Environment Canada Environnement Canada

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December 2nd 2009 Our file: 4782 009

Willard Hagen,
Chairperson
Mackenzie Valley Land and Water Board
P.O. Box 2130
Yellowknife, NT X1A 2P6

Dear Mr. Hagen:

Please find attached Environment Canada's written submission to the Mackenzie Valley Land and Water Board (MVLWB) in respect to the scheduled Public Hearings concerning the renewal of the Town of Hay River's Water Licence (MV2009L3-0005).

Anne Wilson, Water Pollution Specialist, and Mary Kelly, Physical Science Officer – Wastewater Specialist, will be in attendance at the public hearing to make a formal presentation of this intervention, and will be available to respond to any questions which the MVLWB members, the proponent, or the public may have concerning the issues raised by Environment Canada in this submission.

If you wish clarification on any aspect of this submission prior to the public hearing, please contact Anne Wilson at (867) 669-4735 or by email at anne.wilson@ec.gc.ca.

Yours sincerely,

Carey Ogilvie

Carey Ogilvie
Head, Environmental Assessment - North

cc: Anne Wilson (Water Pollution Specialist, EA-North)
Mary Kelly (Physical Science Officer – Wastewater Specialist)
Warren Fenton (A/Manager, Environmental Assessment, EPOD)

Environment Canada Environnement Canada

ENVIRONMENT CANADA'S INTERVENTION

RESPECTING THE

HAY RIVER

MUNICIPAL WATER LICENCE RENEWAL APPLICATION

Submitted to the

Mackenzie Valley Land and Water Board

December 2, 2009

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1.0 INTRODUCTION

This intervention to the Mackenzie Valley Land and Water Board (MVLWB) is made on behalf of Environment Canada (EC) on the renewal of a Type 'A' Water Licence for the Town of Hay River, NT. The licence would permit the use of water and the disposal of waste for municipal purposes for the town of Hay River. The application includes the following activities:

- withdrawal of water for municipal purposes;
- deposit of wastewater from the sewage treatment facilities;
- operation and maintenance of sewage treatment facilities; and
- operation and maintenance of solid waste facilities.

This intervention is prepared based on information supplied by the Town to the MVLWB. EC may wish to seek additional advice or expertise for any new information presented to the Board.

1.1 Mandate of Environment Canada

The mandate of EC is determined by the statutes, regulations, guidelines, policies, federal, territorial, and international agreements, and related programs that it is assigned by Parliament to administer. The overall objective is to foster harmony between society and the environment for the economic, social and cultural benefit of present and future generations of Canadians. The Department shares this goal with other federal agencies, provinces, territories and First Nations.

The *Department of the Environment Act* provides EC with general responsibility for environmental management and protection. Its obligations extend to and include all such matters over which Parliament has jurisdiction, which are not by law assigned to any other department, board, or agency of the Government of Canada. These include matters related to preservation and enhancement of the quality of the natural environment (e.g. water, air, soil), renewable resources including migratory birds and other non-domestic flora and fauna, water, meteorology, coordination of policies and programs respecting preservation and enhancement of the quality of the natural environment, development of standards and guidelines, promotion of sound environmental practices, and providing advice to federal government agencies. In delivering on these obligations Environment Canada has responsibility for specific legislation, regulations, policies, and agreements.

Of particular relevance to the current project are the responsibilities conferred on the Department by legislation and standards such as the:

- *Canadian Environmental Protection Act*
- *Fisheries Act* (Sections 36-42)

Subsection 36 (3) of the *Fisheries Act* prohibits the deposit of deleterious substance into fish bearing waters unless authorized by a regulation under the Act or by another law of Parliament. Environment Canada, on behalf of the Minister of DFO, administers section 36 of the *Fisheries Act*.

Please see Appendix A for a brief description of the above instruments.

1.2 Background

The Town of Hay River has applied for the renewal of their water licence, to continue withdrawing water from Great Slave Lake for municipal and associated uses, and for the disposal of waste.

