



Reference: 329707

Date: September 20, 2018

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Dear Sirs:

Re: Request for Comments on Possible Approval Conditions for Cobble Hill Landfill Updated Final Closure Plan Report

As you are aware, in accordance with Spill Prevention Order MO1701, Minister Heyman is considering whether or not to approve the Cobble Hill Landfill Updated Final Closure Plan (prepared by Sperling Hansen Associates Inc., dated July 21, 2017) and what conditions would be included, should the plan be approved. The alternative under consideration is to reject the Updated Final Closure Plan and consider other options including removal and disposal of the soil at an authorized facility elsewhere.

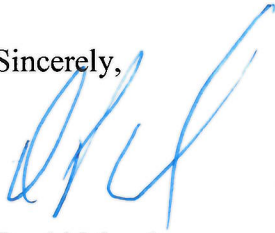
Attached is a draft conditional approval letter we are developing for Minister Heyman's consideration. We would appreciate any comments you may have on the letter and conditions by October 1, 2018. We would also appreciate receiving any additional commitments you are willing to undertake to ensure that the environment and human health are protected in and around the Cobble Hill Landfill. Your comments will be included in the package of materials

provided to Minister Heyman for consideration of whether or not to approve the Updated Final Closure Plan.

Please also note that in the future the Ministry would be willing to receive information, following implementation of the Updated Final Closure Plan if it is approved, as to whether one or more of the Named Parties should continue to be named to the Spill Prevention Order, and to make recommendations to the Minister based on this information, as appropriate.

If you have any questions please feel free to contact me or AJ Downie, Director South Authorizations.

Sincerely,



David Morel
Assistant Deputy Minister
Environmental Protection Division
Ministry of Environment and Climate Change Strategy

Attachment: Draft Letter for Consideration

Draft Letter for Consideration

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Dear Sirs:

Re: Second amended Spill Prevention Order MO1701, dated June 29, 2017 – Updated Final Closure Plan (Cobble Hill Landfill Updated Final Closure Plan Report, prepared by Sperling Hansen Associates Inc., dated July 21, 2017)

I previously approved portions of the Cobble Hill Landfill Updated Final Closure Plan Report, prepared by Sperling Hansen Associates Inc., dated July 21, 2017 (the “Updated Final Closure Plan”), comprising of the minor construction works and the environmental monitoring program, with conditions, as specified in my letters of August 11, 2017, and September 18, 2017. I am informed the minor construction works were completed in September and October 2017.

Pursuant to section 2 of the second amended Spill Prevention Order MO1701, dated June 29, 2017 (the “SPO”), I hereby approve the remaining portions of the Updated Final Closure Plan, with the following conditions:

- 1) Construction activities for implementation of the Updated Final Closure Plan must be commenced on or before June 1, 2019. Construction activities must be completed in accordance with the approved construction activities work plan and implementation schedule referenced in condition 3) of this approval as soon as possible following commencement, and no later than September 30, 2019.
- 2) Before November 15, 2018, a comprehensive pre-winter inspection of the landfill (including but not limited to all pollution control works and monitoring sites) must be conducted, and any identified maintenance and upgrades must be completed under the supervision of a Qualified Professional acceptable to the Ministry. Findings from the comprehensive inspection and details of any upgrades completed must be documented in the November 15th status report that is to be submitted to the Ministry in accordance with SPO. The report must be certified by a Qualified Professional acceptable to the Ministry.
- 3) Before the commencement of construction activities or November 30, 2018, whichever is earlier, a report certified by a Qualified Professional acceptable to the Ministry must be submitted to the Ministry for review and approval. The report must include:
 - a) Any revisions to the closure activities to reflect the completed minor construction works and current site conditions.
 - b) Clear and detailed descriptions regarding how the comments, conclusions and recommendations in the GHD reports (GHD Final Report following Completion of the 2017 Minor Works, dated December 11, 2017, and GHD Clay Basal Liner Evaluation, dated December 11, 2017), will be addressed during the construction activities, including:
 - i) For areas of the existing secondary clay base liner that will be exposed during construction activities, a description of the inspections, sampling, testing, assessments and work, that will be conducted to demonstrate substantial conformance with the specifications for a secondary compacted clay liner as specified in the Landfill Criteria for Municipal Solid Waste Second Edition June 2016 (section 5.4, page 17) including:
 - Soil containing minimum 25 percent clay and minimum 60 percent silt and clay by weight.
 - A minimum compacted thickness of 750 mm. Thickness is to be measured perpendicular to the slope.
 - Compacted hydraulic conductivity of 1×10^{-7} cm/sec or less.
 - Organic carbon content of at least 0.1 percent.
 - Clay structure and permeability to remain stable when exposed to leachate.
 - ii) For the new secondary clay base liner extension, a description of how it is to be placed and compacted against the existing secondary clay base liner such that a competent seal with no leaks is established, and a description of the inspections, testing, assessments and work, that will be conducted as per subparagraph i) above.

