Environmental Site Assessment for Limited Remediation Protocol

Adopted by the Minister of Environment

Pursuant to the Contaminated Sites Regulations

Adopted by the Minister of Environment,
Hon. Sterling Belliveau, on July 3, 2013, effective as of July 6, 2013

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1 OBJECTIVES

The *Environmental Site Assessment for Limited Remediation Protocol* is applicable to the requirements specified in Section 13(1)(a) of the *Contaminated Sites Regulations* respecting duties of a site professional to conduct an environmental site assessment when carrying out limited remediation.

The objectives of this protocol are to:

a) Prescribe the requirements for conducting an environmental site assessment for limited remediation based on the level of potential risk.

b) Present the minimum environmental site assessment requirements for three categories of limited remediation: L1, L2 and L3.

c) Provide regulatory requirements for reporting information from an environmental site assessment completed under limited remediation, including a summary checklist submission, CHK-200: ESA for Limited Remediation Checklist.

The *Environmental Site Assessment for Limited Remediation Protocol* is intended for use by a site professional, the qualifications for which are as defined in Section 5 of the *Contaminated Sites Regulations*.

2 DEFINITIONS

Atlantic RBCA: means the current versions of Atlantic Risk Based Corrective Action guidance documents including the Petroleum Hydrocarbon Impacted Sites User Guidance and software modelling tool, Guidance for Soil Vapour and Indoor Air Monitoring Assessments from Atlantic RBCA and Guidelines for Laboratories as published by the Atlantic Partnership in RBCA Implementation committee.

Exposure Management: means the measures used to protect site receptors at risk from contaminant exposure. These measures can include long-term monitoring to verify non-exposure, engineering controls, physical controls, or administrative controls, all of which potentially require long-term management.

L1 Environmental Site Assessment: means the process used to assess contamination of soil following a release from a single source with single or multiple contaminants of concern.

L2 Environmental Site Assessment: means the process used to assess contamination of soil, groundwater, sediment, or surface water from a single source with single or multiple contaminants of concern.

L3 Environmental Site Assessment: means the process used to assess contamination of soil, groundwater, sediment, or surface water associated with single or multiple sources and/or contaminants of concern. The L3 environmental site assessment process presence and extent of contaminants associated with all potential sources of contamination identified on the property.

3 SELECTION OF LIMITED REMEDIATION ASSESSMENT CATEGORY

The following conditions must be evaluated prior to selecting the appropriate category of limited remediation environmental site assessment (L1, L2, or L3):

a) source and type of contaminant(s)

b) volume of contaminant(s)

c) affected media (soil, groundwater, surface water, sediment)

Based on an evaluation of the above, the applicable L1, L2, or L3 environmental assessment category must be selected. The restrictions associated with each category and the minimum environmental site assessment requirements of L1, L2, and L3 categories are presented in Sections 4, 5, and 6, respectively.

If at any time it becomes evident the conditions are more complex and no longer meet the requirements of the initial category selected, the assessment must proceed to a more acceptable limited remediation assessment category.

It is recognized that the person responsible may choose to address contamination on a site by using "full property remediation" as described in Section 15(1) of the *Contaminated Sites Regulations* or "limited remediation" as described in Section 13(1) of the regulations. If at any time the person responsible chooses to switch from the limited remediation pathway to the full property remediation pathway, or vice versa, all assessment requirements of the pathway selected must be performed.

4 L1 ENVIRONMENTAL SITE ASSESSMENT REQUIREMENTS

4.1 Restrictions for Application of L1 Environmental Site Assessment

An L1 ESA is not to be applied if any of the following conditions exist on site:

a) contamination has extended below the water table, in which case all potential pathways in the subsurface must be investigated to ensure contamination has not come into contact with groundwater

b) any of the following contaminants exceeding Tier 1 Environmental Quality Standards (EQS) criteria as defined in protocol PRO-100, *Notification of*

Contamination Protocol, are present at a depth greater than 0.3 m from the surface:

i) Polychlorinated Biphenyls (PCB's)
ii) Tetrachloroethylene (also known as Perchloroethene, PCE)
iii) Trichloroethylene (TCE)
iv) cis – 1,2- Dichloroethylene (cis-DCE)
v) Vinyl Chloride
vi) Total Mercury
vii) Dioxins and Furans (non-background as determined in Section 5.2.4 of protocol PRO-100, *Notification of Contamination Protocol*

c) if contamination has directly affected any of the following:

(i) watercourse

(ii) wetland

(iii) potable water supply. See Figure 3 of protocol PRO-100, *Notification of Contamination Protocol,* in order to determine groundwater potability.