EC participated in the technical meeting held in Yellowknife Nov. 13, 2009, and found it very helpful in preparation for this intervention. This intervention presents issues which are still outstanding. Should new or additional relevant information be brought forward in the course of the public hearings, this submission will 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 Board and the proponent.

2.0 TECHNICAL COMMENTS AND RECOMMENDATIONS

The Department's review focuses on areas within the water licence application which fall under the EC's mandated responsibilities, with comments organized under the following headings:

2.1 General
2.2 Management Plans
2.3 Surveillance Network Program

Within each category, comments are organized by specific issue, with reference to the appropriate document section, and detailing our concerns and recommendations.

2.1 General

Our review has identified several areas needing further work or clarification, as outlined in the following technical comments and recommendations. Where possible, we have suggested how the water licence may address such concerns, and respectfully provide recommended water licence conditions for the Board's consideration.

One overarching recommendation is that the Town provide clear drawings and maps for the plans and monitoring sites.

2.2 Management Plans

2.2.1 Operation and Maintenance Plan

Issue: The Operations and Maintenance Plan needs revision to provide a useful working reference for operators.

Recommendation:
Environment Canada recommends that a revised Operation and Maintenance Plan be submitted to the Mackenzie Land and Water Board for approval as a part of the Water Licence conditions. For the solid waste site, the plan should include practical guidance on the operation of the engineered treatment pad, the leachate control pond, recycling, handling and disposal of hazardous materials, and treatment of contaminated drainage from the landfill. All aspects of the wastewater collection and treatment should be covered as well, including the cell adjacent to the lagoons which is used for the storage of non-sewage wastewater.

Rationale:
Environment Canada references a guide prepared for GNWT's Municipal and Community Affairs titled "Guidelines for the Planning, Design, Operations and Maintenance of Modified Solid Waste Sites". The information discussing Operation and Maintenance Plans is very thorough and can be applied not only to solid waste sites but also sewage treatment systems. As stated in Subsection 4.6.1 of the document:

> "The stated purpose of an Operations and Maintenance Plan is to assist community staff in the proper operation and maintenance of their waste disposal facilities. It must include:
>
> - A description of how facilities are operated and maintained;
> - How often these tasks are performed; and
> - Who is responsible for their completion.
>
> The Plan must also demonstrate to the Water Board that the community is capable of operating and maintaining their waste sites.
> Inspectors will use the community's manual as part of their inspection procedure to ensure that the stated procedure are being undertaken."

The document also states in Subsection 4.6.2 that regulatory compliance requires due diligence and goes on to provide the definition of due diligence as:

- Establishing a proper system to prevent contravention of regulatory standards; and
- Taking all reasonable steps to ensure effective operation of that system.

Environment Canada agrees with the information provided in this document relating to Operation and Maintenance Plans.

Reference: Ferguson Simek Clark. *Guidelines for the Planning, Design, Operations and Maintenance of Modified Solid Waste Sites in the NWT.* Prepared for The Department of Municipal and Community Affairs, Government of the Northwest Territories. April, 2003

2.2.2 Sludge Management Plan

Issue: No Sludge Management Plan is currently in place.

Recommendation:
Environment Canada recommends that a Sludge Management Plan be submitted to the Mackenzie Land and Water Board for approval as a part of the Water Licence conditions.

Rationale:
Maintenance should include removal and disposal of sewage sludge. Estimates should be made of the quantities of sludge likely to be produced, the required frequency of extraction from the lagoons, and operational procedures developed for environmentally sound removal and disposal. These procedures should include characterization to ensure disposal options are appropriate. Environment Canada recommends that prior to desludging occurring, the proponent submit for approval a Sewage Sludge Management Plan that clearly outlines the chemical composition of the sludge, and how sludge will be stored, treated and eventually disposed of.

