



**Northwest Territories** Environment and Natural Resources

Land and Water Division  
Environmental Assessment and Monitoring  
Environment and Natural Resources  
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May 27, 2011

Kathleen Graham  
Regulatory Officer  
Mackenzie Valley Land and Water Board  
7<sup>th</sup> Floor – 4910 50<sup>th</sup> Avenue  
P.O. Box 2130  
Yellowknife, NT  
X1A 2P6

Dear Ms. Graham:

**Re:           Town of Fort Smith  
              Type A Water Licence Renewal Application  
              Request for Comments**

The Department of Environment and Natural Resources (ENR) has reviewed the above noted application based on its mandated responsibilities under the *Environmental Protection Act*, the *Forest Management Act*, the *Forest Protection Act* and the *Wildlife Act* and provides the following comments and recommendations for consideration by the Board.

## **TOPIC 1: OPERATIONS AND MAINTENANCE PLAN**

### **Comment(s)**

The purpose of an Operations and Maintenance (O&M) Plan is to assist community staff in the proper operation and maintenance of their waste facilities. The current O&M Plan for the solid waste disposal facility (SWDF) was completed in 2004 as part of the previous water licence renewal, and to Environment and Natural Resources' (ENR) knowledge, has not been revised since.

The *Guideline for the Planning, Design, Operations and Maintenance of Modified Solid Waste Sites in the Northwest Territories*<sup>1</sup>, is endorsed by the Departments of Municipal and Community Affairs (MACA) and Environment and Natural Resources (ENR), Government of the Northwest Territories. It provides specific advice in this

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<sup>1</sup> Municipal and Community Affairs. 2003. *Guideline for the Planning, Design, Operations and Maintenance of Modified Solid Waste Sites in the Northwest Territories*.

regard, has been developed specifically for use in the NWT, and provides definitions and uses terminology and instructs on common procedures that will provide all stakeholders certainty and clarity when discussing, planning for, and operating the Hamlet's waste facilities. Also, for specific guidance on the development of an O&M Plan, consult the *Guidelines for the Preparation of an Operation and Maintenance Manual for Sewage and Solid Waste Disposal Facilities in the Northwest Territories*<sup>2</sup>.

### **Recommendations**

1. ENR recommends that an Operations and Maintenance Plan is updated and submitted to the Board for its approval. It should be noted that the water licence also requires an O&M Plan for the sewage waste disposal facility.
2. The Town should also consult the *Guideline for the Planning, Design, Operations and Maintenance of Modified Solid Waste Sites in the Northwest Territories* and the *Guidelines for the Preparation of an Operation and Maintenance Manual for Sewage and Solid Waste Disposal Facilities in the Northwest Territories* in developing this plan.
3. And, once this plan is developed, ENR recommends that it is made available to any staff, operators, and/or contractors performing any functions related to the management of the SWF, and that the Plan is followed.

## **TOPIC 2: SPILL AND CONTINGENCY PLAN**

### **Comments(s)**

ENR notes that the community does not have a Spill and Contingency Plan filed on the registry. As part of the previous water licence term and condition Part I (1), the Town of Fort Smith was required to submit to the Board for approval a Spill and Contingency Plan.

### **Recommendations**

The Town of Fort Smith prepare and submit to the Board for approval and Spill and Contingency Plan.

## **TOPIC 3: CLOSURE AND RECLAMATION PLAN**

### **Comment(s)**

ENR understands that a Closure and Reclamation Plan (C&R Plan) for the current SWDF is not in place. The early stages in the development of a C&R Plan are critical

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<sup>2</sup> Municipal and Community Affairs. 1996. *Guideline for the Preparation of an Operation and Maintenance Manual for Sewage and Solid Waste Disposal Facilities in the Northwest Territories*.

steps in ensuring the community is thinking, preparing and planning for the facility's ultimate closure.

There are three distinct steps, performed in the proper order, through the development of a Final C&R Plan:

1. Preliminary Closure and Reclamation Plan
2. Interim Closure and Reclamation Plan
3. Final Closure and Reclamation Plan

Step 1, a Preliminary C&R Plan, is appropriately prepared in conjunction with the planning and permitting stage of the SWDF. The general purpose is to propose closure objectives, alternatives analysis, and proposed closure criteria to understand the Proponent's intent. Determining appropriate closure options should also be integrated with a level of community engagement to build consensus upfront.

