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July 2, 2019

File: W2017L3-0001

Memory Murefu
Senior Administrative Officer
Community Government of Wekweètì
Wekweètì, Northwest Territories
X0E 1W0

Sent by email

Dear Memory Murefu,

Re: Water Treatment Plant – Design Drawings

The Wek'èezhì Land and Water Board (the Board) met on June 28, 2019 and considered the Community Government of Wekweètì's Design Drawings for the Water Treatment Plant.¹

As described in the Board's Reasons for Decision, the Board has approved the Design Drawings, and provided further direction. Please review the attached Reasons for Decision for further information.

Yours sincerely,

A handwritten signature in blue ink, appearing to read "Joe Mackenzie".

Joe Mackenzie
Chair, Wek'èezhì Land and Water Board

Attachment:

- Reasons for Decision

Copied: Wek'èezhì West Distribution List

¹ See WLWB Online Registry for [Wekweeti - Water Treatment Plant - Design Drawings - May 10 19.pdf](#)



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Reasons for Decision

Reference/File Number:	W2018L3-0001 (Gamètì) and W2017L3-0001 (Wekweètì)
Licensee:	Community Governments of Gamètì and Wekweètì
Subject:	Design Drawings of proposed Water Treatment Plants in Gamètì and Wekweètì

Decision from the Wek'èezhì Land and Water Board Meeting of June 28, 2019

1.0 Decision

On June 28, 2019, the Wek'èezhì Land and Water Board (WLWB or the Board) met and considered the respective Design Drawings of proposed Water Treatment Plants (WTPs) in the communities of Gamètì and Wekweètì. In review of the submissions,^{1, 2} reviewer comments, and proponent responses, the Board has approved the respective Design Drawings, and:

1. Informs the Community Governments of Gamètì and Wekweètì that they are not authorized to operate the new WTPs until the Board has approved updated WTP Operation and Maintenance (O&M) Plans;
2. Directs the Community Government of Gamètì to submit Version 3.0 of the WTP O&M Plan within 30 days of the Board's decision being communicated;
3. Directs the Community Government of Wekweètì to submit Version 3.0 of the WTP O&M Plan at least 90 days prior to beginning operations of the new WTP;
4. Directs the Community Governments of Gamètì and Wekweètì to provide the following in Version 3.0 of the WTP O&M Plans:
 - a. the estimated monthly quantity of backwash, and how backwash is disposed of; and
 - b. whether sludge is expected to be produced by the WTPs, and if so, identify whether sludge composition data is available (e.g., from an existing WTP), how much sludge is expected to be disposed monthly, and how sludge will be disposed of.
5. Is commencing a Water Licence amendment process on its own motion for both W2018L3-0001 (Gamètì) and W2017L3-0001 (Wekweètì) to address the gaps related to discharge from, and the operations and maintenance of, the WTP; and

¹ See WLWB Online Registry for [Wekweeti - Water Treatment Plant - Design Drawings - May 10 19.pdf](#)

² See WLWB Online Registry for [Gameti - Water Treatment Plant - Design Drawings - May 10 19.pdf](#)

6. Informs the Community Governments of Gamètì and Wekweètì that they are not authorized to operate the new WTPs until the Board has approved an amendment to the Water Licences allowing for discharge of backwash.

2.0 Background

The Community Governments of Gamètì and Wekweètì are planning on replacing their respective water treatment plants. As per Part E, Condition 1 of the respective Water Licences for Wekweètì (W2017L3-0001) and Gamètì (W2018L3-0001):

Ninety (90) days prior to construction of any dams, dykes or structures intended to contain, withhold, divert or retain water or Wastes, other than as contemplated in the Spill Contingency Plan, the Licensee shall submit to the Board, design drawings stamped by a Professional Engineer.

As per Part E, Condition 2 of the respective Water Licences, “[c]onstruction of dams, dykes, or structures identified in Part E, Condition 1 shall be carried out as approved by the Board.”

