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RE: Notice of Screening for Department of National Defence's "DEW Line Sites Water Licence Renewals" Project Proposals

On behalf of the Government of Nunavut (GN), I would like to thank the Nunavut Impact Review Board (NIRB) for the opportunity to provide comments on the Department of National Defence's "DEW Line Sites Water Licence Renewals" project proposals. The GN reviewed the proposed projects and has prepared 2 comments (see Appendix) for your consideration.

Qujannamiik,

[Original Signed By]

Chris Spencer
Avatiliriniq Coordinator
Government of Nunavut

Appendix

GN-01: Mitigation Measures	
Department	Environment
Organization	Government of Nunavut
Subject/Topic	Land-farm facilities: Site Settings, Design, Construction, Operation, and Closure
References	<ul style="list-style-type: none"> • NIRB Notice of Screening for Department of National Defence's "DEW Line Sites Water Licence Renewals" project proposals, 181109-03DN013, 03DN117, 03DN119, and 03DN124 • Fox-M Landfarm and Design Management Plan, October 2018 • Cambridge Bay Soil and Water Treatment Facility – Operations and Maintenance Plan, June 2018 • Mary River Project Phase 2 Proposal Technical Support Document (TSD) 28, Management and Monitoring Plans, Appendix F, Waste management plan, Table 3-3 • Fox-M Site Description, October 2018 • Environment and Climate Change Canada (2013). Federal Guidelines for Landfarming Petroleum Hydrocarbon Contaminated Soils. Available at: https://www.canada.ca/content/dam/eccc/migration/fcs-scf/B15E990A-C0A8-4780-9124-07650F3A68EA/Landfarming_en.pdf
CONCERNS	
<p>The proposed landfarm facilities could raise public concern related to any hazardous waste management project. These projects may cause significant adverse ecosystemic effects due to insufficient mitigation (potential ground and surface water contamination). These projects may also cause significant adverse impacts on wildlife due to insufficient mitigation (site access). This appears to be a project where the potential adverse effects are predictable and can be prevented or managed appropriately with known technology. There are some specific mitigation measures that would be appropriate, and some other matters of importance related to this project proposal. In particular the following concerns have to be addressed for all four "DEW Line Sites Water Licence Renewals" project proposals (181109-03DN013, 03DN117, 03DN119, and 03DN124):</p> <ol style="list-style-type: none"> 1. No rationale provided for the proposed soil treatment capacities and the footprints of these four projects. The landfarms are expected to function for 10 years, but no justification is provided for this timeline. 	

2. The Fox-M landfarm design and management plan states that:

“[T]he selection of this site was chosen for the level area which was present; also the design of a landfarm took into account several other factors, including geotechnical suitability which considers topography, soil conditions, natural drainage in the area, depth to bedrock or permafrost, groundwater, and adverse soil conditions that may affect permafrost and potential containment. Environmental considerations weighed heavily in the consideration for the location of the landfarm, these include the footprint of area required; the distance from ecologically sensitive areas, including marine and freshwater systems; the distance from water supplies; contaminated soil areas; geotechnical suitability; and the accessibility of the landfarm location during the remediation work.” (Fox-M Landfarm and Design Management Plan; Section 3.1)

However, there is no reference made to regulatory requirements that define the criteria for landfarm site selection (e.g. 500 m setbacks from the surface water bodies and residential areas), design, construction, operation, and closure (Environment and Climate Change Canada, 2013).

3. The Fox-M landfarm design and management plan states that:

“During the construction of the landfarm facility berms will be created around the area that will contain the contaminated soil. The berms and the base of the facility will be heavily compacted to a level of 95% compaction; this will reduce the permeability of the granular fill.” (Fox-M Landfarm and Design Management Plan; Section 3.2)

However, the plan does not present any liner description. Typical landfarm design in Nunavut provides for a geomembrane liner and filtrate management (see e.g. the proposed landfarm in Cambridge Bay, NIRB Notice of Screening File No: 18UN045 Cambridge Bay soil and water treatment facility Operations and Maintenance Plan and Waste Management Plan June 2018 and Mary River Project Phase 2 Proposal TSD 28). The Fox-M landfarm design and management plan states that:

“The high level of compaction of the granular material used to build the berm and the base of the facility will ensure that all leachate is captured within the facility. No water from the landfarm will flow directly to the surrounding environment; instead any water accumulating within the facility will be recycled back over the material contained in the facility.” (Fox-M Landfarm and Design Management Plan; Section 4.4)

It is not clear from the plan what the expected hydraulic conductivity of compacted granular material for the landfarm is. According to the landfarm guidelines a liner should be used if there is less than 5m of native underlying soil, or if the hydraulic conductivity is more than 10^{-6} cm/s (Environment and Climate Change Canada, 2013).

4. It further states that:

“All contact water in the perimeter collection system is to be collected and tested to ensure it meets the wastewater discharge criteria (Annex D) prior to the facility decommissioning. If the contact water does not meet these guidelines, it will be treated so that it does meet the guidelines.” (Fox-M Landfarm and Design Management Plant; Section 4.4)

It is unclear what expected volumes of the filtrate, contaminated runoff, and snowmelt are from the landfarm, and how this water will be collected, treated, and disposed of if it does not meet the discharge criteria.