Step 2, the Interim C&R Plan, is to identify uncertainties surrounding certain closure options that guide corresponding areas for reclamation research during operations prior to closure. There are typically several versions that are prepared during the life of the facility to address changes in development alternatives, and to refine as the facility progresses towards closure and subsequent versions of closure and reclamation Plans are produced. Interim Plans are prepared on a regular basis to coincide with operational changes, advances in technology, key milestones, information collected during reclamation research, and results of community engagement.

Step 3, the Final C&R Plan, should be more detailed because more information and studies are available to determine duration, frequency, and magnitude of the effects. The final version of the C&R Plan is to contain detailed reclamation activities, and should be prepared and approved prior to a scheduled permanent closure or immediately after an unplanned closure.

## **Recommendations**

Although the current SWDF is expected to have a lifespan of at least another 20 years, ENR recommends that the Proponent prepare and submit an Interim Closure and Reclamation Plan for the current SWDF.

## **TOPIC 4: HAZARDOUS WASTE MANAGEMENT**

### **Comment 1 – Landfarm**

ENR understands that the landfarm was built in 2001 by the Department of Public Works and Services (PWS), GNWT for the remediation of hydrocarbon-contaminated soil originating at the Aurora College. The landfarm has since been registered in the name of PWS and managed by the Town of Fort Smith. The Background report

states that the registration of the landfarm is currently being transferred to the Town. However, it is not clear what the present state of the hydrocarbon-contaminated soils in the landfarm is, and whether or not hydrocarbon-contaminated soils are currently accepted and managed from other spills within the community.

### **Recommendations**

1. The Town of Fort Smith formally take ownership and management of the landfarm and additionally obtain the services of a qualified professional to monitor and determine whether hydrocarbon-contaminated soils accepted at the landfill site are remediated to meet the appropriate land use criteria in the Guideline for Contaminated Site Remediation<sup>3</sup>.
2. The Town of Fort Smith register as a receiver of hydrocarbon-contaminated soils and manage hydrocarbon contaminated soils as a hazardous waste according to the Guideline for the General Management of Hazardous Waste in the NWT<sup>4</sup>.

### **Comment 2 – Uranium Burial Site**

ENR understands that there is a uranium burial site located at the landfill that was established in 1998 by Atomic Energy of Canada Ltd. (AECL). However, other than the brief description in the Background Report, there is no specific information provided on the burial site such as details on: design and construction; volume and characteristics of soil or materials buried; and a monitoring program. Furthermore, ENR understands that AECL manages the site but is unaware of any formal relationship or agreement established between AECL and the Town of Fort Smith.

### **Recommendations**

1. Provide details on the design and construction of the site, volume and characteristics of the soil and materials buried, including laboratory analyses, and the monitoring program. In the case no monitoring program for the uranium burial site exists, one should be established.
2. Establish a formal relationship and agreement between the Town of Fort Smith and AECL to clarify responsibility for the management of the uranium burial site including ongoing operations and maintenance, monitoring, etc.

### **Comment 3 – Hazardous Waste Management Plan**

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<sup>3</sup> GNWT Department of Environment and Natural Resources, 2003. Environmental Guideline for Contaminated Site Remediation. Also available online at:

<http://www.enr.gov.nt.ca/live/documents/content/siteremediation.pdf>

<sup>4</sup> GNWT Department of Environment and Natural Resources, 1998. Guideline for the General Management of Hazardous Waste in the NWT. Also available online at:

[http://www.enr.gov.nt.ca/live/documents/content/General\\_management.pdf](http://www.enr.gov.nt.ca/live/documents/content/General_management.pdf)

Hazardous waste is generated by both the Industrial, Commercial, and Institutional (ICI) sectors as well as by residents. The plan does not clearly state the types of hazardous wastes that are accepted by the ICI sector and which are not. For example, hydrocarbon-contaminated soils, or asbestos may be accepted from the ICI sector where solvent, pesticides, corrosive liquids, etc. would not be accepted from the ICI sector and only from residents.

## **Recommendations**

The Town of Fort Smith develop a comprehensive hazardous waste management plan that clearly states which of the following materials will, and will not be accepted at the solid waste facility, and from which sector.

