Water & Effluent Quality Management Policy

FINAL DRAFT

Mackenzie Valley Land and Water Board
Gwich'in Land and Water Board
Sahtu Land and Water Board
Wek'èezhìi Land and Water Board

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TABLE OF CONTENTS

Definitions and Acronyms (these terms are italicized in the text of the document)

Term	Definition
AEMP	Aquatic Effects Monitoring Plan
Boards	Land and Water *Boards* of the Mackenzie Valley, as mandated by the *MVRMA*
CCME	Canadian Council of Ministers for the Environment
effluent quality criteria (EQC)	Numerical or narrative limits on the quality of the *waste* discharged to the *receiving environment*
GLWB	Gwich'in Land and Water Board
initial dilution zone (IDZ)	Also called a "mixing zone"; an area adjacent to the effluent outfall within which *waste* is discharged and first mixes with water in the *receiving environment*.
MVLWB	Mackenzie Valley Land and Water Board
MVRMA	Mackenzie Valley Resource Management Act
NWT	Northwest Territories
project	Any activity that requires a water licence
proponent	Applicants for water licences
receiving environment	The natural aquatic environment that, directly or indirectly, receives any deposit or discharge of *waste* (as defined in the *NWT* Waters Act), from a *project*
SLWB	Sahtu Land and Water Board
SNP	Surveillance Network Program
stakeholders	Term includes industry, federal agencies, the territorial government, Aboriginal governments and organizations, communities, and other interested parties.
waste	As defined in Section 2 of the *NWT Waters Act*[1]

[1] "*waste*" is defined, in section 2 of the *Northwest Territories Waters Act*, as:

(a) any substance that, if added to water, would degrade or alter or form part of a process of degradation or alteration of the quality of the water to an extent that is detrimental to its use by people or by any animal, fish or plant, or

WLWB	Wek'èezhìi Land and Water Board

(b) water that contains a substance in such a quantity or concentration, or that has been so treated, processed or changed, by heat or other means, 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 to the extent described in paragraph (a),

and, without limiting the generality of the foregoing, includes

(c) any substance or water that, for the purposes of the Canada Water Act, is deemed to be *waste*,

(d) any substance or class of substances prescribed by regulations made under subparagraph 33(1)(b)(i),

(e) water that contains any substance or class of substances in a quantity or concentration that is equal to or greater than a quantity or concentration prescribed in respect of that substance or class of substances by regulations made under subparagraph 33(1)(b)(ii), and

(f) water that has been subjected to a treatment, process or change prescribed by regulations made under subparagraph 33(1)(b)(iii)."

1.0 Purpose of this Policy

The Land and Water *Boards* of the Mackenzie Valley regulate the use of water and the deposit of *waste* into water through the issuance of water licences. The purpose of this Policy is to describe the *Boards'* approach, during a water licensing process, to setting limits, called *effluent quality criteria* (*EQC*), on the amount of *waste* that can be discharged from a *project* into the *receiving environment*. This Policy also addresses other water licence terms and conditions that support compliance with and validation of *effluent quality criteria*.

2.0 Authority

The *Boards'* authority to develop this Policy is granted under sections 65, 102 and 106 of the *MVRMA*.

The authority to set limits on the amount of *waste* discharged from a *project* is given to the *Boards* under paragraph 14(4)(*c*) of the *Northwest Territories Waters Act*, which states that any *waste* produced by an undertaking "will be treated and disposed of in a manner that is appropriate for the maintenance of

(i) water quality standards prescribed by regulations made under paragraph 33(1)(*h*) or, in the absence of such regulations, such water quality standards as the Board considers acceptable, and

(ii) effluent standards prescribed by regulations made under paragraph 33(1)(*i*) or, in the absence of such regulations, such effluent standards as the Board considers acceptable."

No regulations for water quality or effluent standards have been prescribed by the Governor in Council under paragraphs 33(1)(*h*) or 33(1)(*i*) of the *Northwest Territories Waters Act*. This Policy is outlines the process for setting water quality and effluent standards during water licencing.