2.2.3 Quality Control/Quality Assurance (QA/QC) Plan

Issue: The QA/QC plan requires revision.

Recommendation:
Environment Canada recommends the Town submit a revised QA/QC plan for approval by the Board.

Rationale:
The existing QA/QC plan is limited to information on the analytical laboratory, but should include quality control information on taking samples properly, handling of bottles to prevent contamination, sample handling, and documenting samples. The INAC 1996 guidelines provide useful recommendations for drafting such a plan.

2**.2.4 Approval of the Annual Report**

Issue: The Annual Report is not required to be approved by the Board.

Recommendation:
Environment Canada recommends that the Annual Report be submitted for approval by the Board, with provision for re-submission if it is deemed to be not satisfactory.

2.3 Surveillance Network Program (SNP)

2.3.1 Bioassay Testing

Issue: Use of Bioassay Testing

Recommendation:
It is recommended that the licence condition respecting bioassay testing (D.2) be amended to not require 100% survival of test organisms. In the SNP (B.2) Environment Canada recommends that the SNP licence conditions be revised to require the Town to send bioassay samples to an accredited lab for testing twice annually, using the pass/fail static bioassay test.

Rationale:
The bioassay test methods allow for 90% survival of control organisms in the rainbow trout test, so it is not reasonable to require a higher survival rate in the test organisms. For end-of-pipe effluent 50% is the minimum pass rate; for samples taken after the wetlands a higher pass rate would be reasonable.

Toxicity testing provides an evaluation of effluent quality that integrates all the measured parameters, and provides the proponent with an indication of overall effluent characterization with respect to deleteriousness. By doing the testing in spring and fall, a range of conditions are represented in the samples. Environment Canada is no longer able to provide toxicity testing services, and this is more appropriately done by the proponent. The pass/fail bioassay test is a single concentration test that requires less effluent than the LC50 test, and costs less.

2.3.2 SNP Station Number 0053-3 Lagoon Outflow

Issue: Sampling frequency of Station Number 0053-3 at the outflow of the two lagoon trains.

Recommendation:
It is recommended that SNP Station Number 0053-3, at the outflow from the two lagoon trains, should be sampled concurrently with the 0053-2 samples.

Rationale:
There are operational and management planning reasons to include sampling of the outflow from the two lagoon trains concurrently with the 0053-2 samples:
- to track lagoon performance in order to manage sludge and identify any treatment issues;
- in the event that problems are seen with the lagoon discharge quality, there should be response time available prior to the wastewater entering fish bearing waters;
- changes in the lagoon treatment performance should be identified in order to plan for future upgrades or identify any operational modifications that are needed;
- to gain a better understanding of the treatment afforded by the wetlands;

- should the wetlands cease to treat the lagoon effluent to an appropriate level, it would be helpful to understand the reasons and to determine whether the lack of treatment is occurring in the wetland or the lagoons.
EC does not feel this would be an onerous requirement, as monthly sampling would mean an additional 5 samples per year if the two trains are combined, or ten samples if each lagoon series is sampled separately.

2.3.3 SNP Station Number 0053-2 wetland outflow

Issue: Sampling and frequency of sampling of Station Number 0053-2.

Recommendation:
Environment Canada recommends that Station Number 0053-2 continue to be sampled, at a minimum, monthly during periods of flow for analysis for a full suite of parameters, including cBOD, and these should be reported fully in the Annual Report.

Rationale:
cBOD analysis is a useful indicator of organic material loading to the receiving waters, and is a parameter that has been added to other licences in the NWT and NU to identify the relative contribution to BOD. This has been of interest in light of ongoing discussions of Northern performance standards for lagoons, and would provide helpful information.

2.3.4 Landfill Leachate Monitoring

Issue: Lack of monitoring of leachate/runoff at the solid waste facility.

Recommendation:
Monitoring of runoff and leachate generated at the solid waste site should be done at least annually, with appropriate SNP sites identified for both surface and groundwater sampling.