- Asbestos
- Batteries (Lead Acid)
- Glycols (Antifreeze, Heating Fluid)
- Heating Oil Tanks
- Household Hazardous Waste
- Hydrocarbon Contaminated Soil / Snow / Water
- Mercury Containing Materials
- Oil Debris
- Old Fuel
- Ozone Depleting Substances
- Paint
- Propane Tanks
- Residue fuel tanks/drums
- Used Oil
- Vehicles Containing Batteries, Fluids, Mercury Switches

The draft document titled *Developing a Community Based Hazardous Waste Management Plan* can be referenced for this purpose. In addition ENR recommends this plan be developed in consultation with ENR's hazardous waste guidelines and staff. Please contact Gerald Enns, Hazardous Waste Specialist at (867) 920-8044 or email [gerald\\_enns@gov.nt.ca](mailto:gerald_enns@gov.nt.ca) for further assistance.

## **Comment 4 – Household Hazardous Waste Collection**

ENR can provide assistance with household hazardous waste collection events. The images in Figure 6 of the 2004 O&M Plan do not present a disposal option for the variety of household hazardous wastes generated by residents. Household hazardous waste can be collected through various forms, or combinations of services like HHW collection events, HHW drop off by appointment, or collection of HHW on a regular basis at a depot.

## **Recommendations**

The town included details about the type household hazardous waste collection as part of a comprehensive hazardous waste management plan and establish at least one day a year for HHW collection.

### **Comment 5 – Record Keeping**

Hazardous waste generated from the ICI sector is required to be transported to registered receiving facilities in the province or territory of destination and tracked on hazardous waste movement documents according to the *Guideline for the General Management of Hazardous Waste in the NWT*. The Town of Fort Smith has been registered as a receiver for waste asbestos by ENR.

## **Recommendations**

The Town of Fort Smith utilizes hazardous waste documents provided by ENR to track and record the hazardous wastes received at their facility from the ICI sector.

## **TOPIC 5: EXTERNAL WASTE**

### **Comment**

ENR is unclear as to whether the Town accepts outsourced industrial waste.

## **Recommendations**

ENR recommends that no industrial waste sourced from outside the community be accepted at the landfill. If the Town does accept industrial waste streams sourced from outside the community, then analysis of these waste streams must be provided, along with evidence that any community facility will be designed, operated, funded and licensed to mitigate and appropriately manage these activities and associated liabilities.

## **TOPIC 6: GROUNDWATER AND SURFACE WATER QUALITY AT THE SOLID WASTE FACILITY**

### **Comment (s)**

Since the last water licence was issued in 2003, two reports were commissioned by the Town to evaluate and assess the surface and groundwater quality leaving the landfill and the ability of the downstream wetland to treat any potential leachate. The objective of the *Fort Smith Landfill Wetlands Characterization* completed in 2004 was to determine the capacity of the wetland to treat landfill effluent. The report studied the wetland located northwest of the site. However, the 2001 EBA Engineering

report and the INAC inspection in 2005 indicated that the water flows to the northeasterly direction. ENR is not clear whether the wetland treatment area is located northeast, northwest, or both. Furthermore, the report could not determine the cause of the elevated metal concentrations.

In 2005, a *Groundwater Monitoring Program Evaluation* was commissioned by the Town in order to evaluate trends in groundwater quality at the site to reduce the number of parameters analyzed and frequency of sampling. This report recommended that monitoring of metals continue but that all petroleum hydrocarbon parameters be removed and certain parameters be reduced based on the Alberta Code of Practice for Class II Landfills (AB Code of Practice) performance standards. Furthermore, the report recommended that monitoring wells around the landfarm be removed entirely from the monitoring program and that the frequency in sampling be reduced to once from twice per year.

ENR cautions that the dangers of enlisting in a partial use of a guideline or standard originating in another jurisdiction need to be justified. If another guideline from another jurisdiction is to be used and referenced, it is imperative that the adopted components of a guideline or standard are proven to be relevant to its application. However, it appears that the recommendation in the 2005 report to replace the sampling parameters of the monitoring wells with those contained in the AB Code of Practice is not used in proper context. Class II landfills in Alberta that follow the AB Code of Practice are designed with a liner (synthetic or natural) and leachate collection system. To ENR's knowledge, the Fort Smith landfill was not constructed with a liner system or a leachate collection system. Furthermore, ENR also notes that chloride and sulphate concentrations in monitoring wells BH09 and BH10 were above the AB Code of Practice performance standards. According to the AB Code of Practice, if at any time during the life, closure or post closure of the landfill these performance standards are not met, the owner is required to submit a groundwater remediation plan and implement the approved plan.

