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Nunalingni Kavamatkunnilu Pivikhaqautikkut
Department of Community and Government Services
Ministère des Services communautaires et gouvernementaux

December 5, 2014

Brady MacCarl
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Re: Repulse Bay Renewal/Amendment Application Water Licence No: 3BM-REP0409 Clarification

Dear Mr. MacCarl,

The Repulse Bay Water Licence No. 3BM-REP0409 Consolidated Renewal/Amendment Application submitted to the NWB on March 25, 2014 supersedes all other applications. Documents submitted with the February 3, 2014 Renewal/Amendment Application that should be considered in the current application are:

- 1310-3BM-REP0409-Design Brief (Sewage Lagoon)
- 130402-3BM-REP0409-Rev. Geo Inv Rpt-Lagoon Upgrades

Other documents included as part of this prior application have either been since submitted or are attached to this letter in final form.

Please see below for a response on items requesting additional clarification in your email dated November 12, 2014:

1. In regards to licence item C4. The intake pipe shall be equipped with a screen mesh which conforms to DFO guidelines. The ANND Report 2011 listed the intake screen as "Unacceptable", with no further clarification. Also, the licensee has not commented on this issue in any annual report. It is suggested that the licensee verify that this screen is in good working order.

Simeoni Tatty, CGS Maintenance Coordinator North, and Cyril Kusugak, CGS Settlement Manager Repulse Bay, were contacted and are not aware of any problems with the intake screen. They confirmed that no work has been done on the intake screen in the past few years. Because no



clarification was provided as to why AANDC listed the intake screen as “Unacceptable”, no further information can be provided at this time. It should also be noted that the intake screen is not visible from the shore so it is unclear as to how AANDC could have made this assessment during the 2011 inspection.

In an effort to ensure that the Licensee is in compliance with Part C, Item 4 of the Water Licence, during the summer of 2015 the water intake pipe and screen will be inspected using diving services, a remotely operated underwater vehicle (ROV), or another method deemed appropriate. The inspection will confirm that the intake screen conforms to DFO Guidelines. The NWB will be provided with an update on the condition of the intake screen and any action taken within sixty (60) days of this inspection.

2. In regards to licence items D11 and D12, the Board does not have any O&M plan for the landfarm facility on record nor any sampling results of effluent discharged. Was an O&M plan for the landfarm submitted? Also, pursuant to item H12, it is not clear whether the licensee installed the groundwater monitoring wells associated with the landfarm facility.

The “landfarm” in Repulse Bay was never intended to be a permanent structure. The project was designed as a temporary storage area to house contaminated soil from the tank farm upgrade in 2005. No O&M Plan was created for this temporary storage area. The proposed groundwater monitoring wells were never installed. As indicated in the *Repulse Bay, Nunavut Fuel Storage Facility Site Remediation Final Report* prepared by FSC, October 9, 2005, no water was seen entering or leaving the soil storage area and the soil naturally remediated in a short period of time. The Licensee ultimately wishes to have conditions referencing the landfarm removed from the Licence. Please see the separate letter pertaining to the “landfarm” for more detail.

3. The 2004 Annual report indicated that old solid waste site was abandoned and remediation efforts would occur. What is the status of this remediation?

The old solid waste site was abandoned and all solid waste is taken to the currently authorized Solid Waste Site. Metals and waste materials were covered with earthen materials. Due to the proximity of the old solid waste site to the current sewage discharge point, this land is not currently used. During the summer of 2015 the abandoned solid waste site will be visited to ensure all cover remains in place. If any additional cover material is need, it will be placed and graded to match the existing landscape. An update will be included with the 2015 Annual Report.



4. The 2013 Annual Report stated that a study on water quality survey on existing water source and also proposed secondary water source to be done by William Engineering Ltd in 2014. What is the status of this report?

The project to *Locate Alternative Sources of Drinking Water for Each Nunavut Hamlet* done by Williams Engineering Canada Inc. was completed January 10, 2014. You will find this report attached. The purpose of the project was to identify alternative water sources for emergency use in Nunavut, with the work being done in two phases. Phase 1 was a desktop study of all communities and phase 2 was a site visit to each community to sample and further characterize potential alternate water sources.

Repulse Bay was identified as a low risk community with a stable water supply and a low likelihood/severity of a water supply interruption due to the large lake source (Nuviq Luktujuk Lake) and several alternatives available. The alternate source recommended by Williams Engineering is Lake W, approximately 1.8 km from the community. It was also noted that an alternate location on the Nuviq Luktujuk Lake could be used (also referred to as Water Lake in the report). A map of the location of these lakes with respect to the community can be found in Section 3 of the report.

