



Allterra Construction Ltd  
2158 Millstream Road, Victoria BC  
V9B 6H4

Dec 19, 2018

Via email: David.Morel@gov.bc.ca

Dear Mr. Morel,

Thank you for your consideration and recent Ministry consultation with regards to development of an Updated Final Closure Plan for 460 Stebbings Road Cobble Hill Holdings (the "Site"). This letter formally addresses your requests documented in Sections 2 and 3 of the "*Draft Letter for Consideration*" (the "Letter") prepared in September 2018 by Ministry staff. Also, a formal request is made by Allterra Construction Ltd on behalf of Cobble Hill Holdings Ltd to extend the due date for final submission to January 31, 2019. We appreciate that this new due date has been discussed and approved verbally by yourself and welcome the opportunity to discuss and work with Ministry staff directly prior to final submittal.

Pursuant to Section 2 of the Letter, a comprehensive pre-winter inspection of the landfill was completed on November 19, 2018 and discussed with you at our meeting on November 28, 2018. The inspection was submitted formally in our package for Ministry staff on December 12, 2018 as per your letter on November 6, 2018 and is attached to this email.

Pursuant to Section 3 of the Letter, and for your approval, please see the attached letter of agreement form QEP Sperling Hansen Associates to Allterra Construction Ltd. regarding the Updated Final Closure Plan scope of work. Sperling Hansen has worked on the Site with Allterra Construction Ltd. previously as QEP during the Site's 2017 Minor Construction Works and have worked with Cobble Hill Holdings Ltd. on previous closure plan documentation. Sperling Hansen brings a team of qualified professions knowledgeable in landfill development and closure. We would appreciate your approval.

Once again, as our goal is to create a successful closure plan and take full advantage of Ministry consultation, we formally ask that you extend the final submission end date to January 31, 2019.

Please find the attached:

- Cobble Hill Holdings Ltd. 460 Stebbings Road-**Winter Liner Inspection November 19, 2018**
- Cobble Hill Landfill Updated Closure Plan – **Consulting Services**

Yours sincerely

**ALLTERRA CONSTRUCTION LTD.**

CC: [Tessa.Graham@gov.bc.ca](mailto:Tessa.Graham@gov.bc.ca); [AJ.Downie@gov.bc.ca](mailto:AJ.Downie@gov.bc.ca); [mike@chholdings.ca](mailto:mike@chholdings.ca); [marty@chholdings.ca](mailto:marty@chholdings.ca); [raymond@allterraconstruction.ca](mailto:raymond@allterraconstruction.ca); [todd@allterraconstruction.ca](mailto:todd@allterraconstruction.ca); [gary@allterraconstruction.ca](mailto:gary@allterraconstruction.ca)



# SPERLING HANSEN ASSOCIATES

- Landfill Engineering
  - Solid Waste Planning
  - Environmental Monitoring
  - Landfill Fire Risk Control
- 

December 12<sup>th</sup> 2018

PRJ18074

## **Re: Cobble Hill Landfill Updated Closure Plan – Consulting Services**

To Whom It May Concern:

This letter is to confirm that Sperling Hansen Associates (SHA) has entered into agreement with Allterra Construction Ltd. (Allterra) to complete the updated Closure Plan for the Cobble Hill Landfill. SHA and Allterra have a Contractor-Consultant Agreement in place with regards to the scope of work outlined in the Contract.

Please do not hesitate to contact the undersigned with any questions or comments related to the above-mentioned works.

Sincerely,

Scott Garthwaite, ASCT  
Office Manager



# ISLANDER ENGINEERING

## Memorandum

Date: November 19, 2018

To: ALLTERRA Construction Ltd.  
2158 Millstream Road  
Victoria, BC V9B 6H4

Project: 2087

**Attention: Todd Mizuik**

RE: Cobble Hill Holdings Ltd. 460 Stebbings Road-Winter Liner Inspection November 19, 2018

### 1.0 INTRODUCTION

Islander Engineering Ltd. (IEL) has been retained by ALLTERRA Construction Ltd. to provide a pre-winter liner inspection for the 2018 season for Cobble Hill Holding Ltd. 460 Stebbings Road (the "Site"). IEL staff conducted a thorough inspection **of the Site's Permanent Encapsulation Area (PEA)** on November 19, 2018.