Stantec has been contracted to develop Design Drawings for new water treatment facilities in Gamètì and Wekweètì. On May 10, 2019, Stantec submitted Design Drawings for the proposed WTPs.^{3, 4}

2.1 Public Review

The Design Drawings were distributed for public review on May 10, 2019, with Parties’ comments due by May 28, 2019. Comments and recommendations were submitted by the Government of the Northwest Territories – Department of Environment and Natural Resources (ENR). Board staff also submitted questions. Proponent responses were received on June 5, 2019, after the deadline of June 3, 2019. Parties’ comments and recommendations, as well as proponent responses are available on the WLWB Online Registry and as attachments to this Staff Report (Attachments 3 and 4).^{5, 6}

3.0 Reasons for Decision

After reviewing the submissions by the Community Governments of Gamètì and Wekweètì, reviewer comments, and proponent responses, the Board has approved the respective Design Drawings.

- ***Decision #1: The Board approves the Design Drawings of the proposed WTPs in Wekweètì and Gamètì.***

Other issues not directly related to the approval of the Design Drawings were raised during the public review and are discussed in further detail below. The issues relate to the Operation and Maintenance Plan that would be associated with the new WTPs, as well as concerns and uncertainties related to discharge that would be released from the proposed WTPs. Because of these issues, the Board is informing the Community Governments of Gamètì and Wekweètì that they cannot operate the new WTP until an approved O&M Plan is in place (see Decision #2) and until the Water Licence has been amended to allow for the discharge of backwash water from the WTP (see Decision #7).

³ See WLWB Online Registry for [Wekweeti - Water Treatment Plant - Design Drawings - May 10 19.pdf](#)

⁴ See WLWB Online Registry for [Gameti - Water Treatment Plant - Design Drawings - May 10 19.pdf](#)

⁵ See WLWB Online Registry for [Wekweeti - Water Treatment Plant - Design Drawings - Review Comment Summary and Attachment - June 18 19.pdf](#)

⁶ See WLWB Online Registry for [Gameti - Water Treatment Plant - Design Drawings - Review Comment Summary and Attachment - June 18 19.pdf](#)

3.1 Operations and Management Plans

O&M Plans provide guidance for community government staff to operate and maintain facilities. ENR recommended that both Community Governments update their existing WTP O&M Plans to reflect changes in operations and technology (ENR comment 3). Board staff also asked whether there would be any changes in operation or technology not currently captured in the existing WTP O&M Plans (Board staff comment 2). Both Community Governments stated they would update their O&M Plan to “reference the new WTP and its operations and technology”.

Board staff also asked when the Community Governments would be submitting updated O&M Plans if updates were needed (Board staff comment 2). Both Community Governments stated new O&M Plans would be submitted within 90 days after the installation of the WTP.

Typically, approved O&M Plans and other management plans are in place prior to use of waste/water facilities. The Community Governments of Gamètì and Wekweètì have approved O&M Plans for their existing water treatment facilities: Version 2.0 for the community of Wekweètì was approved by the Board as part of the W2017L3-0001 Water Licence renewal,⁷ and Version 2.0 for the community of Gamètì was approved by the Board as part of the W2018L3-0001 Water Licence renewal.⁸ Given that construction will mean the replacement of the entire WTP, and that updates to the WTP O&M Plan would be required as indicated in responses to reviewer comments, the Community Governments of Gamètì and Wekweètì should submit Version 3.0 of the WTP O&M Plan to reflect the changes in operation and technology. The Community Governments of Gamètì and Wekweètì are not authorized to operate the new WTPs until an approved O&M Plan is in place.

- ***Decision #2: The Community Governments of Gamètì and Wekweètì are not authorized to operate the new WTPs until the Board has approved updated WTP O&M Plans.***

Given the Gamètì WTP is intended to be constructed in August 2019,⁹ the Board requires that Gamètì’s Version 3.0 of the WTP O&M Plan be submitted within 30 days of the Board’s Reasons for Decision being communicated. If the WTP O&M Plan needs to be updated to reflect additional changes in operation and technology not reflected in Version 3.0, then the community of Gamètì must submit Version 4.0 of the WTP O&M Plan and receive approval prior to implementing those proposed changes.