Water sampling was done during the summer of 2013 at Nuviq Luktujuk Lake and Lake W. The results of the lab analysis were compared to the GCDWQ and parameters were within the guidelines, with the exception of E. coli and total coliforms which is to be expected when sampling untreated water. The water quality lab results can be found in Appendix D of the report.

5. A letter from Shah Alam (August 1, 2014) states that an updated compliance report and a study plan for the sewage lagoon would be submitted by August 25, 2014. The Board has no record of these plans having been received. Also, the same communication indicates that the Board would receive an updated O&M manual. What is the status of this report? If not yet completed, the licensee is reminded that this will be required in advance of the new lagoon being commissioned.

Please see the attached Compliance Plan. This compliance plan supersedes the submission from October 2012. The Hamlet of Repulse Bay, with assistance from CGS, will use this plan to work towards full compliance with the Water Licence.

There have been many studies completed as part of the sewage lagoon project. The following documents have previously been submitted to the NWB regarding the work for the new sewage lagoon:

1. *Wetlands Assessment, Sewage Treatment Wetlands, Hamlet of Repulse Bay, NU – Final* - exp Services, October 18, 2012;
2. *Screening Level Environmental Assessment, Sewage Facility Upgrade, Hamlet of Repulse Bay, NU – Draft* – exp Services, October 18, 2012;
3. *Geotechnical Investigation – Final* – exp Services, April 2, 2013;



4. Sewage Lagoon Repulse Bay, Nunavut “**Issued for Review**” drawings – exp Services, October 11, 2013; and
5. *Design Brief Sewage Lagoon Upgrade Repulse Bay, Nunavut* – exp Services, October 2013 (stamped January 28, 2014).

Attached to this letter are the following documents related to the new sewage lagoon:

1. Sewage Lagoon Repulse Bay, Nunavut “**Issued For Tender**” drawings – exp Services, February 21, 2014; and
2. *Screening Level Environmental Assessment, Sewage Facility Upgrade, Hamlet of Repulse Bay, NU – Final* – exp Services, November 9, 2012.

As per discussion with exp Services, the O&M Plan for the sewage treatment system cannot be developed until construction of the new sewage lagoon is complete. The Sewage Treatment System O&M Plan will be submitted to the NWB for approval upon completion. In response to recommendation by AANDC, the O&M Plan will include an annual inspection of the berms by CGS Municipal Engineer using the Annual Report Card. If any issues are found with the berm, appropriate measure for further study or repair of the berms will be taken. The annual berm inspection and any follow-up measures taken will be reported in the Annual Report.

Similarly, the Water Treatment System O&M Plan will be developed when construction of the new pumphouse is complete and submitted to the NWB for approval. In response to recommendation by AANDC, the O&M Plan will include routine inspection and maintenance of the fuel line and spill containment basin, and operation to include secondary containment.

The Solid Waste Site O&M Plan will be updated and submitted to the NWB within six months of the approval of a new water licence.

6. Are the design drawings for the new water pumphouse submitted December 17, 2013 the final designs? If so, they should all be stamped by a QP. If construction has already occurred, these stamped drawings can be included in the construction summary report.

The New Water Pump House Repulse Bay, Nunavut “Issued For Tender” drawings are attached. These drawings are signed and stamped by exp Services. Construction is scheduled to begin the summer of 2015 and be completed within one year. The signed and stamped as-built drawings and Construction Report will be provided to the NWB upon completion of the new water pumphouse.



7. The Updated Amendment Application submitted by Shah Alam March 25, 2014, provided design plans for the sewage lagoon that were specifically labelled as preliminary. Final drawings and plans will be required in the Construction Summary Report.

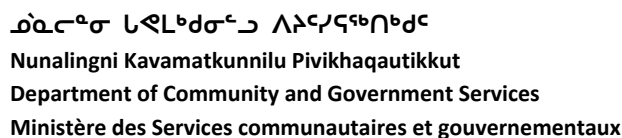
The *Design Brief Sewage Lagoon Upgrade Repulse Bay, Nunavut* prepared by exp Services Inc. and submitted October 2013 is the final version of the sewage lagoon design plans. This report is available on the NWB ftp site. On the cover page the Type of Document is identified as “First Submission”, however this is discernible from the draft version of the document which was submitted to CGS earlier the same month and has a large “DRAFT” watermark through each page.

