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September 29, 2017
File: 285-050.07

Ministry of Transportation and Infrastructure
4C 940 Blanshard Street
Victoria, BC V8W 3E6

Attn: Paul Savinkoff

Re: Performance Verification Plan for 10274 River Road, Delta, BC

1.0 INTRODUCTION

Hemmera Envirochem Inc. (Hemmera) was retained by the British Columbia Ministry of Transportation and Infrastructure (MOTI) 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 10274 River Rd, Delta, BC (the “Site”), MOTI Site ID #17, BC Site ID #14362.

This PVP identifies: (a) risk controls recommended in the *Detailed Human Health and Ecological Risk Assessment 10274 River Road, Delta, BC* (Hemmera, 2017); 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 BC Ministry of Environment (BCMOE) *Administrative Guidance 14: Performance Verification Plans, Contingency Plans, and Operations and Maintenance Plans, Version 1.0* (BCMOE, 2015) and *Procedure 12: Procedures for Preparing and Issuing Contaminated Site Legal Instruments* (BCMOE, 2016).

2.0 SITE TYPE

Type 2, based on the institutional risk controls recommended in the human health and ecological risk assessment (DHHERA), presented and discussed below.

3.0 RISK CONTROLS

The following risk controls were recommended in the DHHERA (Hemmera, 2017):

- (a) Site groundwater must not be used as potable water.
- (b) At least 1 m of soil cover must be maintained atop residual subsurface soil contamination in the risk control area within the metes and bounds described in this document.

METES AND BOUNDS FOR THE SOIL COVER RISK CONTROL AREA (See Figure 1)

Commencing from the south-east corner of Parcel 6285, thence along the bearing N 43 degrees 23' 37.67" W a distance of 58.0 metres;

Thence along the bearing S 41 degrees 9' 15.10" W a distance of 20.5 metres (the point of beginning);

Thence along the bearing S 48 degrees 50' 45.67" E a distance of 13.5 metres;

Thence along the bearing S 41 degrees 9' 14.24" W a distance of 15.8 metres;

Thence along the bearing N 48 degrees 50' 45.67" W a distance of 13.5 metres;

Thence along the bearing N 41 degrees 9' 14.24" E a distance of 15.8 metres to the point of beginning containing an approximate area of 213.5 m².

4.0 RATIONALE FOR RISK CONTROLS

Following extensive physical remediation of the Site there remains some hydrocarbon related contamination (BETX) and arsenic contamination in subsurface soils and groundwater. With respect to soils, arsenic is the only substance that was retained as a contaminant of potential concern (COPC) with respect to human health, and is present at moderate concentrations (maximum 32.6 mg/kg) loosely delineated to an area a few metres in size, at suspected depths of 1.07 to 2.44 m bgs. Ethylbenzene, toluene, and xylene were retained as COPCs in subsurface soil with respect to terrestrial biota such as soil invertebrates, plants, and wildlife.

The risk control requiring that 1 m of soil must be retained atop subsurface soils with human and terrestrial biota COPCs is believed to be necessary, as there is the potential the site will be levelled prior to development. Such levelling could involve excavation or placement of additional fill, or both, in different areas of the Site. The depth of 1.0 m was selected as this is BCMOE's present default cover thickness for rendering human and ecological exposures to subsurface soils an incomplete exposure pathway.

Site groundwater contains benzene, ethylbenzene, and toluene 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 was recommended both as a precautionary measure, and in accordance with BCMOE policy and procedure regarding DW use and risk based closure. This risk control has been extended to the Site as a whole for simplicity, and in the event groundwater extraction from outside of areas of contamination could draw contaminated groundwater to extraction locations.

5.0 RECOMMENDED ACTIONS

The above risk controls pertain to future Site development and use. They should be communicated to future Site purchasers, including the owners of individual lots within the metes and bounds identified above. Such communication could be via provision of this PVP, or the CoC.

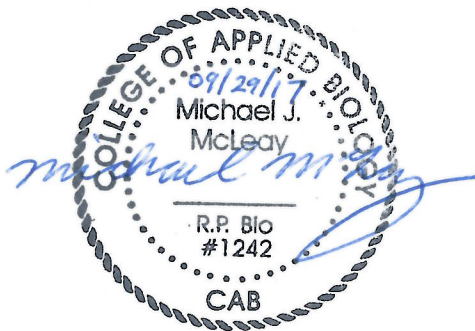
No formal verification or records keeping of such communication or adherence to the no potable water use risk control is needed.

However, verification of 1 m clean soil cover is required by the Site developer if grade reduction occurs within the risk control area. The Site developer should maintain records describing regrading and verifying 1 m of clean soil remains atop contamination, as these records could be requested by BCMOE.

6.0 CLOSURE

This Work was performed in accordance with Contract No 045 CS 4899 between Hemmera and the BC MOTI ("Client"), dated July 27, 2015 ("Contract"). This Report has been prepared by Hemmera, based on fieldwork conducted by Hemmera, for sole benefit and use by the Client, BC MOE, 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.

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7.0 REFERENCES

BCMOE (2015). Administrative Guidance 14 on Contaminated Sites: Performance Verification Plans, Contingency Plans, and Operations and Maintenance Plans, Version 3.0, December, 2015.




BCMOE (2016). BC Ministry of Environment Procedure 12: Procedures for Preparing and Issuing Contaminated Site Legal Instruments, Version 3.0 Draft 7, February, 2016.

Hemmera (2017). Detailed Human Health and Ecological Risk Assessment, 10274 River Road and OMA1, Delta, BC, MOTI Site ID #17, September, 2017.

FIGURE

Site Risk Control Area

Legend

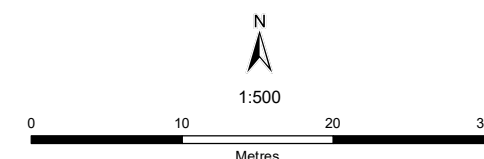
-  Site Boundary
-  Site Risk Control Area
-  Property Line (approximate)

Notes

1. All locations should be considered approximate.
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

- Aerial Image: Bing Maps Aerial



NAD 1983 UTM Zone 10N

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