- ***Decision #3: The Community Government of Gamètì is to submit Version 3.0 of the WTP O&M Plan within 30 days of the Board’s decision being communicated.***

Wekweètì’s new WTP is set to be constructed in summer 2020,¹⁰ and for the same reasons explained previously, the Board requires the Community Government of Wekweètì to submit the updated O&M Plan a minimum of 90 days prior to the anticipated start of operations of the new WTP. This timeline reflects the typical timeline for considering submissions received by the Board.

- ***Decision #4: The Community Government of Wekweètì is to submit Version 3.0 of the WTP O&M Plan, at least 90 days prior to beginning operations of the new WTP.***

⁷ See WLWB Online Registry for [Wekweeti - Type B Water Licence Renewal - Reasons for Decision - Sep 27 17.pdf](#)

⁸ See WLWB Online Registry for [Gameti - Type B Water Licence - Reasons for Decision - Dec 21 18.pdf](#)

⁹ See WLWB Online Registry for [Gameti - Water Treatment Plant - Design Drawings - May 10 19.pdf](#)

¹⁰ See WLWB Online Registry for [Wekweeti - Water Treatment Plant - Design Drawings - May 10 19.pdf](#)

3.1.1 Backwash and Sludge from the WTPs

The Design Drawings for the WTPs include backwash systems. Backwash systems typically allow water to be pumped backwards through filters to remove accumulated particles (e.g., sand, dirt, etc.). ENR noted that the Design Drawings show that backwash may be discharged from the WTP onto land and flow towards the nearest water body (Snare Lake in Wekweètì and Rae Lake in Gamètì). ENR recommended the Community Governments provide details on the chemical composition of backwash and sludge, including chemicals required for coagulation and disinfection, and the yearly volumes expected to be produced by the WTPs (ENR comment 1). The Community Governments responded by identifying the chemicals and yearly volumes used in the WTP process systems, and stated that the backwash water does not contain any chemicals; no information was provided on the chemical composition of sludge.

ENR also recommended that should any parameters be expected to exceed the Canadian Council of Ministers of the Environment (CCME) Protection of Aquatic Life guidelines, and should WTP waste be discharged directly or indirectly to the receiving environment, that the Community Governments should demonstrate how residual wastes (such as backwash or sludge) “will be managed in ways that do not pose a risk” to Rae Lake and Snare Lake respectively (ENR comment 2). ENR also recommended that current drawings be updated to reflect these details. The Community Governments responded that no concentrations above CCME guidelines are expected.; no information was provided on how residual wastes would be managed.

The Board notes that the WTP O&M Plans for Gamètì and Wekweètì do not provide information on sludge or wastewater (such as from backwashing) produced by the WTP. Given the proposed WTPs in each community identify backwash systems, Version 3.0 of the WTP O&M Plans should specify the estimated monthly quantity of backwash, and how it is disposed of. The updated O&M Plans should also identify whether sludge is produced by the WTPs, and if so, whether sludge composition data is available, how much sludge is disposed monthly, and how sludge is disposed.

- ***Decision #5: The Community Governments of Gamètì and Wekweètì are to provide the following in Version 3.0 of the WTP O&M Plans:***
 - a. the estimated monthly quantity of backwash, and how backwash is disposed of; and***
 - b. whether sludge is expected to be produced by the WTPs, and if so, identify whether sludge composition data is available (e.g., from an existing WTP), how much sludge is expected to be disposed monthly, and how sludge will be disposed of.***

3.2 Water Licence Amendment

Based on the Design Drawings, it is the Board’s understanding that backwash is proposed to be discharged onto land, draining towards Rae Lake and Snare Lake in Gamètì and Wekweètì, respectively. The Board notes that, as per Part D, Condition 1 of the Gamètì Water Licence, the Licensee “shall ensure that any unauthorized Wastes associated with the municipal undertaking do not enter any Waters”. Part D, Condition 1 of Wekweètì’s Water Licence similarly states that the Licensee “shall ensure that any unauthorized Waste associated with this undertaking do not enter any Waters”.