d) where inaccessible petroleum contaminated soil, with benzene, toluene, ethylbenzene, xylene (BTEX) or total petroleum hydrocarbons (TPH), exceeding the Tier 2 Pathway Specific Standards (PSS) as defined in protocol PRO-500, *Remediation Levels Protocol*, for soil leaching to groundwater pathway remain below a building structure on a potable site,

e) where contaminated soil has come in contact with bedrock on a potable site,

f) sites where measures greater than short-term emergency action and/or temporary excavation are required to address vapours within a building

4.2 Minimum L1 Environmental Site Assessment Requirements

All contamination must be delineated to appropriate Tier 1 EQS criteria specified in protocol PRO-100, *Notification of Contamination Protocol*.

4.2.1 Soil Sampling Requirements for L1 Environmental Site Assessment

Confirmatory soil samples collected following remedial excavations may be used to satisfy the soil sampling requirements of an L1 ESA.

Minimum soil sampling requirements that must be met are:

a) Confirmatory soil samples must be collected from the side walls and floor of the excavation in accordance with Table 1, Section 3, (Confirmatory Sampling Requirements) of protocol PRO-700, *Conformation of Remediation Protocol*

b) Where contaminated soil below any part of a building footprint is proposed to be left in place, full delineation of contamination and verification through soil vapour, sub-slab, and/or indoor air sampling that the indoor air quality is not affected above an acceptable level must be completed. The concentration, volume, and location of any contaminated soil remaining below a building as well as the findings of the air quality assessment must be documented in form FRM-700, Record of Site Condition Form, and filed with the Minister.

c) In cases where contaminated soil has extended to bedrock on non-potable sites and no evidence of free product is present, the site professional must use their professional judgement to determine whether a groundwater assessment is required. In cases where it is determined that a groundwater assessment is required, the assessment shall proceed to an L2 ESA. In cases where it is determined that a groundwater assessment is not required, the soil vapour/indoor air sampling requirements outlined in Section 4.2.3 of this protocol must be met.

d) Sampling procedures must be documented. A composite sampling procedure for soil sampling of volatile organic compounds is not acceptable.

e) Sampling data quality assurance and quality control procedures must be documented. Field methods used to collect samples, preserve samples, and control potential cross contamination of samples must also be documented.

4.2.2 Water Sampling Requirements for L1 Environmental Site Assessment

The following minimum groundwater sampling requirements must be met:

a) On sites where there is a potable well or spring supplied water source, the well or spring must be analyzed for the contaminant being addressed in the soil in accordance with the laboratory requirements identified in Section 4.2.4 as described below.

b) Any other water samples collected must also be analyzed in accordance with the laboratory requirements identified in Section 4.2.4 below.

c) Sampling protocols must be documented.

d) Sampling data quality assurance and quality control procedures must be documented. Field methods used to collect samples, preserve samples, and control potential cross contamination of samples must also be documented.

4.2.3 *Soil Vapour, Sub-Slab, and Indoor Air Quality Sampling Requirements for L1 ESA*

Soil vapour, sub-slab, and indoor air sampling work must follow the latest version of the Atlantic RBCA Guidance for Soil Vapour and Indoor Air Monitoring Assessments, available as a stand-alone document from the Atlantic RBCA website (atlanticrbca.com).

The rationale, approach, and results (including lab reports) of all soil vapour, sub-slab, and indoor air monitoring assessments must be documented in an environmental site assessment report.

Evaluation of soil vapour, sub-slab, or indoor air must be accomplished through the collection and interpretation of empirical site data in the following circumstances:

- where contaminants in soil above the Tier 1 EQS as specified in protocol PRO-100, *Notification of Contamination Protocol*, (including soil above the Tier 1 EQS and below the applicable Tier 2 PSS as specified in PRO-500, *Remediation Levels Protocol*) are left below a building structure
- where contaminated soil, containing gasoline or volatile organic compounds has extended to bedrock and a groundwater assessment has not been conducted on a non-potable. In such instances, all potentially affected buildings (dwellings) located within 30 meters of the source must be assessed
- where a building (dwelling) has a dirt floor, open sump, or rock foundation

4.2.4 *Laboratory Requirements for L1 Environmental Site Assessment*

Appropriate laboratory analysis must be conducted for samples collected, including the following:

a) Laboratories performing analysis must be accredited to ISO/IEC 17025 standards (and subsequent revisions) by the Standards Council of Canada (SCC) or the Canadian Association of Laboratory Accreditation (CALA). All routinely required analyses must appear on the laboratory's certificate.

