Regulations* (MMER) would be required. In the context of these guidelines, the term TIA refers to a natural water body frequented by fish into which deleterious substances (such as tailings, waste rock, low-grade ore, overburden, and any effluent that contains any concentration of the deleterious substances specified in the MMER and of any pH) are disposed.