The Sewage Lagoon Repulse Bay, Nunavut “Issued For Tender” drawings, dated February 21, 2014, are attached. These drawings are signed and stamped by exp Services. Construction is scheduled to begin the summer of 2015 and be completed by the end of 2016. The signed and stamped as-built drawings and Construction Report will be provided to the NWB upon completion of the sewage lagoon construction.

8. The Design Brief for the New Lagoon Facility (February 14, 2012) indicates that the purpose of the sewage lagoon is to provide pretreatment before the wetlands. However, the Final Wetlands Report (March 25, 2014) suggested that the wetlands will not be able to adequately treat sewage effluent in the long-term. If this is the case, the discharge criteria should be applied after the lagoon, not the wetland. If the wetlands are still considered part of the treatment process, the licensee should provide the adaptive measures they plan to employ to improve the wetland's digestive capacity.

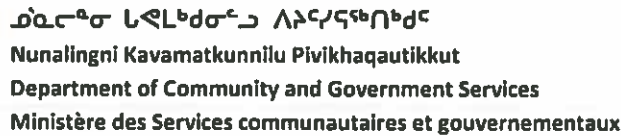
The current sewage disposal facility in Repulse Bay consists of a truck offload discharge area and a natural wetland area. There is currently no lagoon or holding cell to allow solids to settle before entering the wetland area. Wastewater flows downstream from the discharge area through the wetlands and a series of small surface water bodies for 1,400 m prior to reaching the Hudson Bay.

The *Wetlands Assessment, Sewage Treatment Wetlands, Hamlet of Repulse Bay, NU* prepared by exp Services Inc. and submitted October 18, 2012 states that while the wetland treatment area meets compliance requirements of Water Licence No. 3BM-REP0409, mitigation measures are recommended to improve the performance in the long-term. **The recommended mitigation measure is to construct a sewage lagoon to improve the performance of the sewage treatment system in the long-term.** The sewage lagoon will greatly reduce the amount of contaminants, pathogens and nutrients discharging into the downstream wetlands. The sewage lagoon will also remove the majority of suspended solids through sedimentation over time. The downstream wetlands area will be receiving wastewater with a significantly reduced load and will trap any remaining solids and breakdown any remaining contaminants en-route to the Hudson Bay. The wetland's digestive capacity will be improved by reducing the overload of organic materials that is currently occurring with no sewage lagoon.



Monitoring Station	Description	Frequency
REP-1 (existing)	Raw water supply at the Nuviq Luktujuq Lake Water Supply prior to treatment	Volume, monthly and annual
REP-2 (existing)	Effluent discharge from the Final Discharge Point of the Solid Waste Disposal Facilities	Quality, monthly May to August
REP-3 (existing)	Raw Sewage at truck offload point	Volume, monthly and annual
REP-4 (new)	Effluent discharge from the sewage lagoon	Quality, monthly May to August
REP-5 (new)	Effluent discharge from the Final Discharge Point of the wetlands area	Quality, monthly May to August
REP-5 (remove)	Effluent discharge from the Landfarm facility at the controlled point of discharge	Quality, annual
REP-6 (remove)	Monitoring well located up-gradient of the Landfarm Facility	Quality, annual
REP-7 (remove)	Monitoring well located down-gradient of the Landfarm Facility	Quality, annual

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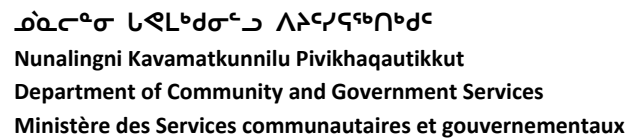


“An inspection of all engineered facilities related to the management of water and waste, shall be carried out annually in July or August by a Geotechnical Engineer. The engineer’s report shall be submitted to the Board for review within sixty (60) days of the inspection.”

It is the intention of the Licensee that this response and supporting documents will provide the necessary clarification for the NWB to precede with issuing a new Water Licence. Please contact the undersigned with any questions or concerns.

Meer Singh

CC: Kowesa Etitiq, SAO Repulse Bay
Phyllis Beaulieu, NWB
David Hohnstein, NWB



- Hamlet of Repulse Bay Water Licence No: 3BM-REP0409 "Landfarm" Letter
- Locate Alternative Sources of Drinking Water for Each Nunavut Hamlet Report
- Hamlet of Repulse Bay Plan for Compliance, December 5, 2014
- Sewage Lagoon Repulse Bay, Nunavut "Issued For Tender" Drawings
- Screening Level Environmental Assessment, Sewage Facility Upgrade, Hamlet of Repulse Bay Final Report
- New Water Pump House Repulse Bay, Nunavut "Issued For Tender" Drawings
- Response to AANDC Review Comments
- Wetlands Location Plan