May 12, 2017 Reference No. 088877

Mr. Allan Leuschen
Senior Environmental Protection Officer
Authorizations – South
Environmental Protection Division
Ministry of Environment
2080 Labieux Road
Nanaimo, BC V9T 6J9

Dear Mr. Leuschen:

**Re: Location and Volume of Existing Waste**
**Upland Landfill**
**7295 Gold River Highway, Campbell River, British Columbia**

GHD Limited (GHD) is submitting this letter to the Ministry of Environment (MOE) on behalf of Upland Excavating Ltd. (Upland) as a response to item 6 in the letter entitled "*Application for an Operational Certificate under the Environmental Management Act on behalf of Upland Excavating Ltd. (Upland),"* dated October 6, 2016 (Letter). A copy of the Letter is presented as Attachment A.

## 1. Background

GHD Limited (GHD) is submitting this letter to the Ministry of Environment (MOE) on behalf of Upland Excavating Ltd. (Upland) in support of the Waste Discharge Application (Application) submitted on May 27, 2016 for the Upland Landfill (Landfill). The Application is filed under Tracking Number 335965 and Authorization Number 107689. The following technical reports were submitted in support of the Application to present the design, technical studies, and investigations completed by GHD and Upland:

- Technical Assessment Report
- 2016 Design, Operation, Closure Plan
- Hydrogeology and Hydrology Characterization Report
- 2016 Geotechnical Investigation Report

The MOE submitted a letter to GHD, dated October 6, 2016, requesting additional information related to the Application. GHD responded with a proposed approach and timeline in a letter dated December 7, 2016. This letter has been prepared in accordance with GHD's letter, dated December 7, 2016, to address Item 6 of the MOE's additional information request, requesting *the location, volume and waste type of any on-site landfill(s) and confirmation that they will be relocated into the proposed lined landfill.*

**GHD**
10271 Shellbridge Way Suite 165 Richmond British Columbia V6X 2W8 Canada
**T** 604 214 0510 **F** 604 214 0525 **W** www.ghd.com

## 2. Existing Landfill Permit

The existing Upland Landfill (Existing Landfill) is located at 7295 Gold River Highway (Upland Property). The Existing Landfill is operated under Permit PR-10807, issued on June 1, 1992 (Permit). The Permit allows for the discharge of 3,200 cubic metres of waste per year. The permitted waste includes inert municipal waste as follows:

- Stumps
- Trees
- Land clearing waste
- Selected building demolition debris
- Residue of combustion from the open burning of wood waste

The Permit allows for up to four burns year. The maximum quantity of wastes to be burned in each burn event was 750 cubic metres per year. The ash and burn residue was included in the annual waste volume.

The Permit also encourages the segregation of material for recycling and reuse, where possible.

## 3. Waste Discharge Area

The waste discharge area is located in the southeast portion of the Upland Property, adjacent to the burn area, as shown on Figure 1. The estimated area of the waste discharge area is approximately 7,000 square meters. The waste layer is estimated to have a thickness of up to approximately 5 meters. The estimate volume of waste is approximately 35,000 cubic metres, broken down as follows:

The volume of waste in this area is broken down as follows with an estimated volume of approximately 35,000 cubic metres:

- Land clearing waste – approximately 25,000 cubic metres
- Residue of combustion – approximately 10,000 cubic metres

## 4. Other Materials

Upland undertakes waste diversion by segregating reusable materials for recycling and reuse. Concrete and asphalt are the two of the principal materials segregated for re-use, such as an aggregate alternative or admixture. The location of the stockpiles of re-covered concrete and asphalt are shown on Figure 1.

## 5. Relocation of Existing Waste

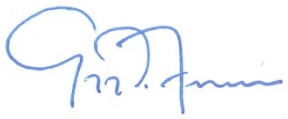
The existing 35,000 cubic meters of waste will be relocated to the lined Landfill once approved and constructed.

The segregated re-covered material will not be relocated to the lined Landfill.

GHD trusts this letter will provide the MOE with the information requested in item 6 of the MOE letter dated October 6, 2016. Should you have any questions or require additional information please do not hesitate to contact the undersigned.

