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ENVIRONMENTAL PROTECTION OPERATIONS DIVISION  
Prairie and Northern Region  
Twin Atria #2, Room 200  
4999-98 Avenue NW  
Edmonton, Alberta  
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January 18, 2010

Our file: 4782 009

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

Dear Mr. Hagen:

Please find attached Environment Canada's presentation outlining our intervention 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 giving this presentation at the public hearing, 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](mailto:anne.wilson@ec.gc.ca).

Yours sincerely,

Cheryl Baraniecki  
Acting Director  
Environmental Protection Operations Division

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



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# Town of Hay River - Type A Water Licence Renewal Application

## Environment Canada's Intervention to the Mackenzie Valley Land & Water Board

Anne Wilson / Mary Kelly  
Environmental Protection Operations Division  
January 26-27, 2010 Hay River, NT



# Overview

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- Mandate
- Management Plans
  - *Operation and Maintenance*
  - *Sludge Management*
  - *QA/QC*
- Reporting
- Bioassay Testing
- Surveillance Network Program
  - *Sampling at SNP 0053-3*
  - *Landfill leachate monitoring*
- Conclusion

# Mandate

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- The primary relevant legislation and standards administered by EC which influenced the content of this submission are:
  - *Canadian Environmental Protection Act (CEPA)*; and
  - Sections 36 to 42 of the *Fisheries Act*
    - *Pollution Prevention Provisions*



# Management Plans

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- Operation and Maintenance Plan
  - To provide a useful working reference for operators, the O&M Plan needs revision

## Recommendations:

- A revised O&M Plan be submitted to the MVLWB 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.

# Management Plans

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- Sludge Management Plan
  - No Sludge Management Plan is currently in place
  - A sludge lagoon is referenced, and dry sludge is said to be added to the edge of the lagoon cells to increase soil biomass

## Recommendations:

- 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.
- 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.

# Management Plans

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- Quality Control / Quality Assurance (QA/QC) Plan
  - The existing QA/QC plan is limited to information on the analytical laboratory
  - The QA/QC plan should include quality control information on taking samples properly, handling of bottles to prevent contamination, sample handling, and documenting samples.

## Recommendations:

- The Town submit a revised QA/QC plan for approval by the Board.

# Reporting

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- Approval of the Annual Report
  - The Annual Report is not required to be approved by the Board
  - Missing, unclear or erroneous information should be verified

## Recommendations:

- The Annual Report be submitted for approval by the Board, with provision for re-submission if it is deemed to be not satisfactory.





# Bioassay Testing

- Bioassay testing has been a licence requirement since the May 31, 2002 licence renewal
- Both rainbow trout and *Daphnia* tests have been used
- This is a recognized tool for the Town to demonstrate the effectiveness of treatment in achieving good effluent quality
- Testing can confirm that effluent quality criteria are reasonable



# Bioassay Testing Recommendations

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- Amend the condition in the expiring licence that requires 100% survival of all organisms in the two bioassay tests used
  - This is stricter than the standard method protocol, which allows up to 10% mortality in control organisms
  - Toxicity test criteria could be set between 50% and 90% survival for a pass/fail static bioassay test
- Reduce the testing to just the rainbow trout
- Sampling frequency can be reduced to twice annually:
  - once following spring freshet
  - once before freeze-up
- SNP Item B.2 should be amended to change the test from an LC50 to the pass/fail test
- The samples can be sent to an accredited lab for testing

# Surveillance Network Program (SNP)



# Surveillance Network Program (SNP)

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- SNP Station Number 0053-3 Lagoon Outflow

For operational and management planning, sampling of the outflow from the two lagoon trains concurrently with the 0053-2 samples would:

- Track lagoon performance in order to manage sludge and identify any treatment issues;
- Reveal changes in the lagoon treatment performance to plan for future upgrades or identify any operational modifications that are needed;
- Provide response time prior to the wastewater entering fish-bearing waters;
- Improve the understanding of the treatment afforded by the wetlands;
- Should the effluent quality change for the worse, we can see whether the lack of treatment is occurring in the wetland or the lagoon.

## Recommendations:

- SNP Station Number 0053-3, at the outflow from the two lagoon trains, should be sampled concurrently with the 0053-2 samples.

# Surveillance Network Program (SNP)

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- SNP Station Number 0053-2 Wetland Outflow
  - Only one full suite sample was collected and reported in 2008 at Station Number 0053-2
  - Previous years had 3 – 5 samples collected

## Recommendations:

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

# Surveillance Network Program (SNP)

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- Landfill Leachate Monitoring
  - There is a lack of monitoring of leachate/runoff at the solid waste facility
  - Past inspections had identified several elevated parameters, which may be migrating from the site

## Recommendations:

- Monitoring of runoff and leachate generated at the solid waste site should be done at least annually
- Both surface and groundwater should be monitored
- Appropriate SNP site(s) identified

# Conclusion

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- EC would like to thank the Board for the opportunity to participate in the renewal process for the Town of Hay River's water licence
- Questions?