Rationale:
The facility is located adjacent to the Hay River, which is down-gradient for both surface and groundwater movement. At the time of the last licence renewal, past inspections had identified problems with leachate and groundwater quality; in particular, selenium, chromium, copper, nickel, ammonia, and phenol. Monitoring is needed to identify whether contaminants from the landfill are potentially migrating from the site. It is Environment Canada's understanding that there are unused groundwater wells which could be re-commissioned (provided they are appropriately sited) and that this will be examined in an upcoming review of the solid waste site operations. Environment Canada supports this exercise, and encourages the Town to take steps to improve monitoring of the solid waste facility.

4.0 CONCLUSION

Environment Canada would like to thank the MVLWB for the opportunity to comment on the Town of Hay River's water licence application, and we hope that these technical comments and recommendations are useful to the Board in their decision-making process. The Department respectfully requests the opportunity to submit additional written comments after the public hearings to address any new information brought forward at the hearings. Environment Canada staff are available to review a draft water licence, and we look forward to further discussions at the January 26th and 27th, 2010 Public Hearings in Hay River, NT.

APPENDIX A: RELEVANT LEGISLATION, POLICIES AND GUIDELINES

Department of the Environment Act

The *Department of the Environment Act (DOE Act)* provides EC with general responsibility for environmental management and protection. It's obligation extend to and include all matters over which Parliament has jurisdiction, and have not by law been assigned to any other department, board, or agency of the Government of Canada as related to:

- Preservation and enhancement of the quality of the natural environment (e.g. water, air, soil)
- Renewable resources including migratory birds and other non-domestic flora and fauna
- Water
- Meteorology
- Coordination of policies and programs respecting preservation and enhancement of the quality of the natural environment.

The *DOE Act* states that EC has a mandated responsibility to advise heads of federal departments, boards and agencies on matters pertaining to the preservation and enhancement of the quality of the natural environment. As such, this mandate is extremely broad.

Canadian Environmental Protection Act, 1999

Proclaimed on March 31, 2000, the new *Canadian Environmental Protection Act, 1999* (CEPA 1999, referred to hereinafter as *CEPA*) is an Act respecting pollution prevention and the protection of the environment and human health in order to contribute to sustainable development. *CEPA* shifts the focus away from managing pollution after it has been created to preventing pollution. The Act provides the federal government with new 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.

For substances that are declared "toxic" under *CEPA* and are added to the List of Toxic substance in Schedule 1 of the Act, instruments will be proposed to establish preventive or control actions for managing the substance and 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).

Authority to require emergency plans for toxic or other hazardous substances is provided in Part 8 of *CEPA*. Environmental emergency plans for such a substance(s) must cover prevention, preparedness, response and recovery.

Fisheries Act – Pollution Prevention Provisions

The Minister of Fisheries and Oceans is legally responsible to Parliament for administration and enforcement of all sections of the *Fisheries Act*. However, under a Prime Ministerial Instruction (1978) and a Memorandum of Understanding (1985), EC administers and enforces those aspects of the Act dealing with the prevention and control of pollutants affecting fish. In this context, EC works to:

- Advance pollution prevention technologies;
- Promote the development of preventative solutions; and
- Work with the provinces, territories, industry, other government departments and the public on issues relating to the pollution provisions of the *Fisheries Act.*

The main pollution prevention provision is found in subsection 36(3) of the Act, and is commonly referred to as the "general prohibition". This subsection prohibits the deposit, into fish-bearing waters, of substances that are deleterious to fish. The legal definition of "deleterious substance" provided in subsection 34(1) of the Act, in conjunction with court rulings, provides a very broad interpretation of deleterious and includes any substance with a potentially harmful chemical, physical or biological effect on fish or fish habitat. One measure of a deleterious substance (such as a liquid discharge) is acute lethality as measured by the standard 96 hour fish bioassay test.