Due to the proximity of the landfill to the Slave River, leachate monitoring and management should be a priority to prevent contamination of the surrounding environment. Evidence of elevated metals concentrations as per the above mentioned reports, and gaps in surface and groundwater monitoring data to date, would indicate a need to continue and perhaps augment existing monitoring to determine contaminant sources and ensure its capture and management. It is concerning if in fact there are considerations to reduce monitoring given these circumstances. Furthermore, leachate from the landfill may be migrating offsite and it is unknown whether this is being captured and if the wetland has the capacity to treat it.

### **Question(s) and Recommendations**

1. It is recommended that a study be completed to determine the origin of the elevated metals concentrations and whether a) landfill leachate is migrating

offsite, b) the downstream wetland (whether it be the wetland to the northeast, northwest or both) has the capacity to treat the landfill effluent, and c) surface water quality leaving the wetland and entering the Slave River meets Canadian Council of Ministers of the Environment (CCME) Freshwater Aquatic Life Guidelines.

2. ENR understands that hydrocarbon-contaminated soil from the Aurora College has been remediated. However, it is unclear whether the Town of Fort Smith has accepted additional hydrocarbon-contaminated soils from other sites. If the landfarm is in fact still active (i.e. the Town accepts hydrocarbon-contaminated soil), then it is recommended that the yearly groundwater monitoring continue to include monitoring wells MW102, MW103, MW103B, and MW104 and petroleum hydrocarbon parameters in the other groundwater monitoring wells should also be analyzed.
3. The 2005 *Groundwater Monitoring Program Evaluation* report reference the use of the AB Code of Practice for Class II Landfills be followed in terms of monitoring for chloride, sodium, sulphate and pH in groundwater. If the Mackenzie Valley Land and Water Board (Board) has accepted this request, will the Board also be requesting that the Town submit a groundwater remediation plan and implement the approved plan?

## **TOPIC 7: LANDFILL GAS**

### **Comment (s)**

Landfill gas is composed of a mixture of hundreds of different gases. By volume, landfill gas typically contains 45% to 60% methane and 40% to 60% carbon dioxide. Landfill gas also includes small amounts of nitrogen, oxygen, ammonia, sulfides, hydrogen, carbon monoxide, and nonmethane organic compounds (NMOCs) such as trichloroethylene, benzene, and vinyl chloride.

Landfill gas can pose significant health and safety issues - specifically, issues related to possible explosion and asphyxiation hazards, odors, and low-level chemical emissions. There are also health and safety issues associated with landfill fires (which may or may not be the direct result of landfill gas).

However, ENR has not seen information that demonstrates landfill gas is considered within the documentation provided.

### **Question(s)**

Has the Town of Fort Smith conducted, or is it considering any form of landfill gas assessment?

Comments and recommendations were provided by ENR technical experts in the Environment Division and/or the South Slave Region, and were coordinated and collated by the Environmental Assessment and Monitoring Section (EAM).

Should you have any questions or concerns please do not hesitate to contact Patrick Clancy, Environmental Regulatory Analyst, at (867) 920-6591 or email at [patrick.clancy@gov.nt.ca](mailto:patrick.clancy@gov.nt.ca).

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Clancy', written in a cursive style.

Patrick Clancy  
Environmental Regulatory Analyst  
Environmental Assessment and Monitoring  
Land and Water Division  
Department of Environment and Natural Resources  
Government of the Northwest Territories

## Rhonda Miller - MVLWB

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**From:** Kathleen Graham [kgraham@mvlwb.com]  
**Sent:** May-30-11 11:20 AM  
**To:** permits@mvlwb.com  
**Subject:** FW: Town of Fort Smith - MV2011L3-0001 - Type A Water Licence Renewal  
**Attachments:** 05-27-11 - ENR Letter to the Board - Fort Smith - MV2011L3-0001 - ENR Comments.docx

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**From:** Patrick Clancy [mailto:Patrick\_Clancy@gov.nt.ca]  
**Sent:** Friday, May 27, 2011 4:41 PM  
**To:** kgraham@mvlwb.com  
**Subject:** Town of Fort Smith - MV2011L3-0001 - Type A Water Licence Renewal

Hi,

Please find attached ENR's comment on the subject renewal application.

Thank you,

Patrick Clancy  
Environmental Regulatory Analyst  
Environmental Assessment and Monitoring  
Department of Environment and Natural Resources  
GNWT  
(867) 920-6591  
(867) 873-4021