Backwash meets the definition of waste as per the *Waters Act*, “waste” meaning:

- (a) a 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 an animal, fish or plant, or

(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 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)

While the WTPs can be constructed as per the Design Drawings, Part D, Condition 1 of the Gamètì and Wekweètì Water Licences do not authorize the discharge of backwash as proposed for the operations of the WTPs.

To address the proposed discharge of backwash, the Community Governments of Gamètì and Wekweètì must undergo an amendment to their respective Water Licences. As per paragraph 72.12(1)(b) of the *Mackenzie Valley Resource Management Act* (MVRMA) and paragraph 36(b) of the *Waters Act*, the Board may amend the conditions of a Water Licence on its own motion if it appears to the Board to be in the public interest. In the cases of Gamètì and Wekweètì, the existing Water Licences do not allow the new WTPs to discharge backwash; an amendment would be required to allow for this. The Board understands that the new WTPs are necessary to come into compliance with the new Canadian Drinking Water Quality Guidelines and recognize that a functioning WTP is essential for the communities in order to have access to drinking water.

The Board is proposing a draft condition be added to Part D of the respective Gamètì and Wekweètì Water Licences, similar to the following: “The Licensee shall not deposit backwash water from the Water Supply Facilities to the Receiving Environment, unless authorized in writing by an Inspector.”

In the above draft condition, the Board proposes that the definition for “Receiving Environment” would be included during the amendment process and be the same as that used in the MVLWB Water and Effluent Quality Management Policy: “The natural environment that, directly or indirectly, receives any deposit of waste (as defined in the *Waters Act*) from a project”.

The Board also notes that there are no conditions related to the O&M Plan for the WTP, and the Board intends to address this gap in the amendment process.

Based on the comments received during the public review, no exceedances of CCME guidelines are expected for any parameters (see response to ENR comment 2). However, follow-up correspondence has indicated that elevated total suspended solids (TSS) may be present in the backwash water (see Attachments 5),^{11,12} and concerns about metals (such as aluminum) from backwash discharge have been identified at other municipal water treatment facilities (i.e., Samba K’e and Fort Liard).^{13,14} At this time, the composition of proposed discharge water is unclear and therefore the Board has not included specific criteria for this discharge, which should instead be authorized in writing by an Inspector.

- ***Decision #6: The Board is commencing a Water Licence amendment process on its own motion for both W2018L3-0001 (Gamètì) and W2017L3-0001 (Wekweètì) to address the gaps related to discharge from, and the operations and maintenance of, the WTP;***

¹¹ See WLWB Online Registry for [Wekweeti - Water Treatment Plant - Design Drawings - Review Comment Summary and Attachment - June 18 19.pdf](#)

¹² See WLWB Online Registry for [Gameti - Water Treatment Plant - Design Drawings - Review Comment Summary and Attachment - June 18 19.pdf](#)

¹³ See WLWB Online Registry for [MV2018L3-0001 - Samba Ke First Nation - Issuance Letter-Licence and Conditions - Type B - Feb21-19.pdf](#)

¹⁴ See WLWB Online Registry for [MV2009L3-0025 - Fort Liard - Water Licence current to Feb22-18.pdf](#)

- **Decision #7: The Community Governments of Gamètì and Wekweètì are not authorized to operate the new WTPs until the Board has approved an amendment to the Water Licences allowing for discharge of backwash.**

Signed the 2 of July 2019, on behalf of the Wek'èezhìi Land and Water Board



Witness



Joe Mackenzie
Chair, Wek'èezhìi Land and Water Board