Specifically, the winter liner inspection was conducted to verify the status of the liner as exposed to direct sunlight from Oct 2016 to the present date (approximately 2 years), inspect pollution control works, and inspect monitoring sites.

Previously, Qualified Professional (QP) reports made by Sperling Hansen Associates on January 30, **2017** and GHD on Dec 31, 2017 indicate that *"The liner system will provide an adequate closure system for the cell for up to approximately five years, with direct exposure to ultra-violet radiation"* and that *"Concentrations of leachate indicators in the on-Site groundwater monitoring wells have remained relatively stable since landfilling began indicating that progressive deterioration of water quality from a leachate source has not occurred,"* respectively.

A QP water quality report made April 2018 by ALLTERRA Construction Ltd. is attached and concludes **that the liner system of the Site's PEA is functioning as designed** with no degradation of surrounding water quality observed.

Consideration was taken by IEL staff to fully inspect the PEA liner for any possible liner degradation presumably caused by the effects of UV radiation, and additionally, wildlife, and surface water

erosion. The presence of odours and any signs of vegetation toxicity or stress were also documented. IEL inspected liner seams for tearing and robustness.

## **2.0 Potential Causes for Liner Degradation**

### **2.1 UV Radiation**

The entire liner system, including the surface and faces, were inspected for signs of stretching and heat degradation caused by UV radiation. The liner system appeared smooth throughout showing no signs of warping or stretching on all faces. Small folds were noted to exist on North and East faces that have likely accommodated small movements of the liner during its installation (Photo 1). To investigate the likelihood of stretching as a cause of these small folds, IEL removed tires and geotextile membranes that lay overtop the liner system in the surface water ditch systems. This is the most likely area where stretching would occur as ditches are weighted down by tires and sand bags.

Ditches were observed as lined with tires and sand bags placed upon geotextile fabric followed by the PEA liner underneath. Tires, sandbags, and fabric were removed to show no signs of tearing, stretching, or warping (Photos 2 and 3).

### **2.2 Wildlife**

Evidence of wildlife in the forms of hoof prints, feces, bird nesting, burrowing, were devoid on the entire PEA including surface and faces (Photo 4, 5, 6). There were no signs of wildlife markings including punctures or nesting on the liner itself, however, wildlife marking can be shown to track **along the North and South toes in the ditch systems located outside the PEA's footprint** (Photo 7).

### **2.3 Surface Water Erosion**

The surface contours and ditch systems of the PEA appear to promote adequate drainage of surface waters from the PEA with minimal surface pooling observed (Photo 8). Signs of abrasion are devoid on the liner itself including PEA surface ditch works. Erosion caused by PEA surface water to ditch works designed to transfer water from the south east corner to the southwest corner and onto the surrounding property is not evident (Photo 9), however, there are small signs of minimal erosion to the quarry most noticeably at the toe of the NW corner (Photo 10).

### **2.4 Odours**

There were no odours perceived at the time of inspection.

### **2.5 Vegetative Toxicity or Stress**

Signs of vegetative toxicity or stress including soil discoloration were devoid along the outer perimeter of the PEA indicating that it is functioning as designed. Vegetation in the form of grasses,

small weeds, small shrubs appear within surface water ditch works along the outer quarry perimeter of the PEA (Photo 11, 12, 13).

## 2.6 Liner Seam Robustness

Seams were inspected throughout the PEA including those welded during the minor construction works during the fall of 2017. Original seams welded by the liner manufacturer were also inspected including others that could be visually detected. Seams show no sign of degradation (Photo 14, 15, 16, 17, 18). Extrusion welds were observed to hold strong with no observable deterioration. Additionally, water was devoid within the liner system itself i.e. there was no pooling within the liner system at all toes along the perimeter.

