



Mackenzie Valley Land and Water Board
7th Floor - 4910 50th Avenue
P.O. Box 2130
YELLOWKNIFE NT X1A 2P6
Phone (867) 669-0506
FAX (867) 873-6610

Staff Report

Applicant: City of Yellowknife	
Location: Yellowknife, NT	Application: MV2009L3-0007
Date Prepared: March 25, 2010	Meeting Date: April 1, 2010
Subject: Renewal of Type A Water Licence	

1. Purpose/Report Summary

To obtain a board decision on the Type A Water Licence Renewal Application submitted by the City of Yellowknife (the City) to continue to use water and dispose of waste for municipal purposes in the City.

2. Background

- July 10, 2009 – WL Application submitted;
- July 20, 2009 – WL Application sent out for review;
- August 7, 2009 – comment deadline on preliminary screening exemption matter and for draft work plan;
- September 30, 2009 – WL Application comment deadline;
- October 7, 2009 – site visit;
- November 5, 2009 – Board exempts WL Application from preliminary screening;
- November 12, 2009 – technical session held;
- November 23, 2009 – public hearing advertisement appears in News/North;
- November 27, 2009 – intervention due date;
- December 15, 2009 – pre-hearing conference held;
- January 7, 2010 – the City’s response to interventions;
- January 19, 2010 – pre-hearing Board briefing and public hearing held;
- January 20, 2010 – post-hearing Board debrief;
- February 12, 2010 – draft WL circulated for review and comment;
- March 4, 2010 – comment deadline for review of draft WL;

- March 25, 2010 – draft WL and various issues presented to and discussed with the Board; and
- April 1, 2010 – draft WL and Reasons for Decision presented to the Board.

3. Discussion

Staff received comments on the draft WL from Indian and Northern Affairs Canada (INAC), the City, the Government of the Northwest Territories Environment and Natural Resources (GNWT-ENR), Environment Canada (EC), the Northwest Territories Métis Nation (NWTMN), and the Department of Fisheries and Oceans (DFO). Responses to these comments can be found in the Review Comment Summary Table.

This Water Licence for the City of Yellowknife is being prepared in conjunction with the Town of Hay River Water Licence. Staff met with the Board previously to discuss some outstanding issues in the development of the drafts presented today, April 1, 2010.

4. Comments

Because it is not known when the Minister will approve and sign the Water Licence, the date of May 31, 2010 has been used as a temporary measure for the Water Licence Issuance Letter, Cover Page and Surveillance Network Program. May 30, 2010 marks the current licence expiry date. If the Minister approves and signs the Water Licence prior to this date, the date on the documents will be changed accordingly.

5. Reviewer Comments

The attached Review Comment Summary Tables contains the comments that were received from reviewers on the a draft WL and indicates how the comments, if applicable, were incorporated into the draft WL presented today, April 1, 2010.

6. Security

No security required for this operation.

7. Conclusion

Board staff has considered the Water Licence Application, interventions, and comments submitted during the licencing process and notes that the proposed conditions in the draft WL should mitigate potential environmental impacts.

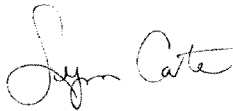
8. Recommendation

Staff recommends that the Board issue the Type A Water Licence with the associated Reasons for Decision.

9. Attachments

- Preliminary Screening
- Review Comment Summary Table (draft WL)
- Review Comment Summary Table from City of Yellowknife (draft WL)
- Draft Type A Water Licence Issuance Letter
- Draft Type A Water Licence Cover Page
- Draft Type A Water Licence Conditions, Schedules, and Surveillance Network Program
- Draft Reasons for Decision
- Draft Letter to the Minister

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Lynn Carter". The signature is written in a cursive style with a large initial "L" and "C".

Lynn Carter
Regulatory Officer

**Reviewer Comments – City of Yellowknife – MV2009L3-0007 –
Comments on Draft Water Licence**

Reviewer	Comment	Mitigation
<p>Government of the Northwest Territories – Department of Environment and Natural Resources, Patrick Clancy, Environmental Assessment Analyst</p>	<p>Comments taken from letter dated March 4, 2010:</p> <p>The Department of Environment and Natural Resources (ENR) has reviewed the above noted project based on its mandated responsibilities under the <i>Environmental Protection Act</i>, the <i>Forest Management Act</i>, the <i>Forest Protection Act</i> and the <i>Wildlife Act</i> and provides the following comments and recommendations for consideration by the Board.</p> <p>1. Topic: Use of the Term Engineer</p> <p>Comment</p> <p>Throughout the draft Water Licence, references are made to particular tasks that an “engineer” is required to complete (i.e. inspect, review, design, etc.). Certain Terms refer to the Term “engineer” while other terms refer to a “qualified engineer”.</p> <p>Recommendation</p> <p>For consistency, ENR recommends that all Terms should use the standard Term “by a qualified engineer” as opposed to referring to either “engineer” or “a qualified engineer”.</p>	<p>NOTE: Numbering of conditions, Schedule numbers, and page numbers have changed slightly since draft WL was sent out to Reviewers.</p> <p>Changed all occurrences to “Engineer” for consistency.</p>