5. No description of the site security provided (e.g. fence, gate). As stated in the FOX-M Site Description (and three other site descriptions), wildlife is present in the area and may access the landfarm. According to the landfarm guidelines, wildlife access to facilities should be prevented. Fencing is therefore recommended (Environment and Climate Change Canada, 2013).
6. No rationale or reference is provided for the proposed soil acceptance criteria. Landfarm guidelines recommend certain restrictions on total petroleum hydrocarbon, heavy metals, and other parameters of the contaminated soils (Environment and Climate Change Canada, 2013). If any of the levels detected exceed these restrictions, the contaminated soil is not recommended for landfarming.
7. A limited environmental control program is presented in the landfarm design and management plans. According to the landfarm guidelines a ground and surface water monitoring is recommended for the landfarms (Environment and Climate Change Canada, 2013).
8. No detailed information is provided for the project's closure and site remediation in the scenario where remediation objectives have not been reached after 10 years.

SUGGESTIONS AND RECOMMENDATIONS

The GN recommends the Proponent provide the following information:

1. Rationale for the selected capacity and footprint of the proposed soil treatment facilities and expected lifetime of the project.
2. Creation of a reference to the regulatory documents (guidelines) that define the criteria for the landfarm site selection, setbacks from other facilities, design, construction, operation, and closure (e.g. Environment and Climate Change Canada (2013) or other documents as applicable). In addition, provide confirmation of adherence to these regulatory documents. Define the applicable setbacks and buffer zone inside the perimeter of the facility to be used for firebreaks, access roads, leachate management,

and monitoring works.

3. Confirmation of the hydraulic conductivity of the landfarm base. Discuss the proposed liner or provide a rationale for not having any liner for the landfarm. Assess the environmental impacts and prove no significant effects on ground and surface water will occur.
4. Estimation of the expected volumes of the filtrate, contaminated runoff, and snowmelt from the landfarm. Provide information about the proposed collection, treatment, and disposal of the filtrate, contaminated runoff, and snowmelt if it does not meet the discharge criteria.
5. Description of site security, including a fence to prevent wildlife access.
6. Provide a rationale or reference for the proposed soil acceptance criteria.
7. Description of the proposed ground and surface water monitoring or provide a rationale for not having any ground and surface water monitoring for the landfarms.
8. Description of the project closure and site remediation in case the remediation objectives have not been reached.

ADDITIONAL COMMENTS

1. Please provide a definition of "Type B hydrocarbon contaminated soils".

GN-02: Archaeological Program	
Department	Culture and Heritage
Organization	Government of Nunavut
Subject/Topic	DEW Line Sites Water Licence Renewals
References	<ul style="list-style-type: none"> NIRB Notice of Screening
CONCERNS	
<p>The Department of National Defence is proposing the DEW Line Sites Water License Renewals Project in a continued effort to carry out remediation work at four Dew Line sites: (1) Fox-M site in Hall Beach; (2) CAM-3 site in Shepherd Bay, 50km south of Taloyoak; (3) CAM-M 3km west of Cambridge Bay; (4) DYE-M Cape Dyer 150 km southeast of Qikiqtarjuaq. The proponent intends to construct a hydrocarbon landfarm at each of the sites. The activities put forward include the following: 1) construction of hydrocarbon landfarms; 2) construction of access roadways; 3) operation of heavy vehicles and equipment; 4) decommissioning of landfarming operations.</p> <p>A search of the Nunavut Archaeological Site Database indicates that there are recorded archaeological sites in the immediate vicinity of the four project areas. This however does not preclude the presence of additional unidentified sites or cultural features.</p> <ul style="list-style-type: none"> Fox-M (Hall Beach). Survey carried out in 1990 identified two (2) sites. CAM-3 (Shepherd Bay). Systematic survey carried out in 2006 identified twenty-one (21) sites within the project activity area. CAM-M (3km west of Cambridge Bay). Surveys conducted in 1990 and 1998 identified eight (8) sites in the vicinity of project area. DYE-M (Cape Dyer). A survey in 1990 identified seven (7) sites within the project activity area. <p>Nunavut site records categorize some of these sites as having high cultural significance. For instance, in Hall Beach one site consists of over thirty features and is considered to be the original settlement of Hall Beach. At DYE-M and CAM-3 burial sites are recorded within the project footprint. At the four locations, several sites have been identified to be at risk from future project activities.</p>	
SUGGESTIONS AND RECOMMENDATIONS	
<p>The Department of Culture and Heritage recommends that a robust archaeological program be carried out to record the archaeological sites and implement appropriate mitigation measures.</p> <ol style="list-style-type: none"> The proponent should hire a qualified archaeologist and applies for Class 2 permits (four 	

permits) in order to conduct archaeological field assessments and to mitigate any potential impact to archaeological sites located at the Fox-M, CAM-3, CAM-M and DYE-M sites.

2. No activities should be conducted in the vicinity (50 m buffer zone) of any archaeological/historical sites. If archaeological sites or features are encountered, activities should immediately be interrupted and moved away from this location. Each site encountered needs to be recorded and reported to the Government of Nunavut Territorial Archaeology Office.

All archaeological and palaeontological sites in Nunavut are protected by law. The applicant must understand that it is their responsibility to ensure that no heritage resource sites are disturbed in the course of their activities. No person shall alter, or otherwise disturb an archaeological site, or remove any artifact from an archaeological site. Moreover, the building of inuksuit is not recommended.

ADDITIONAL COMMENTS

N/A