Sincerely,

GHD

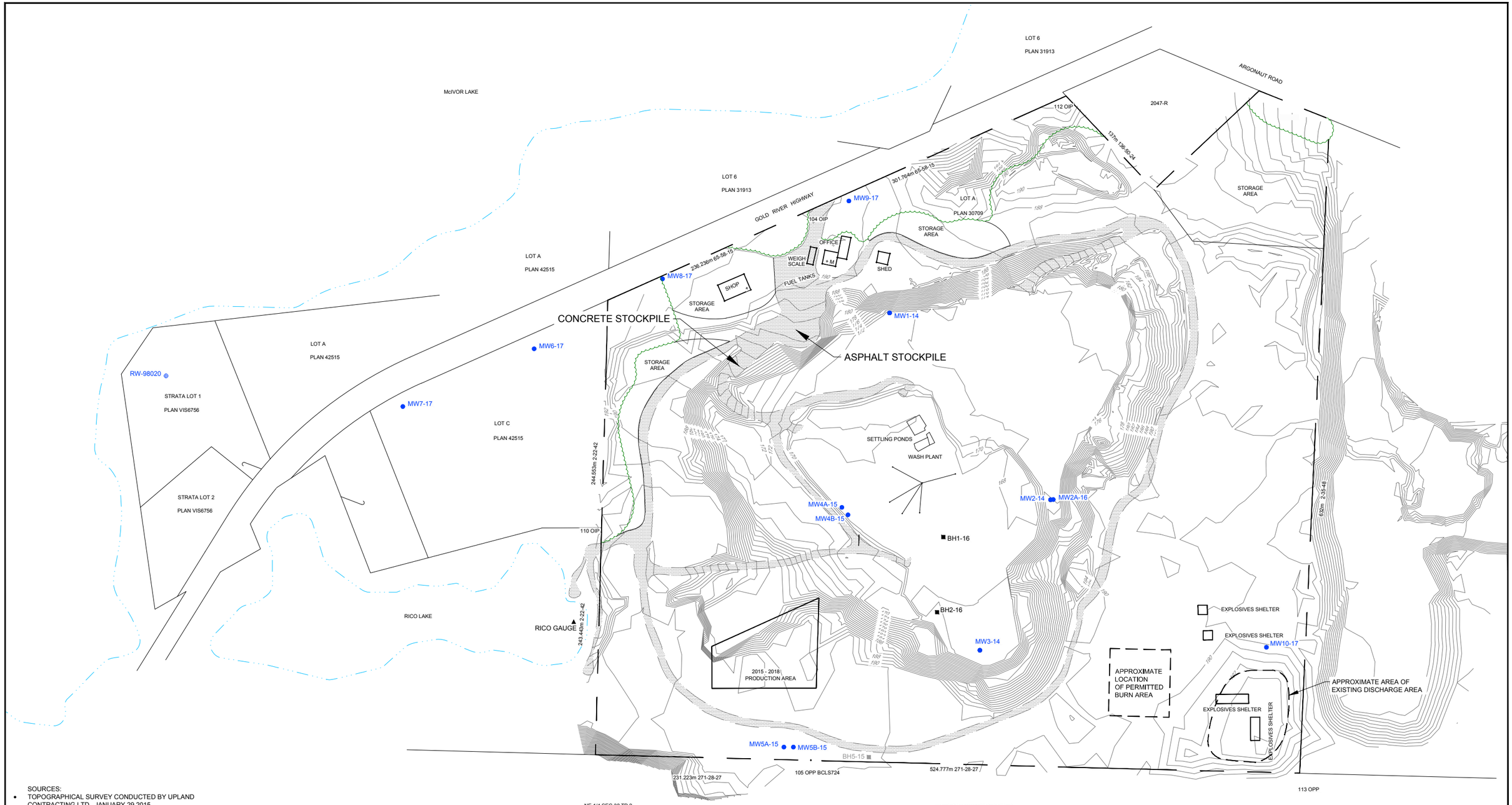


Gregory D. Ferraro, P. Eng. Shauna Sturgeon, P.Eng.

Encl.

cc: Terry Stuart – Upland Excavating Ltd.
Mark Stuart – Upland Excavating Ltd.
Brian Fagan – Upland Excavating Ltd.

# Figures




SOURCES:

- TOPOGRAPHICAL SURVEY CONDUCTED BY UPLAND CONTRACTING LTD., JANUARY 29 2015
- TOPOGRAPHIC SURVEY PLAN OF UPLANDS EXCAVATING GRAVEL PIT CONDUCTED BY McELHANNEY ASSOCIATES LAND SURVEYING LTD. COMPLETED ON NOVEMBER 21ST, 2016.