- iii) A description of how GHD comments regarding clay mineralogy that under certain circumstances could affect clay permeability, will be addressed.
 - iv) The Updated Final Closure Plan proposes use of the existing smooth geomembrane cover liner on the landfill top plateau, and installation of a new double textured geomembrane cover liner on the landfill side slopes. If it is still proposed to use the existing smooth geomembrane cover liner on the landfill top plateau, then technical justification that supports this use must be provided including consideration of damage/degradation from exposure to the environment including sunlight since Fall 2016, liner specifications, inspections, and any necessary sampling, testing and repairs.
- c) A complete, consolidated and updated post closure monitoring program (section 9 of the Updated Final Closure Plan) that includes:
- i) Post closure inspections, operations, maintenance, monitoring, environmental monitoring, and reporting.
 - ii) An updated environmental monitoring program that addresses the recommendations in the attached “Environmental Monitoring Program Recommendations from Staff”, and conditions 4 and 5 of my letter dated August 11, 2017. Monitoring in accordance with the updated environmental monitoring program, and reporting, must commence for existing monitoring sites on or before January 1, 2019, and for new monitoring sites on or before April 1, 2019.
 - iii) The duration of the post closure period during which time post closure inspections, operations, maintenance, monitoring and environmental monitoring, must be conducted and reported in accordance with section 6 of the SPO, is subject to review and future approval by the Minister.
 - iv) A description and tabular summary of the post closure monitoring plan and the implementation reports and records that will be reported in accordance with section 6 of the SPO.
- 4) Before the commencement of construction activities or March 31, 2019, whichever is earlier, a detailed construction activities work plan and implementation schedule certified by a Qualified Professional acceptable to the Ministry must be submitted to the Ministry for review and approval. The construction activities work plan and implementation schedule must identify the timing of all construction activities, and the corresponding name(s), professional designation(s), experience, knowledge and education, of the Qualified Professional(s) to be continuously present on-site to supervise all construction activities, in accordance with section 3 of the SPO.
- 5) Before the commencement of construction activities or April 30, 2019, whichever is earlier, the Named Parties must: (a) advertise and hold two local public meetings to provide information to the public on the requirements of the SPO and the approved Updated Final Closure Plan with conditions and the efforts that will be made in the implementation of the

Updated Final Closure Plan to ensure that the environment is protected, and (b) provide a summary of the questions and answers from these meetings to the Ministry.

- 6) The semi-monthly status reports submitted pursuant to section 4 of the SPO must also include:
 - a) Identification of any deviations from the construction activities work plan and implementation schedule referenced in condition 3) of this approval,
 - b) The planned activities (and associated timing) for the next reporting cycle, and
 - c) The environmental monitoring program laboratory reports and tabulated results.

I reserve the right to amend the above conditions as circumstances warrant.

The Ministry of Environment and Climate Change Strategy (the "Ministry") publishes regulatory documents on its website for the purpose of research, public education and to provide transparency in the administration of environmental laws. The Named Parties acknowledge that the Ministry may publish any documents prepared or submitted (including data and reports) under the SPO (including this approval), excluding information that would be excepted from disclosure if the document was disclosed pursuant to a request under section 5 of the *Freedom of Information and Protection of Privacy Act*.

The requirements of the SPO remain in full force and effect. In accordance with section 3 of the SPO, the Named Parties must carry out all closure activities set out in the approved Updated Final Closure Plan in accordance with the conditions of this approval. Failure to comply with the requirements of the SPO is a contravention of the *Environmental Management Act* and may result in legal action.

Please be advised that the Ministry may have a staff person or ministry hired contractor on site at any time and during the conduct of any work that the ministry deems appropriate. In addition, ministry staff or a ministry hired contractor may be on site to inspect any works or installations prior to those works or installations being completed and removed from plain view. The Ministry may also have ministry staff or ministry hired contractors observe and monitor some or all of the closure activities at the site, and collect samples of the clay layer, contaminated soil, leachate, surface water and/or groundwater as needed. Should any information be needed by the staff and/or contractors to inform their observations and/or assess compliance, it is expected that the information is provided in a timely manner to those staff.

Sincerely,

George Heyman
Minister

Attachment - Environmental Monitoring Program Recommendations from Staff

ARCS: 280-30
ORCS: MO1701

DRAFT

Attachment - Environmental Monitoring Program Recommendations from Staff

1. A conceptual groundwater model should be developed for the landfill. The model should describe the groundwater system and guide its monitoring program. The model should be periodically updated with the monitoring data and any additional information (e.g. drilling).
2. Two shallow bedrock monitoring wells should be installed near and downslope from the landfill. The wells should be installed within the uppermost portion of the water-bearing bedrock. The wells should be advanced using a diamond core drilling method or similar methods that can ensure that the wells are screened within fracture zones.
3. Water collected from the newly installed background well MW-6 is very hard and reports detectable hydrocarbon concentrations, and therefore its use for background comparison may be limited. Instead, background groundwater quality benchmarks should be developed from the historical data set.
4. The groundwater quality monitoring network should be modified to only include the seepage wells, new shallow bedrock wells and surface water monitoring site (SW-1) at the ephemeral creek. SW-1 should be monitored at the same frequency as groundwater wells. If notable changes in groundwater quality are observed after the landfill closure, the other existing monitoring wells should be re-introduced to the monitoring network.
5. Groundwater levels should be routinely collected at all existing and new groundwater monitoring sites, including at the seepage blanket monitoring wells. Those well should also be surveyed for elevation to allow for a geodetic water level monitoring.
6. Since the interflow is controlled by precipitation which can dilute the water chemistry, the seepage blanket monitoring wells should be sampled either prior to large precipitation events or sometime after such events.
7. Piper diagrams should be used to characterize the leachate and all water samples. The diagrams and their interpretations should be routinely reported.
8. The Environmental Monitoring Plan should identify actions to be implemented (e.g. confirmatory sampling, monitoring program(s) adjustments, additional studies, mitigating actions, etc.) if results from the groundwater and surface water monitoring sampling show elevated values of parameters, or if analysis of results (e.g. Piper diagrams) reveal increasing trends or other shifts in water quality.