## 2.7 Pollution Control Works and Monitoring Sites

The site's PEA design contains redundancy in pollution control i.e. the liner system is primary pollution control and a clay basal liner poses as redundant secondary control. Detailed liner inspection is presented above in this report. The clay basal liner is discussed in the GHD Dec 11, 2017 report entitled Clay Basal Liner Evaluation **who report** *"GHD does not have any fundamental concerns regarding the adequacy of the basal clay liner in relation to the protection of human health and the environment based on the information reviewed and data obtained during the clay liner investigation."* A QP water quality report made in April 2018 by ALLTERRA Construction Ltd. is **also attached and concludes that the liner system of the Site's PEA is functioning** as designed with no degradation of surrounding water quality observed.

Monitoring sites are maintained well. Surface water stations SHA-SW-2 and SHA-SW-1 are shown **in Photo's 19 and 20 respectively** and show natural foliage. The leachate/leak detection enclosure and piping system is shown in Photo 21. IEL did not observe any soil discoloration or vegetative stress surrounding the closure. Monitoring wells are encased in metal housing and show no signs of deterioration.

## 3.0 Conclusion

The PEA liner system and monitoring stations at Cobble Hill Holding Ltd. 460 Stebbings Road appear to be in very good condition and well maintained. The liner system shows no signs of UV radiation deterioration. Liner seams are intact and show no signs of degradation. Surface contours and ditches are observed to promote adequate drainage of surface waters to limit storm water ponding and minimize quarry erosion. The liner system appears to be functioning as designed in controlling pollution to the surrounding environment.

During this inspection, it was noted that there were no perceivable effects on the liner caused by UV radiation including stretching, warping, tearing, or puncturing of any kind. Additionally,

contours of the PEA seem to be a sufficient deterrent to wildlife encroachment as wildlife track marks were devoid on the PEA itself and concentrated within the perimeter quarry ditch works.

Odours were not present on the PEA at the time of inspection nor observed throughout semi-monthly inspections from September 2017 to the present. Further, vegetative stress or discoloration of soil was not observed directly outside the PEA footprint and including leachate piping and secondary containment indicating the CHH PEA system is functioning as designed.

Please contact the undersigned with any questions.

ISLANDER ENGINEERING LTD.

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## **Photos**





**Photo 1 – PEA North Face Liner Folds**





Photo 2 – PEA East-West Surface Ditch System



Photo 3 – PEA North-South Surface Ditch System



Photo 4 – PEA East Face- Evidence of Wildlife is devoid on the liner system





Photo 5 – PEA North Face- Evidence of Wildlife is devoid on the liner system



Photo 6 – PEA South-East Surface- Evidence of Wildlife is devoid on the liner system





Photo 7 – Wildlife track marks outside of the PEA-Base of north toe



**Photo 8 – Minimal ponding of surface waters is observed**





Photo 9 – South ditch erosion is not present





Photo 10 – Slight erosion of the quarry is noted at the NW toe-the liner is fully sealed at this location





Photo 11 – Grasses, weeds, small shrubs are present along the PEA perimeter-SE crest



Photo 12 – Grasses, weeds, small shrubs are present along the PEA perimeter





Photo 13 – Grasses, weeds, small shrubs are present along the PEA perimeter



Photo 14 – Liner seams show no signs of deterioration



Photo 15 – Liner seams show no signs of deterioration





Photo 16 – Liner seams show no signs of deterioration



Photo 17 – Liner seams show no signs of deterioration



Photo 18 – Liner seams show no signs of deterioration





Photo 19 – Monitoring site SHA-SW-2





Photo 20 – Monitoring site SHA-SW-1



Photo 21 – Monitoring site Leachate and Leak Detention piping and enclosure