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Provincial Rental Housing Corporation and
BC Housing Management Commission
601 – 4555 Kingsway
Burnaby, BC, V5H 4V8

Attention: Ms. Mandy Hansen, RI(BC)

**RE: CLARIFICATION OF THE FINDINGS OF THE LIMITED SCOPE
PHASE II ENVIRONMENTAL SITE ASSESSMENT
LITTLE MOUNTAIN HOUSING, VANCOUVER, BC**

Dear Ms. Hansen:

The purpose of this letter is to provide clarification with respect to the conclusions and recommendations provided in Golder Associates Ltd.'s (Golder's) report to the Provincial Rental Housing Corporation and the BC Housing Management Commission (BC Housing) titled *Limited Scope Phase II Environmental Site Assessment Conducted at the Little Mountain Housing Complex Located at the Northwest Corner of 37th Avenue and Main Street, Vancouver, BC*, dated October 18, 2007.

1.0 SUMMARY OF WORK CONDUCTED TO DATE

1.1 Stage 1 Preliminary Site Investigation

A Stage 1 Preliminary Site Investigation (Stage 1 PSI) was conducted by Golder, on behalf of BC Housing, at the Little Mountain housing complex (the "Site") in April 2007. The results of this investigation were presented in a report to BC Housing, dated May 8, 2007.



The principal findings of the Stage 1 PSI included the identification of four areas of potential environmental concern (APECs):

- APEC 1: Fill from Unknown Sources;
- APEC 2: Storage Tanks;
- APEC 3: Hazardous Building Materials; and
- APEC 4: On-Site Migration of Contaminants from Off-Site Sources.

Further environmental investigation / assessment work was recommended to assess these APECs. However, as some of the storage tanks were inferred to be located beneath the basement floor slabs of existing structures at the Site, it was thought that such an assessment might be better conducted at the time of building demolition.

1.2 Limited Scope Phase II Environmental Site Assessment

BC Housing requested that Golder undertake a limited scope Phase II Environmental Site Assessment (limited scope Phase II ESA) of the Site in the summer of 2007. The purpose of the limited scope Phase II ESA was to assess, on a preliminary basis, soil and groundwater conditions at the Site, and to investigate certain APECs.

The investigation involved the drilling of eight, widely-spaced boreholes, the installation of five, shallow groundwater monitoring wells, and the collection and analysis of selected soil and water samples.

In summary, no exceedances of the BC Ministry of Environment (BC MoE) Contaminated Sites Regulation (CSR) standards for the protection of freshwater aquatic life (AW-freshwater) were found in the groundwater samples analysed, and only two, shallow soil samples contained marginal exceedances of the CSR soil standards for residential land use (RL), for selected polycyclic aromatic hydrocarbon (PAH) compounds.

The general conclusions of the limited scope Phase II ESA were that:

Based on the results of analyses and investigations conducted to date, evidence of significant contamination issues at the Site are not apparent. No exceedances of the CSR AW-freshwater standards were reported for groundwater samples collected from the Site, and nine of eleven soil samples analysed contained no CSR RL exceedances of metals, extractable petroleum hydrocarbons (EPH) or PAH. Two soil samples did contain marginal CSR exceedances for selected PAH constituents; however, as (a) there was a lack of any indication of contamination

in the soil at these sampling locations, (b) the soil concentrations reported represented only minor exceedances of the CSR RL soil standards, and (c) no PAH concentrations exceeding the CSR AW-freshwater standards were detected in groundwater at these locations, the reported soil exceedances are not considered to represent a significant environmental concern.

Consequently, based on the results obtained to date, no further detailed investigation of general soil or groundwater quality is considered warranted at this time.

2.0 DEVELOPMENT PLAN

It is currently understood that the intent is to re-develop the entire 15.5 hectare (38.3 acre) housing complex site. It is further understood that this will involve removal of the existing, older buildings, and associated infrastructure, and construction of new residential units.

3.0 DISCUSSION AND COMMENTS

3.1 Polycyclic Aromatic Hydrocarbons

Polycyclic aromatic hydrocarbons (PAHs) are a group of compounds that contain a carbon ring structure. Most PAHs in the environment are associated with the incomplete burning of carbon-containing materials, like oil, wood, garbage and/or coal. Mothballs, asphalt and creosote-containing wood preservatives also contain PAHs, as does automobile exhaust, industrial emissions and smoke from burning wood, charcoal and tobacco.

Some PAHs can dissolve in water, and can be carried by groundwater for long distances. Fires can also form fine particles of PAHs that, when bound to ash, can also travel long distances.

Based on the available information, there is currently no definitive evidence to explain why the PAH exceedances were detected at the two Site locations identified in the limited scope Phase II ESA report. They may represent random concentrations within the overall fill unit placed at the Site, the residue of burning, the residue from roads (asphalt) and/or vehicles, or some other, as yet undetermined, source.

3.2 Definition of a “Contaminated Site”

The current and anticipated future land use of the Site is understood to be for residential purposes. Under the British Columbia *Environmental Management Act*, a “contaminated site” is defined as follows:

1) “contaminated site” means an area of the land in which the soil or any groundwater lying beneath it, or the water or the underlying sediment, contains:

- a) A hazardous waste, or
- b) Another prescribed substance

in quantities or concentrations exceeding prescribed risk based or numerical criteria or standards or conditions.

As certain PAH constituent concentrations were detected at levels exceeding the CSR RL soil standards, by definition, the Site would be considered a contaminated site under the Act.

3.3 Clarification

As noted previously, due to:

- (a) the lack of any indication of contamination (*i.e.*, the presence of debris, staining, odours or other indicators) in the soil where the PAH exceedances were detected,
- (b) the soil PAH concentrations detected were only marginal exceedances of the CSR RL soil standards, and
- (c) no PAH exceedances were detected in the groundwater collected and analysed from these soil exceedance locations,

the reported soil exceedances were not considered to represent a significant environmental concern and, based on this, no further detailed investigation was considered warranted at this time.

This conclusion was made in consideration that the Site was to be re-developed, and that additional assessment work was required in the future, particularly during building demolition, to address other APECs (*i.e.*, storage tanks and building materials). As additional work was needed in the future, it was inferred that the issue of the PAH exceedances could be addressed at that time.

The identified exceedances will have to be addressed at some time in the future, in order to render the Site suitable for residential re-development. There are a number of ways to address these exceedance issues, including, but not limited to, excavation and off-Site disposal through to risk assessment. The most appropriate method to address the PAH issue would best be determined through consideration of the future development plans for the Site.

4.0 CLOSURE

We trust that the information contained in this addendum letter provides clarification with respect to the analytical results obtained to date, and the path forward with respect to future environmental assessment.

Yours very truly,

GOLDER ASSOCIATES LTD.

ORIGINAL SIGNED BY

Jim S. Laidlaw, P.Eng.
Project Engineer and Associate

JSL/nnv
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