3.0 How this Policy was developed

This Policy was developed by the Water/Effluent Quality Guidelines Working Group, one of the Standard Procedures and Consistency Working Groups established by the *Boards* in 2008. This draft of the Policy is based on input from Board staff, consultants and numerous publically available documents and is consistent with past and present practices of the *Boards*. During the development of the Policy and prior to public distribution, members of the *Boards* reviewed this draft of the Policy and have provided input on the document and, in particular, on the "Guiding Principles" (Section 6.0, below). *(N.B., this section will be updated after a period of public review and upon subsequent revisions)*

4.0 Application of this Policy

This Policy will be applied by all the Land and Water *Boards* (*Boards*) operating under the *Mackenzie Valley Resource Management Act* (*MVRMA*) including the:

- Mackenzie Valley Land and Water Board;
- Gwich'in Land and Water Board;
- Sahtu Land and Water Board; and
- Wek'èezhìi Land and Water Board.

4.1 What this Policy applies to:

This Policy applies to all *project*s that require a water licence and that may affect the water quality in the *receiving environment*.

Specifically, this Policy applies to the terms and conditions of a water licence set by the *Boards* to manage the discharge of *waste* to the *receiving environment*. Such terms and conditions include[2], but are not limited to, those that set *effluent quality criteria* (*EQC*) or that require monitoring programs and/or management plans. In all cases, the *Boards* will set the terms and conditions of a water licence based on the facts before them.

4.2 How this Policy will be applied:

This Policy outlines the types of information that a *proponent* must submit to the *Boards* as part of the process of setting terms and conditions to manage the discharge of *waste*. Although the same types of information will be required from each *proponent*, the amount of detail required will vary depending on the size, type, stage and duration of the *project* under consideration. The specific level of effort required from the *proponent* will be specified in appropriate guideline documents (also see Appendix A).

4.3 When this Policy will be applied:

This Policy will be applied to all water licence applications received after the effective date of the Policy. In the case of existing water licences, this Policy may be applied if there is a proposal to amend the *EQC*. Like any water licence condition, amendments to the *EQC* are considered[3] upon request of the *proponent*, by the Board's own motion (if the amendment appears to be in the public interest), or during the water licence renewal process.

[2] see section 15 of the *Northwest Territories Waters Act* for terms and conditions that may be set in a water licence

[3] section 18 of the *Northwest Territories Waters Act*

5.0 Objectives of this Policy

The *Boards* believe that this Policy is necessary to ensure the transparency of Board decisions. By referencing this Policy, *proponent*s, *stakeholders* and other interested parties will be able to make more informed submissions to the *Boards*, which will, in turn, lead to more efficient and effective Board processes and decisions.

The *Boards* recognize that this Policy will need to be supported by more detailed guidelines and specific procedures including, but not limited to: setting site-specific water quality standards, collection of baseline information, establishment of *initial dilution zone*s, monitoring plan guidelines, *waste* management guidelines. Items currently identified as requiring more guidance are noted in the text of the Policy and itemized in Appendix A. These guidelines and procedures will further address the level to which the Policy will apply to different *project*s and permits (e.g., Type A or Type B water licence applications etc).

The specific objectives of this Policy are to:

1. Conserve and protect water resources for all users;
2. Balance the interests of all users to ensure that development is sustainable and responsible;
3. Guide Board decision-making so that it is clear, timely, balanced, consistent and transparent; and
4. Ensure public engagement in the stewardship of water resources.

6.0 Guiding Principles

The following principles represent the values and beliefs of the *Boards* and will guide the *Boards*' decisions on any matter that will ultimately affect water quality in the *receiving environment* of a *project*. The principles are not listed in order of priority.

1. Sustainable Development: The *Boards* believe in meeting the needs of the present without compromising the ability of future generations to meet their own needs.

2. Pollution Prevention: The *Boards* believe in the use of processes, practices, materials, products or energy that avoid or minimize the creation of pollutants and *waste*, and reduce overall risk to human health and the environment.

3. Precaution: The *Boards* believe that where there are threats of serious or irreversible damage, the lack of full scientific certainty should not be used as a reason for postponing cost effective measures to prevent environmental degradation.

4. Polluter Pays: The *Boards* believe that the polluting party should pay for the restoration of damage done to the natural and built environments.

5. Integrated Watershed Management: The *Boards* believe in the cooperative and coordinated stewardship of shared water resources. Decisions are not to be made in isolation but are

made for the greatest collective benefit for all Canadians and in particular for residents of the Mackenzie Valley.

6. Multiple Uses and Values: The *Boards* believe that decisions should address multiple, diverse and sequential uses of water – many of which are provided at the same time by the same water body.

7. Shared Responsibility: The *Boards* believe that in our co-management system, all *stakeholders* – including Aboriginal governments and organizations, federal and territorial governments, communities and industry - have a responsibility to meaningfully participate in decisions that will affect water quality.

