



Hemmera Envirochem Inc.

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December 9, 2021
File No. 103468-15

Sunbury River Road Developments LP
Suite 910 – 1055 Dunsmuir Street
Vancouver, BC V7X 1L3

Attention: Max Gordichuck, Development Manager

Re: Performance Verification Plan for North Alpha, 8600 River Road, Delta, BC

1.0 INTRODUCTION

Hemmera Envirochem Inc. (Hemmera) was retained by Sunbury River Road Developments LP to prepare this Performance Verification Plan (PVP) in support of an application for a “risk-based” Certificate of Compliance (CoC) for the property located at 8600 River Rd, Delta, BC. The legal description of the parcel is Part 1 Area north of River Road (387.9 m²) and Part 1 Area (84,350.6 m²) shown on Legal Plan EPP100165, Lot 1, District lot 131, Group 2, New Westminster District.

This PVP identifies: (a) risk controls recommended in the *Human Health and Ecological Risk Assessment Update – North Alpha Landfill, Delta, BC* (Hemmera, 2021); and (b) recommended actions to ensure that these risk controls are implemented and maintained, in order that the Site continues to meet Contaminated Sites Regulation (CSR) risk-based standards for remediation in the future.

This PVP was prepared in accordance with information provided on the BC Ministry of Environment and Climate Change Strategy (ENV) website¹ as well as *Protocol 1 – Detailed Risk Assessment*.

2.0 SITE TYPE

The Site type is **Type 2**, based on the institutional and engineering risk controls recommended in the human health and ecological risk assessment (HHERA), presented and discussed below.

¹ <https://www2.gov.bc.ca/gov/content/environment/air-land-water/site-remediation/guidance-resources/performance-verification-plans>

3.0 RISK CONTROLS

The following risk controls were recommended in the HHERA²:

- Site groundwater must not be used as drinking water.
- Soil contamination within the landfill footprint must remain at least 1m below ground surface or covered by pavement or buildings.
- The leachate collection system must remain operational until the Site has been built over and paved.
- The passive soil vapour barrier that spans the entirety of the landfill footprint (both building footprint and asphalt parking lots) must remain in place and continue to operate as designed.

BOUNDARY OF THE SOIL CONTAMINATION RISK CONTROL

Soil contamination must remain at least 1m below ground surface or covered by pavement or buildings within the boundaries of the property (as presented in **Section 1**) shown on **Figure 1** (attached).

Metes and bounds for this area are as follows:

Commencing from the southeast corner of Lot 1 adjacent River Way (PID 031-264-883), thence northerly along the bearing N00°00'51"W a distance of 2.000 metres to the point of beginning:

- Thence westerly along the bearing S80°09'32"W a distance of 130.000 metres;
- Thence northwesterly along the bearing N45°00'00"W a distance of 32.000 metres;
- Thence northerly along the bearing N02°09'08"E a distance of 357.000 metres;
- Thence easterly along the bearing N69°38'44"E a distance of 147.000 metres;
- Thence southerly along the bearing S00°00'51"W a distance of 405.000 metres to the point of beginning.

These boundaries solely refer to the risk control associated with the landfill cap.

3.1 Contingency Measure

As a contingency redundant measure, the passive sub-slab ventilation system will be equipped with an active methane and soil vapour management system which includes rooftop-mounted blowers at all vertical riser pipes, which will be activated as and when needed. This system will be installed and monitored annually. The active ventilation system will be triggered when the sub-slab methane concentration reaches >0.5% methane by volume of air or 10% of the methane LEL (5%). The system is described in detail in the Letter of Assurance (November 2021)³.

² Hemmera Envirochem Inc., 2021. Human Health and Ecological Risk Assessment Update – North Alpha Landfill, Delta, BC. Submitted to Sunbury River Road Development LP. December 2021.

³ Hemmera Envirochem Inc., 2021. Letter of Assurance: Ventilation System for 8600 River Road, Delta, BC. Submitted to Sunbury River Road Development LP. November 9, 2021.

4.0 RATIONALE FOR RISK CONTROLS

The Site is part of a former landfill and is currently under development. The Site is subject to landfill closure procedures, as documented in *North Alpha Landfill Closure Plan* (Sperling Hansen, 2013), as well as risk controls as detailed in **Section 3**.

Site groundwater contains various substances at concentrations exceeding drinking water standards. Hence, groundwater should not be used as potable water. While the use of Site groundwater as drinking water is extremely unlikely given an available municipal water supply, this risk control is required both as a precautionary measure, and in accordance with ENV policy and procedure regarding DW use and risk-based closure. This risk control has been extended to the Site as a whole both for simplicity, and in the event groundwater extraction from outside of areas of contamination could draw contaminated groundwater to extraction locations.