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	<p>2. Topic: Part F: Conditions Applying to Abandonment and Restoration</p> <p>Comment</p> <p>ENR notes that Conditions, Part F, Items 1, 2, 3, and associated Schedule F pertain to Abandonment and Restoration. However, does not include a “<i>Landfill Gas Monitoring Plan</i>” and an “<i>Annual Reporting of the Findings of the Landfill Gas Monitoring Plan</i>”, which was recommended by ENR and agreed to by the City of Yellowknife.</p> <p>Recommendation</p> <p>ENR recommends that Part F include the requirements for:</p> <ul style="list-style-type: none"> • A “<i>Landfill Gas Monitoring Plan</i>”; and • An “<i>Annual Reporting of the Findings of the Landfill Gas Monitoring Plan</i>”. <p>3. Topic: Surveillance Network Program, Part B: Sampling and Analysis Requirements, Section 3.</p> <p>Comment</p> <p>ENR notes that a list of parameters has been updated for the analysis of runoff and seepage from the Solid Waste Disposal Facility (SWDF). However, it is plausible that a strict adherence to testing for those parameters for seepage and leachate may not be warranted over the entire term of the Water Licence.</p>	<p>Added to Schedule 3, Item 1 as suggested.</p>

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	<p>Recommendation</p> <p>ENR recommends that the parameter list be flexible to accommodate and adapt to future information. For example, information provided by the results of the SWDF Drainage Study (Section j.), may assist to define appropriate parameters for seepage and leachate testing that more accurately reflect issues of concern from the SWDF.</p> <p>Comments and recommendations were provided by ENR technical experts in the Environment Division, Wildlife Division and the North Slave Region, and were coordinated and collated by the Environmental Assessment and Monitoring Section (EAM).</p>	<p>The Board can make changes to the SNP at its discretion (see Part B, Item 6) should testing of some parameters not be applicable in the future.</p>
<p>Environment Canada, Anne Wilson, Water Pollution Specialist</p>	<p>Comments taken from letter dated March 4, 2010:</p> <p>Part 2; Page 2</p> <p>The definition of “Sewage Disposal Facilities” should be extended to specify the inclusion of Lake F3 as that is the compliance point, and some thought should be given to identifying the wetlands component part of the system which extends to 0032-F1.</p> <p>Part 2; Page 2</p> <p>The definition of “Surveillance Network Program” is too narrow in its current wording. Suggested changes in text are showed in italics below:</p> <p>“Surveillance Network Program” means a monitoring program established to collect data on surface water and groundwater quality to assess <i>discharge quality and licence compliance, as well as the potential for impacts to the environment.</i></p>	<p>Changed to incorporate the wetlands.</p> <p>Changed to incorporate wording suggested by Environment Canada and INAC.</p>

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	<p>Part D, item 24; Page 7 The report indicated in Part D, item 24 doesn't necessarily need to be completed by an engineer; the data will be from an accredited lab and other disciplines (chemist, biologist, statistician) would be able to report the relationship.</p> <p>Part D, item 26; Page 8 Suggested changes in text to Part D, item 26 are showed in italics below: The Licensee shall, by March 31, 2013, complete and submit to the Board for approval a study to understand metal concentrations in surface water in the vicinity of the Solid Waste Disposal Facilities. <i>The study should include recommendations for mitigation measures should the metal concentrations be linked to a solid waste source.</i></p> <p>Part H, item 2; Page 9 EC suggests that there be a clause stating that if the Plan is not approved, a timeline for resubmission (e.g. 90 days) be included.</p> <p>Schedule B, item 1; Page 11 Item 1. overlaps with g. and h., and could be clarified by terming this the "general" O&M plan, assuming it refers to O&M for all other municipal activities.</p>	<p>Changed as suggested.</p> <p>The City agreed to this study but did not specifically say they would "...include recommendations for mitigation measures should the metal concentrations be linked to a solid waste source" in their written response. However, it is mentioned in both EC's intervention and the quote appears in this response from the City. Changed as suggested.</p> <p>This is usually stated in the covering letter related to the Plan.</p> <p>Changed as per plan set up suggestions from City of Yellowknife so this no longer applies.</p>