8. Jurisdiction Best-Placed: The *Boards* believe that although policy development should take place at all jurisdictional levels, policy implementation should be the responsibility of the level most appropriate to resolving the issue at hand.

7.0 Approach to setting *Effluent quality criteria*

One of the most effective means *Boards* have of protecting water quality is to regulate the "quantity, concentration and types of *waste"*[4] that may be discharged from a *project* into the *receiving environment*. *Boards* do this by setting discharge limits, also called *effluent quality criteria* (*EQC*), in the terms and conditions of a water licence. *EQC*'s define the maximum allowable concentrations or amounts (i.e., loadings) of each contaminant in the *waste* and the *proponent* must ensure that the *waste* discharged stays within these limits in order to remain in compliance with the water licence. Typically, an *EQC* value will be developed for any contaminant that is predicted to be in the *waste* at a concentration that may adversely affect downstream water quality.

7.1 Objectives for effluent quality criteria

The *EQC* will be established on a *project*-specific basis to ensure that:

1. Water quality in the downstream environment is protected,

2. Contaminant loadings to the environment are minimized, and

3. The *proponent* can reasonably and consistently achieve the *EQC*.

More detail is provided below on how these objectives will be met.

[4] paragraph 15(1)(b) of the *Northwest Territories* Waters Act

7.2 Information requirements necessary to meet EQC objectives

7.2.1 Objective 1: Water quality in the downstream environment is protected:

7.2.1.1 Water Quality Standards

The *Northwest Territories Waters Act* states that "any *waste* that would be produced by the appurtenant undertaking will be treated and disposed of in a manner that is appropriate for the maintenance of water quality standards"[5]. The *Boards* interpret this clause to mean that *EQC* for a *project* must be set such that the water quality standards established for the *receiving environment* will not be exceeded.

There is no definition of the term "water quality standard" in the *Northwest Territories Waters Act*, but the *Boards* believe it to be equivalent to the more widely accepted term "water quality objective" which has been defined by the Canadian Council of Ministers of the Environment (*CCME*) as:

> "a numerical concentration or narrative statement that has been established to support and protect the designated uses of water at a specified site[6]."

No such standards have been established for water bodies in the *NWT*; instead, the level of water quality to be maintained in the *receiving environment* has been, and will continue to be, decided on a *project*-specific basis by the *Boards* and *EQC* set accordingly[7].

7.2.1.2 Setting site-specific water quality standards

In order to set site-specific water quality standards for a *receiving environment*, the *Boards* must evaluate the following types of information:

- Pre-development (baseline) conditions of the receiving waters (i.e., water quality as well as the resident species of plants and animals that live in or use the water)
- Traditional and potential uses of the receiving water bodies (e.g., sustenance, recreational, cultural etc.)
- Cultural significance of the water bodies to local residents,
- Inputs of *waste* from other *project*s located in the same watershed or region in order to evaluate potential cumulative effects, and
- Published water quality guidelines (e.g., *CCME* Guidelines) and traditional knowledge that is relevant and appropriate for the receiving waters based on the information listed above.

In their water licence applications, *proponent*s must provide the information necessary to establish water quality standards for contaminants of concern and may, based on that information, propose appropriate water quality standards for the *receiving environment* of their *project*. *Proponents* can

[5] subsection 4(c) of the *Northwest Territories Waters Act*
[6] *CCME* (1999), Canadian Environmental Quality Guidelines. Guidelines and Standards Division, Winnipeg, MB.
[7] MacDonald Environmental Sciences Ltd. (2006), Toward the Development of Northern Water Standards, prepared for Indian and Northern Affairs. Chapter 3.

and should avail themselves of relevant information that has already been collected by other parties or that may be derived from regional land use or water management plans.

Although the *CCME* has published some guidance documents on the development of site-specific water quality objectives, the *Boards* need to develop specific guidance for *proponent*s that provide details on the above information requirements and describe how each of the above factors will be considered during a water licensing process (also see Appendix A). While the same types of information will be required by each *proponent*, the amount of detail required will often vary depending on the size, type and duration of the *project*.