0 40 80 120m

LEGEND

| | | | |
|---|---|---|---|
| 178 | EXISTING MAJOR CONTOURS | | TREES/VEGETATION |
| | EXISTING MINOR CONTOUR | MW3-14 | EXISTING MONITORING WELL |
| | PROPERTY LINE | RW-98020 | RESIDENTIAL WELL |
| | EXISTING LAKE | BH5-15 | EXISTING BOREHOLE |
| | EXISTING ACCESS ROADWAY | BH5-15 | ABANDONED BOREHOLE |
| | | RICO GAUGE | SURFACE WATER GAUGE |

GHD

UPLAND EXCAVATING LIMITED

# LOCATION OF EXISTING WASTE EXISTING CONDITIONS

88877-03

May 11, 2017

FIGURE 1

CAD File: P:\drawings\88000s\88877\88877-Corr\88877-03(LEUS006)\88877-03(LEUS006)GN\88877-03(LEUS006)GN-WA001.DWG

# Attachment A
# MOE Letter dated October 6, 2016 - Additional Information Request

October 6, 2016

Tracking Number: 335965
Authorization Number: 107689

Gregory D. Ferraro, PEng
GHD Limited
greg.ferraro@ghd.com

Dear Mr. Ferraro,

Re: Application for an Operational Certificate under the Environmental Management Act on behalf of Upland Excavating Ltd. (Upland)

Thank you for the emails of May 27, 2016, and the attached information:

- Waste Discharge Application Form (WDA), May 27, 2016
- Technical Assessment Report (TAR), GHD, May 27, 2016
- Hydrogeology and Hydrology Characterization Report (HHCR), GHD, May 27, 2016
- 2016 Design, Operations and Closure Plan (DOCP), GHD, May 27, 2016
- 2016 Geotechnical Investigation (GEO), GHD, May 27, 2016
- Stakeholder Consultation Summary Report (CONSULT), GHD, May 27, 2016

GHD/Upland also recently initiated a second stakeholder review process.

In response to the information submitted, this letter details the additional information required at this time:

1. Please provide a consultation report with regard to comments/concerns received after the first stakeholder review process, and comments/concerns received as part of the recently initiated second stakeholder review process, including comments/concerns received and GHD/Upland responses.

2. The ministry Landfill Criteria for Municipal Solid Waste, 2nd Edition, dated June 2016 (Landfill Criteria), has recently been finalized and is available at http://www2.gov.bc.ca/gov/content/environment/waste-management/garbage/landfills. Please review the Landfill Criteria and provide confirmation the application/information are in accordance with the Landfill Criteria or any necessary revisions to the application/information to be in accordance with the Landfill Criteria.

3. The HHCR (s. 3.4.2) indicates there are insufficient monitoring points to accurately map the groundwater flow direction within the fractured bedrock aquifer unit; however, it is expected that flow direction will be similar to regional flow which is expected to be to the southeast towards the Quinsam River. The HHCR (s. 3.4.5, 5) also recommends the nature of the bedrock ridge extending from the southwest to

northwest of the Site and the direction and magnitude of groundwater flow between the Site and McIvor and Rico Lakes should be further investigated with three bedrock monitoring wells (MW7-16, MW8-16 and MW9-16) however the DOCP (s. 14, Figure 14.1) Environmental Monitoring Program (EMP) does not include these monitoring wells. After the recommended three bedrock monitoring wells have been installed and sampled/monitored, please provide updated hydrogeological, environmental and technical interpretations, conclusions and recommendations including with regard to the EMP.

4. The HHCR (s. 3.4.5, 4.4 & 5) recommends the installation of one additional monitoring well (MW6-16) in the overburden sand and gravel aquifer near the down-gradient site boundary before landfill development to obtain baseline water quality data, and for assessing site groundwater compliance after landfill development. The DOCP (s. 14, Figure 14.1) includes an EMP that includes 1 down-gradient monitoring well (MW6-16).

   The Landfill Criteria (s. 9) indicate that the EMP shall be developed in accordance with the Guidelines for Environmental Monitoring at Municipal Solid Waste Landfills (Monitoring Guidelines). The Monitoring Guidelines (s. 3.3) recommend a minimum of 1 up-gradient monitoring well (2 are recommended), a well immediately adjacent to the down-gradient edge of the landfill/infiltration basin to enable sampling of 'raw' leachate, and a line of three wells situated down-gradient from the landfill and perpendicular to groundwater flow, and also indicate:
   - To facilitate early contaminant detection, monitoring wells should be located to sample groundwater from the uppermost aquifer, at the closest practicable distance from the site boundary, encompassing all possible routes to detect leachate migration. Monitors at up-gradient and down-gradient locations should generally be installed at two depths; one in the uppermost aquifer and a deeper one to assess vertical hydraulic gradients and the potential for leachate movement to depth.

   Please provide revisions to the EMP in accordance with the Landfill Criteria & Monitoring Guidelines, particularly with regard to a well immediately adjacent to the down-gradient edge of the landfill/infiltration basin, and a line of three wells situated down-gradient from the landfill and perpendicular to groundwater flow.