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	<p>Schedule H; Page 15 Are there general practices that would also belong in an O&M plan, such as the water treatment operations?</p> <p>Surveillance Network program Part A, Station Number 0032-10; Page 18 Monthly sampling for the parameters required in SNP Item B.1 would inform system operators of changes to primary treatment achieved as well as identify the treatment contributions of the system components between F6 and F3 outflows. This information would be helpful for informing sludge management.</p> <p>Surveillance Network program Part B, item 1; Page 20 The parameters ammonia and phosphorous should be removed from the list of items to be analyzed at Station numbers 0032-F1 and 0032-F3 as they are already included under the term nutrients.</p> <p>Surveillance Network program Part B, item 2; Page 20 Regarding the use of a static LC₅₀ bioassay, as long as the tests are continuing to pass, the LC₅₀ test does not provide any additional information, but does incur significantly higher costs and requires larger sample volumes. EC recommends the pass/fail test be used, with a “fail” (i.e. less than 70% survival) triggering an LC₅₀ test.</p> <p>Surveillance Network program Part B, item 7; Page 21 The standard 24 or 25 element scan done by Taiga Lab could be listed in conjugation with stating ‘ICP-MS Metal Scan’ for completeness.</p>	<p>n/a</p> <p>Comment forwarded to Proponent.</p> <p>Changed as suggested.</p> <p>Added wording which helps clarify this condition.</p> <p>Did not change.</p>

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	<p>Annexe A Schedule Part D, item 21; Page 25 Replace 'Sewage Disposal Facility Reporting' with 'Current Record Drawings' and replace 'Within 18 months of issuance of Water Licence' to 'Within 6 months of issuance of Water Licence'.</p> <p>Annexe A Schedule Part D, item 22; Page 25 Replace 'Current Record Drawings of the Sewage Disposal Facilities' with 'Investigation of algal blooms and pH, for mitigation development' and replace 'Within 6 months of issuance of Water Licence' to 'Within 18 months of issuance of Water Licence'.</p>	<p>Updated.</p> <p>Updated.</p>
<p>Department of Fisheries and Oceans – Western Arctic Region, Rick Walbourne, Habitat Biologist</p>	<p>Comments taken from letter dated February 23, 2010:</p> <ul style="list-style-type: none"> - Condition D11 – The Snow Disposal plan should also include a topographic map outlining the areas associated with the plan. - SNP – The rationale for SNP Site 0032-2 references "<u>Yellowknife River water</u>" however this site is associated with the emergency source at Yellowknife Bay. The rationale section should state Yellowknife Bay to be consistent with the location. - There have been some Water Licenses in the past that include a map of sampling station within the SNP. This ensures consistency in sample sites through the life of the Water Licence. 	<p>Asked for City to include these areas in the Stormwater Management Plan, but no specific requirement for a topographic map.</p> <p>Changed as suggested by the City.</p> <p>Not included as a requirement of Type A Licences issued recently.</p>

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<p>Indian and Northern Affairs Canada, Carole Mills, Manager Water Resources Division</p>	<p>Comments taken from letter dated March 4, 2010:</p> <p>PART A - SCOPE AND DEFINITIONS</p> <ul style="list-style-type: none"> The definition of “Analyst” should be revised to read as follows: “means an Analyst designated by the Minister under <i>section 35(1) of the Act.</i>” “Average Concentration for Faecal Coliforms” is now proposed to be calculated using the geometric mean, rather than the arithmetic mean. INAC supports this change within the water licence. A geometric mean calculation can offset the effect of very high or low values, which might bias the mean if a straight average (arithmetic mean) were calculated. This is helpful when analyzing for faecal coliform concentrations, as levels may vary greatly over a given time period (e.g. from 10 to 1000 fold) The definition of “Coarse-grained Soil” should be revised to read as follows: “means coarse-textured soil having a median grain size of >75 µm as defined by the American Society for Testing and Materials D422-63(2007) “Standard Test Methods for Particle-Size Analysis of Soils”, or subsequent edition.” The definition of “Fine-grained Soil” should be revised to read as follows: “means fine-textured soil having a median grain size of <75 µm as defined by the American Society for Testing and Materials D422-63(2007) “Standard Test Methods for Particle-Size Analysis of Soils”, or subsequent edition.” 	<p>Did not change as this is referring to Subsection (1) of Section 35.</p> <p>Noted.</p> <p>Changed as suggested.</p> <p>Changed as suggested.</p>