7.2.2 Objective 2: Contaminant loadings to the environment are minimized:

In accordance with the Guiding Principles (section 6) and the *CCME* non-degradation policy[8], *proponent*s are expected to minimize and, where technically and economically possible, to prevent *waste* from entering water in the *NWT*. To this end, the *Boards* expect *proponent*s to demonstrate how their planning processes have considered the following *waste* prevention/minimization hierarchy[9] of preferred options:

1. Source control – *waste* should be prevented or reduced at the source whenever feasible;
2. Reuse/recycle – *waste* that cannot be prevented should be reused or recycled in an environmentally safe manner whenever feasible;
3. Treatment based on best available technology – *waste* that cannot be prevented or recycled/reused should be treated in an environmentally safe manner whenever feasible; and
4. Discharge based on limits – discharge of *waste* to the environment should be employed only as a last resort and should be conducted in an environmentally safe manner.

Information on proposed *waste*-control strategies and measures are to be submitted by the *proponent* with the water licence application and will assist the *Boards* in setting *EQC* that are appropriate for the *project* in question.

7.2.3 Objective 3: The proponent can reasonably and consistently achieve the EQC

The final determination of *EQC* requires that the *proponent* submits the following:

- technically feasible predictions of the concentration and quantities of contaminants that it proposes to discharge after all proposed *waste* prevention measures have been employed, and

[8] Ibid note 6: "For waters of superior quality or that support valuable biological resources, the *CCME* nondegradation policy states that the degradation of the existing water quality should always be avoided."
[9] The *waste* prevention/minimization hierarchy as written above has been adapted from the following reference: F. Henry Habicht II. Memorandum: EPA Definition of Pollution Prevention. U.S. Environmental Protection Agency, May 28, 1992.

- predictions of how the effluent, once discharged, will mix and disperse in the *receiving environment*.

These information requirements will enable the *Boards* to set *EQC* that are reasonably and consistently achievable by the *proponent*, while still ensuring that the *receiving environment* is protected. Note that the establishment of an *initial dilution zone* (*IDZ*) will be considered by the *Boards* on a case-by-case basis such that the water quality standards for the *receiving environment* will need to be met outside of the *IDZ*. Guidelines respecting *IDZ*s will be developed as noted in Appendix A.

7.3 Procedure for setting EQC

The *Boards* will consider all of the required information as submitted by the *proponent* plus all evidence provided by interveners to the Board process or by Board staff or consultants. The *Boards* will calculate and compare, on a *project*-specific basis, the *EQC* needed to meet water quality standards outside of an *IDZ* (if prescribed) and the *EQC* that are achievable based on efforts to minimize the amount of *waste* discharged. The lower values of this comparison will be adopted as the final *EQC* for the water licence.

7.4 Stakeholder Involvement and Community Participation

Consultation with *stakeholders* is a fundamental component of the *Mackenzie Valley Resource Management Act.* Accordingly, under this Policy, *stakeholders* will be engaged in the development of *EQC* for individual *project*s as well as in the development of guidelines and procedures referred to herein. Although the onus is on the *proponent* to provide the information as outlined above in their applications, the *Boards* believe that the best decisions will be made only if all parties share their relevant expertise and knowledge during the review process.

8. Terms and Conditions that Support the *EQC*

In order to ensure that the *EQC* are meeting the objectives described in Section 7, above, the *Boards* set other licence terms and conditions such as requirements for environmental monitoring, adaptive management or the submission of various management plans.

8.1 Monitoring Requirements

Environmental monitoring programs are essential for providing the information needed to determine if the *waste* prevention/minimization and water quality protection measures (including *EQC*) are successfully meeting their stated objectives. Monitoring will be required for various activities during the construction, operation and closure of a *project*; however, the monitoring programs listed below are specifically related to the *EQC* for a *project*:

1. Surveillance Network Programs (*SNP*s), consist of specific sites within a development at which water quality and quantity are measured. These programs are a requirement of every water licence. *SNP*s are designed to aid the *proponent* and the regulators in ensuring that the *EQC* are being and will continue to be consistently met. *SNPs* can require monitoring for some non-regulated parameters which allows all parties to ensure that the concentrations of some non-regulated contaminants do not unexpectedly increase. Typically, one of the *SNP* stations is assigned to the end-of-pipe and is the point at which the *proponent* must comply with the *EQC* and any other required parameter. Other *SNP* stations are often located at points of *waste* transfer or treatment prior to the end-of-pipe to ensure that the *waste*-handling system is working as expected.

2. Aquatic Effects Monitoring Programs (*AEMPs*) monitor the short- and long-term effects of a *project* on the wider *receiving environment*; such programs are currently only required of larger *project*s. *AEMPs* in particular can tell us if the water quality standards set for a *receiving environment* are being met. Guidelines for the development of *AEMP*s are available (Appendix A).