5. The HHCR (s. 4.1, 5) refers to Contaminated Sites Regulation (CSR) Technical Guidance (TG) 6 “Water Use Determination”, and summarizes the applicable CSR standards and WQGs that apply at the boundary of the Site as follows:
   - CSR Schedule 6 & 10 numerical Drinking Water (DW) standards
   - BC WQGs for DW and freshwater aquatic life (FWAL) along the western property boundary

   The TAR (s. 6.1.1) indicates that the CSR DW standards would apply on-site, the CSR freshwater aquatic life AW standards would not apply at the site boundary as the nearest freshwater aquatic receptor where the groundwater may potentially discharge

to is greater than 500 metres from the on-Site infiltration pond, and the water quality passing the Site boundary will meet the BC WQGs for DW. The DOCP (s. 13.3, Table 13.1) compares groundwater substance concentrations to the BC WQGs for DW.

The Landfill Criteria (s. 4.1) refers to the CSR, Generic Numerical Water Standards for the applicable water use(s) as defined in Protocol 21 "Water Use Determination" (dated December 15, 2015, effective Feb. 1, 2016, supersedes former TG 6 "Water Use Determination" dated July 2010). Protocol 21 (s. 5, Figure 3) also indicates that CSR AW Aquatic life water use applies to groundwater located beyond 500 metres of an aquatic receiving environment if the groundwater contains substances with concentrations above the aquatic life water use standards and has the potential to migrate within 500 metres of the aquatic receiving environment.

Please provide confirmation/assessment of the recommended water quality standards and guidelines that would apply on-site and at the landfill site (property) boundaries, including whether CSR AW standards would apply at the down-gradient landfill site (property) boundary. Please provide a table(s) that compares groundwater substance concentrations to the recommended water quality standards and guidelines.

6. The existing permit authorizes landfilling. Please provide the location(s), volume(s), and waste types of any on-site landfill(s), and confirmation that that all on-site waste will be relocated into the lined landfill.

7. The existing permit authorizes open burning and the DOCP (s. 6.10) proposes continued open burning. The Landfill Criteria (s. 6.6) indicates that "Open burning of wastes at the landfill site is generally prohibited. However, open burning of clean wood and yard waste may be approved in the SWMP, OC or permit if it can be demonstrated to the director that there is no viable alternative such as reuse, recycling, energy recovery, or composting. A technical assessment report satisfactory to the director shall be submitted and the open burning shall be approved in the SWMP, OC or permit. Approval must also be obtained from any other applicable fire protection authorities." Please provide a TAR certified by a qualified professional that demonstrates that there is no viable alternative to open burning, and that the proposed open burning is protective of human health and the environment.

8. The Landfill Criteria (s. 8) indicate that financial security is required for all privately-owned landfills, provides guidance regarding financial security amount, calculation and type, and indicates the DOCP shall include a financial security plan. Please provide a financial security plan in accordance with the Landfill Criteria.

9. The DOCP (s. 8) includes a surface water management plan and indicates that the design criteria make allowances for additional water that may result from snowmelt (s. 8.2.1). The Landfill Criteria (s. 5.6) indicate that the surface water management works shall be designed in accordance with criteria including the design shall make allowances for additional water that may result from snow melt and from prolonged

multi-day precipitation events. Please confirm that the surface water management works design makes allowances for additional water that may result from prolonged multi-day precipitation events.

10. The GEO report recommends leachate level monitoring in the landfill (s. 4.2, 6). The DOCP (s. 9.8.3.2) mentions leachate storage in the landfill and appears to indicate that leachate levels in the landfill will be monitored however the DOCP EMP (s. 14) does not specifically include leachate level monitoring in the landfill. The Landfill Criteria (s. 9 Monitoring Criteria, 9.1) requires leachate level monitoring in the landfill. Please provide revisions to the EMP that include leachate level monitoring in the landfill.

11. The Permit Fees Regulation (s. 3) indicates how the annual fee for a permit is calculated based on the maximum (annual) authorized discharge rate and concentration specified in the permit. Please provide/confirm the proposed maximum (annual) authorized discharge rate for the refuse discharge, and maximum (annual) authorized discharge rate and concentration(s) for the treated leachate discharge.

12. Please provide an electronic pdf siteplan (e.g. 8.5x11 inch, to scale, N arrow, high resolution, colour, clearly shows the landfill site, landfill site boundary, buffer zone, landfill footprint (to nearest 0.01 ha), facilities and works, structures, groundwater and surface water monitoring locations, etc.).

Please provide the information in electronic pdf format to PermitAdministration.VictoriaEPD@gov.bc.ca with a copy to allan.leuschen@gov.bc.ca so that processing of the application may continue. Of course, based on the additional information provided, or any other information, further additional information may be requested in future. If you have any questions or concerns, please contact the undersigned at telephone 250 751 3199 or email allan.leuschen@gov.bc.ca.

Yours truly,

A. Leuschen
Senior Environmental Protection Officer
Authorizations - South

ENCL: None

cc: Terry Stuart, Upland Excavating Ltd. terry.stuart@uplandgroup.ca