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	<ul style="list-style-type: none"> • The definition of “Minister” should be revised to read as follows: “means the Minister of Indian Affairs and Northern Development.” • The definition of “Pump-out Sewage” should be revised to read as follows: “means all Toilet Wastes or Toilet Waste and Greywater mixture collected by means of a vacuum truck for disposal at the Sewage Disposal Facilities.” • The definition of “Sewage” should be revised to read as follows: “means all Toilet Wastes or Toilet Wastes and Greywater mixture; • The definition of “Sewage Disposal Facilities” should be revised to read as follows: “comprises the area and engineered structures designed to contain and treat Sewage, as shown.....dated March 24, 2009.” • The definition of “Surveillance Network Program” should be revised to read as follows: “means a program established to define environmental sampling and analysis requirements during operations.” • The definition of “Waste” should be revised to read as follows: “means Waste as defined by section 2 of the Act.” • The definition of “Waters” should be revised to read as follows: “means any Waters as defined by section 2 of the Act.” 	<p>Changed as suggested.</p> <p>Did not change as both Toilet Waste and Greywater are defined.</p> <p>Did not change as both Toilet Waste and Greywater are defined.</p> <p>Changed – added “and treat” to definition.</p> <p>Changed to incorporate wording suggested by Environment Canada and INAC.</p> <p>Changed as suggested.</p> <p>Changed as suggested.</p>

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	<p>PART B - GENERAL CONDITIONS</p> <ul style="list-style-type: none"> No comments <p>PART C – CONDITIONS APPLYING TO WATER USE</p> <ul style="list-style-type: none"> C1 - Condition 1 should also include the date of the 2009 water licence application. C2 - Condition 2 provides the annual amount of water that can be used by the City of Yellowknife. INAC notes that there is a significant reduction in the approved water use amount in the draft licence (3,600,000 m³) as compared to the previous licence (5,500,000 m³). INAC understands that in 2009 the City used ~3,000,000 m³ of water so the amount proposed by the Board is more than sufficient to meet current needs. However, in the setting of this amount, has the Board considered potential growth and increased demand of the City over the proposed duration (maximum term permissible under a Type A Water Licence is 25 years) of the water licence? C4 - INAC recommends that Condition 4 be removed in its entirety. Condition 4 requires that water intake hoses be equipped with screens to prevent the entrainment of fish. Although INAC supports the use of mesh screens to prevent the entrainment of fish, INAC is of the opinion that such a requirement does not fall within the jurisdiction of the <i>Northwest Territories Waters Act</i> (use of water and the deposit of waste) and should not be contained within the terms and conditions of the water licence. Accordingly, INAC is of the opinion that such a clause within the water licence is not enforceable under the Act. 	<p>n/a</p> <p>Changed as suggested.</p> <p>The amount in this condition is from City of Yellowknife Water Licence Renewal Application Supplementary Report, Table 5 for year 2022, page 17. Note that the number was rounded up.</p> <p>Board has decided to include this condition as per suggestions by DFO during initial application review comment period.</p>

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	<p>PART D - CONDITIONS APPLYING TO WASTE DISPOSAL</p> <ul style="list-style-type: none"> <p>D8 - Condition 8 outlines the requirement for biannual inspections of all constructed berms, dykes, and dams within the sewage disposal facilities. INAC supports the Board's requirement to conduct inspections of these structures by a qualified engineer, as well as the development and submission of an implementation plan by the Licencee to address any concerns identified. However, INAC questions the biannual frequency of this requirement. A geotechnical inspection of these facilities would best be conducted following seasonal thaw, to observe any impacts on the stability of these structures during the transitional period (e.g. erosion caused by seasonal runoff; soil subsidence during thaw, etc.). Accordingly, it may not be until the month of June until such an inspection could take place. This would result in a report not being submitted to the Board until August. In order to meet the biannual summer inspection requirement as proposed by the Board, the Licencee would have to immediately conduct another inspection of the structures in question, possibly before implementing any recommendations from the previous inspection. If this were the case, a second inspection would not be productive.</p> <p>INAC suggests that the Board only require a single summer inspection of all constructed berms, dykes, and dams within the sewage disposal facilities. As proposed by the Board, an engineer's report should be submitted 60 days following and include an implementation plan to address any recommendations by the engineer. INAC suggests that only should the Licencee be required to conduct work at the structures in question to address stability/structural issues,</p> 	<p>The Board has revised this condition to reflect these and the City's concerns. The inspection is to take place once every two years with a report to be submitted 60 days thereafter.</p>

