



October 13th, 2021

Richard Dwyer
Manager of Licensing
Nunavut Water Board
P.O Box 119
Gjoa Haven, NU X0B 1J0

Re: 2AM-WTP1830 Agnico Eagle Mines – Whale Tail Project Responses to Landfarm Design Report & Landfarm Design Management Plan Comments

Dear Mr. Dwyer,

As requested, the following responses are intended to address the comments made in the below letter:

- September 28, 2021; Landfarm Design Report & Landfarm Design Management Plan CIRNAC Comments– Water License 2AM-WTP1830.
- September 28, 2021; Landfarm Design Report & Landfarm Design Management Plan ECCC Comments– Water License 2AM-WTP1830.

Should you have any questions or require further information, please do not hesitate to contact us.

Regards,

Alexandra Ozaruk
Alexandra.ozaruk@agnicoeagle.com
819-759-3555
Compliance Counselor

1 CIRNAC Comments

Comment 1: CIRNAC has reviewed the Landfarm Design Management Plan V2 and the Landfarm Design report provided by AEM and notes that a Summary of Landfarm activities and records to be kept appears in Table 6.2, page 24 of the Design Report.

This table details certain tasks, their frequency, and the associated records to be kept related to those tasks however it fails to identify the responsible party for each activity. Additionally, the responsibility for reporting on these activities is also not clearly defined for the reviewer.

Agnico Eagle's Response:

Agnico Eagle acknowledges CIRNAC's comment regarding the inclusion of the responsible parties for each activity outlined in Table 6.2 of the Landfarm Design Report. The Environment Department is the main responsible party for all of the below activities and will work in collaboration with other department to ensure an efficient operation. Below is an updated table defining this information for the reviewer.

As mentioned in the Landfarm Design and Management Plan, a report of landfarm activities will be prepared annually by the Environment Department and provided as part of the Meadowbank Complex annual report.

Activity	Analysis	Frequency	Record	Responsible Party
Excavation of spill and transport of contaminated material	If unsure of full excavation - F1-F4, BTEX	As needed	Date, time and location of spill and excavation; estimated quantity of excavated soil; storage/disposal location of excavated soil, if applicable; any evidence of remaining product	All department with guidance from Environment Department
Contaminated soil additions to landfarm	If contaminant source unknown, F1- F4, BTEX, metals, oil and grease, VOCs (at discretion of Environment Department)	Prior to soil addition at facility	Date and time; quantity of soil; original location; landfarm location; spill/excavation record # or storage container label	Energy and Infrastructure with guidance from Environment Department
Soil aeration	N/A	Min. once during summer	Date and time of the aeration; location; soil	Energy and Infrastructure with guidance

			condition (moisture, odour, etc.)	from Environment Department
Soil treatment with sewage sludge as nutrient supplement	Visual inspection to ensure proper incorporation	At least once during summer on selected windrows	Date and time; quantity of soil; original location; landfarm location; spill/excavation record # or storage container label	Energy and Infrastructure with guidance from Environment Department
Ponded contact water	Water Licence 2AM-WTP1830 Group 4	Prior to any dewatering, if reused in landfarm, no sampling necessary	Date and time, location, laboratory report	Energy and Infrastructure and Environment Department
Sampling for progress of remediation	Hydrocarbon vapour in headspace (by PID); F1-F4 BTEX (laboratory)	Vapour – as needed; Laboratory - annually	Date and time; location; odour; laboratory report	Environment Department
Soil removal from landfarm	Removal subject to meeting GN criteria	Once GN criteria are met	Date and time; location; quantity of soil removed; final location	Energy and Infrastructure with guidance from Environment Department
Identification of maintenance requirements	Visual inspection of landfarm	Twice over the summer	Inspected areas; condition of berm and base; previously unidentified safety concerns	Environment Department

2 ECCC Comments

2.1 Landfarming Aviation Fuel Reference:

Reference: Whale Tail Pit Landfarm Design and Management Plan, Version 2 (August 2021)

Comment 1: Per Section 3.1 (Acceptable Materials) of the Landfarm Management Plan, aviation fuel (Jet A) is one of the products that may be treated at the landfarm. It is ECCC's understanding that Jet A is a kerosene-based fuel; however, it is unclear whether additional constituents/additives could be present in the Jet A fuel. The landfarm management plan should provide additional detail in this respect.

Recommendation 1: ECCC recommends that the following information be provided in the Landfarm Management Plan:

- Identify the constituents contained in aviation fuel (Jet A) and indicate whether these constituents are amenable to landfarming; and
- Clarify whether and how the proposed soil remediation criteria and effluent discharge criteria address all contaminants of potential concern that may be present in aviation fuel (Jet A).

Agnico Eagle's Response:

According to the Safety Data Sheet (SDS), Jet A is composed of a complex mixture of petroleum hydrocarbons, with the primary constituent being kerosene. Kerosene is a petroleum hydrocarbon and is included in The Federal Contaminated Sites Landfarming Guidelines as a suitable contaminant type for remediation.

Appendix 3 of the Government of Nunavut (GN) Guidelines for Contaminated Site Remediation (GN, 2009) explains that "Petroleum products typically contain thousands of compounds in varying proportions". Therefore, it is unreasonable to identify all constituents contained in Jet A. However, trace constituents of note that could potentially be included in Jet A are as follows: benzene, toluene, ethylbenzene, xylene, and naphthalene.

Benzene, toluene, ethylbenzene, and xylene (BTEX) are referenced in the Whale Tail Landfarm Management Plan in Table 3. The concentration of these substances will be tested in accordance with the GN Remediation Guidelines prior to any removal of soil from the landfarm.

Table 3 - Summary of relevant GN Tier 1 Soil Remediation Criteria for Surface Soil

	Land Use Criteria (mg/kg)	
	Agricultural/Wildlife	Industrial
<i>Benzene</i>	<i>0.03</i>	<i>0.03</i>
<i>Toluene</i>	<i>0.37</i>	<i>0.37</i>
<i>Ethylbenzene</i>	<i>0.082</i>	<i>0.082</i>
<i>Xylene</i>	<i>11</i>	<i>11</i>
<i>PHC Fraction 1</i>	<i>30</i>	<i>320</i>
<i>PHC Fraction 2</i>	<i>150</i>	<i>260</i>
<i>PHC Fraction 3</i>	<i>300</i>	<i>1,700</i>
<i>PHC Fraction 4</i>	<i>2,800</i>	<i>3,300</i>

Naphthalene is included in Table 4 of the Whale Tail Landfarm Management Plan as a polycyclic aromatic hydrocarbon. The concentration of this substance will be tested in accordance with the GN Remediation Guidelines prior to any removal of soil from the landfarm.

Table 4 - Summary of relevant remediation criteria for PAHs

	Land Use Criteria (mg/kg soil)	
	Agricultural/Wildlife	Industrial
<i>Benzo-a-pyrene</i>	<i>0.1</i>	<i>0.7</i>
<i>Naphthalene</i>	<i>0.1</i>	<i>22</i>

Agnico Eagle believes that soil remediation criteria and effluent discharge criteria outlined in the Landfarm Management Plan, and align with the Water License 2AM-WTP1830, is robust and addresses contaminants of potential concern.

It is important to note that the quantity of Jet-A fuel that is expected to be transferred to the landfarm is negligible in comparison to diesel or other oils. This is not a common product that is spilled at either the Meadowbank or Whale Tail projects.