The risk control requiring that soil contamination remain at least 1 m below ground surface or covered by pavement or buildings is necessary to prevent human and ecological receptors from interacting with sub-surface soil contamination.

The leachate collection system is included as a risk control; this system was a requirement of the Landfill Closure Plan, with samples collected on a monthly basis. Once development construction is completed on the Site and the building cover and final asphalt paving are in place, infiltration of surface water into the ground will be significantly reduced by 70%. As such, the leachate collection system will no longer be needed. Groundwater plume stability is not contingent on the leachate collection system remaining operational.

The engineered passive vapour barrier must remain in place to prevent entry of soil vapour COPCs (benzene, xylenes, VPH_v, dichlorodifluoromethane, 1,2-cis-dichloroethylene, n-hexane, tetrachloroethene, and trichloroethene) into indoor and outdoor air spaces at concentrations of concern. Additionally, given the Site's historic use as a landfill, methane generation is a concern. Mitigation of exposure to soil vapours is necessary to prevent the potential for exposure and risks to human receptors.

5.0 RECOMMENDED ACTIONS

The following actions are required by the Site owner to ensure the risk controls are implemented and maintained:

- Notification of the Site operator that contaminated soils within the metes and bounds area above must remain at least 1m below ground surface, or pavement or buildings, and that the soil cap must be reinstated if breached.
- Verification of the leachate collection system's continued functioning should also be conducted by the Site owner. As noted in Section 4.0, this system is monitored monthly; samples are collected and reported to Metro Vancouver as part of the conditions for discharge into the sanitary sewer. Sunbury River Road Investments Ltd. Inc should retain copies of these monitoring records and hold them in order to produce if requested by the Director.
- Annual inspection of the vapour management system including testing the vacuum pressure and/or methane concentrations at the sample ports, and visual inspection of the parking lot vapour containment system (catch basins).

Records related to these actions must be maintained by the Site owner.

No formal verification or records keeping of such communication or adherence to the no potable water use is needed.

6.0 CLOSURE

This Work was performed in accordance with the professional services agreement between Hemmera Envirochem Inc. (“Hemmera”) and Sunbury River Road Developments LP (“Client”), dated October 24, 2018 (“Contract”). This Report has been prepared by Hemmera, based on fieldwork conducted by Hemmera, for sole benefit and use by the Client, ENV, and the Contaminated Sites Approved Professional (CSAP). In performing this Work, Hemmera has relied in good faith on information provided by others, and has assumed that the information provided by those individuals is both complete and accurate. This Work was performed to current industry standard practice for similar environmental work, within the relevant jurisdiction and same locale. The findings presented herein should be considered within the context of the scope of work and project terms of reference; further, the findings are time sensitive and are considered valid only at the time the Report was produced. The conclusions and recommendations contained in this Report are based upon the applicable guidelines, regulations, and legislation existing at the time the Report was produced; any changes in the regulatory regime may alter the conclusions and/or recommendations.

Prepared by:
Hemmera Envirochem Inc.

Reviewed by:
Hemmera Envirochem Inc.

**ORIGINAL SIGNED
AND STAMPED**



Jennifer Trowell, M.ET., R.P.Bio.
Risk Assessor





Peter Reid, M.Eng., P.Eng., CSAP, MBA
Technical Expert

EGBC Permit Number: 1003471

FIGURE

Landfill Cap Metes and Bounds

Legend

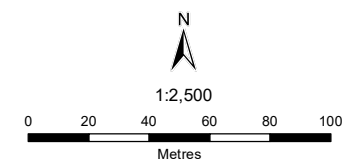
-  Site Boundary
-  Landfill Cap Footprint
-  Addressed by Certificate of Compliance
-  Property Line

Notes

1. All mapped features are approximate and should be used for discussion purposes only.
2. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.

Sources

- Contains information licensed under the Open Government Licence - Province of British Columbia



NAD 1983 UTM Zone 10N
Page Size: 11" x 17"

Landfill Cap Metes and Bounds Description

COMMENCING from the southeast corner of Lot 1 adjacent River Way (PID 031-264-883)
Thence northerly along the bearing N00°00'51"W a distance of 2.000 metres to the **POINT OF BEGINNING**:
Thence westerly along the bearing S80°09'32"W a distance of 130.000 metres;
Thence northwesterly along the bearing N45°00'00"W a distance of 32.000 metres;
Thence northerly along the bearing N02°09'08"E a distance of 357.000 metres;
Thence easterly along the bearing N69°38'44"E a distance of 147.000 metres;
Thence southerly along the bearing S00°00'51"W a distance of 405.000 metres to the **POINT OF BEGINNING**.

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