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	<p>that a second/follow-up inspection and corresponding report be submitted to the Board.</p> <ul style="list-style-type: none"> • D9 – Criteria presented within this clause are adopted from the 2003 Government of the Northwest Territories “Guideline for Contaminated Site Remediation”, which is based on the CCME “Canada-Wide Standards for Petroleum Hydrocarbons (PHC) in Soil (2001)”. It should be noted that the CCME document was updated in 2008, and some changes to criteria have been made. Specifically, the industrial criterion for F1 for both coarse and fine grained soils is 320 mg/kg and for F2 the revised criterion is 260 mg/kg for both soil types. • D24 – INAC is pleased that the Board has accepted INAC’s recommendation for the City to conduct CBOD and BOD sampling for a period of three years and to provide a trend/comparative analysis between the two parameters. However, INAC does not agree with the Board that the report to be submitted by the Licensee needs to be completed by a qualified engineer. INAC recommends that the clause be revised to read as follows: <i>“The Licensee shall complete monitoring of wastewater effluent quality for carbonaceous biological oxygen demand (CBOD) and biological oxygen demand (BOD) for a minimum of three years. The study findings, including a trend analysis, shall be submitted to the Board for approval before August 31, 2014.”</i> • D25 – INAC is unclear as to the Board’s rationale for requiring the Licensee to conduct a study on the capabilities of the effluent discharge area for the Biotreatment Pad of the Solid Waste Disposal Facilities to absorb water. INAC notes that the Board has established a new SNP station (0032-17) to 	<p>Board has decided to use GNWT Industrial Guideline values.</p> <p>Changed as suggested.</p> <p>This recommendation for an “absorption study” came from the Intervention presented by Environment Canada (Issue 3.2.1) to</p>

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	<p>monitor the quality of effluent or drainage water discharged from the pad. INAC supports the establishment of this new SNP station; however, INAC does not understand the Boards rationale for requiring an “absorption study.” Depending on the Board’s rationale, such a study may be premature if it is found that the quality of the effluent being discharged is protective of the receiving environment.</p> <p>PART E - CONDITIONS APPLYING TO MODIFICATIONS</p> <ul style="list-style-type: none"> • No comments <p>PART F - CONDITIONS APPLYING TO ABANDONMENT AND RESTORATION</p> <ul style="list-style-type: none"> • No comments <p>PART G - CONDITIONS APPLYING TO CONSTRUCTION</p> <ul style="list-style-type: none"> • No comments <p>PART H - CONDITIONS APPLYING TO OPERATIONS AND MAINTENANCE</p> <ul style="list-style-type: none"> • No comments <p>PART I – CONDITIONS APPLYING TO SPILL CONTINGENCY PLANNING</p> <ul style="list-style-type: none"> • I3 – INAC recommends that all spills equal or above reportable thresholds identified within the attached table be immediately reported to the NWT 24 hour spill report line (867) 	<p>which the City agreed and the Board has incorporated as a condition of this WL.</p> <p align="center">n/a</p> <p align="center">n/a</p> <p align="center">n/a</p> <p align="center">n/a</p>

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	<p>920-8130. These reportable amounts align and build upon those identified within the <i>Spill Contingency Planning and Reporting Regulations</i> under the Government of the Northwest Territories' <i>Environmental Protection Act</i>. In addition, INAC recommends that all spills, regardless of amount should be recorded onsite and available to the Inspector upon request. Further, all spills, regardless of amount, are the responsibility of the proponent and must be cleaned up in a timely manner.</p> <p>INAC recommends that condition 13 be revised to read as follows: "<i>The Licensee shall immediately report to the 24 Hour Spill Report Line (867-920- 8130) any spills equal or above the amounts established in Schedule I, Item 1, within municipal boundaries or in the areas of the Water Supply or Waste Disposal Facilities.</i>"</p> <p>SCHEDULE F – CONDITIONS APPLYING TO ABANDONMENT AND RESTORATION</p> <ul style="list-style-type: none"> Although directed at mining operations in the NWT, the City should refer to the concepts and information requirements contained within INAC's "Mine Site Reclamation Guidelines for the NWT." INAC believes that the information in guidelines would aid the City in the development of their own closure and reclamation plans. 	<p>Condition revised to include Indian and Northern Affairs Canada's 2007 <i>Guidelines for Spill Contingency Planning</i>.</p> <p>Comment forwarded to Proponent.</p>