8.2 Adaptive Management

While selecting the best possible approach to water and effluent quality management is very important, adaptive management acknowledges that it can be difficult to predict all the effects of *project*s and developments on water resources. As a result, adaptive management involves monitoring the effects of actions and, where necessary, adjusting the actions based on the monitoring results. For example, if monitoring results show the effects of a *project* on the environment are much greater than predicted, further mitigation measures may be prescribed or *EQC* may be changed. While the concept of adaptive management has been integrated, to a certain extent, into the water licensing process, the *Boards* will develop further guidelines specifying how the principles of adaptive management will be applied to *projects*.

8.3 Management Plans

Depending on the type and size of the *project*, the *Boards* may require the submission of management plans that will detail how certain aspects of the *waste* prevention/minimization hierarchy will be implemented. Such management plans as the *Boards* deem necessary will be included in the terms and conditions of a water licence may include, but not be limited to: *Waste* Management Plans, Spill Contingency Plans, Water Management Plans, Closure and Reclamation Plans. Please refer to Appendix A for a list of management plan guidance documents that are either approved or require development.

9.0 Policy Implementation

Section 106 of the *MVRMA* gives the *MVLWB* the responsibility to "issue directions on general policy matters or on matters concerning the use of land or waters or the deposit of *waste* that, in the Board's opinion, require consistent application throughout the Mackenzie Valley". This Policy is issued under Section 106 and, as such, the *MVLWB* will establish the procedures necessary to ensure that this Policy is appropriately implemented and periodically reviewed.

The *MVLWB* may establish working groups from time to time to address specific policy, technical or scientific matters related to effluent and water quality management and the water licensing process, including the development of guidelines.

Individual Land and Water *Boards* (*MVLWB*, *GLWB*, *SLWB*, and *WLWB*) are responsible for processing, administering and monitoring water licences in accordance with this policy.

10.0 Monitoring and Performance Measurement for this Policy

Mechanisms will be required to monitor and measure performance and to evaluate the effectiveness in achieving the Policy objectives articulated above. Such mechanisms could include:

- Annual reporting to the *MVLWB* against the Policy objectives;
- The *NWT* Environmental Audit; and
- The results of the regional or watershed monitoring programs, (e.g., Cumulative Impact Monitoring Program)

In accordance with the principles of a management systems approach (i.e., Plan-Do-Check-Act), the *MVLWB* will develop a performance measurement framework that specifies reporting requirements against the Policy objectives including indicators, sources of information and frequency of reporting. This Policy will be reviewed and amended as necessary within that framework.

APPENDIX A: Guidelines/Strategies that will support implementation of this Policy

Subject area	Guidance Required	Availability of *NWT*-specific guidance
Cumulative effects	Cumulative effects assessment strategy	INAC's Environmental Stewardship Framework (www.ceamf.ca)
	Cumulative impact monitoring tools	Not yet available.
EQC setting	Municipal *waste*water discharge	• "Guidelines for the Discharge of Treated Municipal *Waste*water in the Northwest Territories" (1992), prepared by Indian and Northern Affairs for the *NWT* Water Board • A joint EC-INAC initiative called the Northern Research Working Group is developing recommendations for municipal *waste*water discharge limits in northern Canada (under the Canada-wide Strategy for the Management of Municipal *Waste*water Effluent)
	Setting Site-Specific Water Quality Standards	Not yet available.
	Collection of baseline information for water bodies	Not yet available.
	Establishment and characterization of *Initial dilution zone*s (*IDZ*s)	Not yet available.
	General objectives for effluent discharges	Not yet available.
Management Plans	Closure and reclamation planning	"Mine Site Reclamation Guidelines" (2006), Indian and Northern Affairs Canada
	Spill contingency planning	"Guidelines for Spill Contingency Planning" (2007), Indian and Northern Affairs Canada
	Adaptive management planning	• Under development by the *WLWB*

		• Some guidance provided in INAC's "Guidelines for Designing and Implementing Aquatic Effects Monitoring Programs for Development *Project*s in the *NWT*" (2009)
	Waste management planning	Under development by the *Board*s.
Monitoring	Aquatic Effects Monitoring Programs	"Guidelines for Designing and Implementing Aquatic Effects Monitoring Programs for Development *Project*s in the Northwest Territories", (2009), Indian and Northern Affairs Canada
	Establishment of Surveillance Network Programs for water licences	Not yet available.
Stakeholder engagement	Approaches or practices related to stakeholder engagement and consultation	Under development by the *Board*s.