b) All sampling and analysis must be in accordance with laboratory approved recommendations concerning sample containers, storage and preservation.

c) Appropriate selection of laboratory analytical methods to ensure adequate conformance to data quality objectives, assessment endpoints (ecological or human health), and method/reportable detection limits.

d) In the case of petroleum hydrocarbons, analysis shall conform to Atlantic RBCA Guidelines for Laboratories, and the latest revisions of the Tier 1 and Tier 2 Petroleum Hydrocarbon Methods.

e) For all other contaminants, the analytical methods recommended are those in the latest guidance from the Canadian Council of Ministers of the Environment (CCME) concerning sampling, analysis, and data management for contaminated sites.

4.2.5 Reporting Requirements for L1 ESA

The environmental site assessment, remedial action plan, and confirmation report requirements of the *Contaminated Sites Regulations* may be compiled and documented in a single report for limited remediation using L1 environmental site assessment. With the exception of the evaluation process for inaccessible soils below building structures outlined in this protocol, including the use of Tier 2 PSS tables found in PRO-500, *Remediation Levels Protocol* where applicable, all contamination must be remediated to appropriate Tier 1 EQS criteria specified in protocol PRO-100, *Notification of Contamination Protocol*, or Tier 2 Unconditional criteria specified in protocol PRO-500, *Remediation Levels Protocol*. The time requirements specified in the *Contaminated Sites Regulations* must be followed.

5 L2 ENVIRONMENTAL SITE ASSESSMENT REQUIREMENTS

5.1 Use of L2 ESA

L2 ESA may be used to assess contamination in soil, groundwater, sediment, or surface water. L2 may be used to assess single or multiple contaminants of concern. L2 is intended to be used to address contamination associated with a known release or event from a single source. The L2 ESA process supports remediation to appropriate Tier 1 EQS or Tier 2 criteria. Where institutional and/or engineered controls are effective in eliminating the exposure pathway between the source and the receptor, long-term exposure management may be employed.

5.2 Minimum L2 ESA Requirements

To fulfill the L2 ESA requirements, a Phase 2 ESA must be conducted on all portions of the property or properties affected by the contaminant event. For the purpose of an L2 ESA, a Phase 1 ESA is not required to be completed, as assessment is limited to portions of properties affected by a known release or event. All other aspects of protocol PRO-400, *Phase 2 Environmental Site Assessment Protocol* must be followed.

6 L3 ENVIRONMENTAL SITE ASSESSMENT REQUIREMENTS

L3 ESA may be used to assess contamination in soil, groundwater, sediment, or surface water associated with single or multiple sources and/or contaminants. L3 may be used in situations where a record of site condition is being sought to address the entire property. L3 ESA allows remediation of contamination to appropriate protocol PRO-100 *Notification of Contamination Protocol* Tier 1 EQS or protocol PRO-500 *Remediation*

Levels Protocol Tier 2 criteria. Where institutional and/or engineered controls are effective in eliminating the exposure pathway between the source and the receptor, long-term exposure management may be applied. Upon completion of the L3 ESA process the presence and extent of contaminants associated with all sources identified on the property will have been assessed.

6.1 Minimum L3 ESA Requirements

To fulfill L3 ESA requirements, the following must be completed:

- Phase 1 ESA in accordance with protocol PRO-300, *Phase 1 ESA Protocol,*
- Phase 2 ESA in accordance with protocol PRO-400, *Phase 2 ESA Protocol*

7 THIRD PARTY ASSESSMENT AND DELINEATION REQUIREMENTS FOR L1, L2, AND L3 ESA

All contamination must be delineated to appropriate Tier 1 EQS criteria specified in protocol PRO-100 *Notification of Contamination Protocol*, including off site assessment.

Prior to commencing third party delineation, written permission to access property for the purposes of off-site delineation must be obtained from the property owner(s).

8 REQUESTS FOR TIME EXTENSIONS

To request a time extension for the completion of an L1, L2 or L3 ESA under Limited Remediation, in accordance with Section 13(1a) of the Regulations, form FRM-400, Request for Time Extension, contained within PRO-400 *Phase 2 Environmental Site Assessment Protocol* must be completed in entirety by a Site Professional. Form FRM-400, Request for Time Extension and the minimum supporting documentation prescribed therein must be submitted to the Minister within 150 days of filing form FRM-100, Notification of Free Product or Contamination. The documentation will be processed by the Minister. Acceptable submissions will result in an alternate date requirement for the completion of the environmental site assessment. The revised date to complete an environmental site assessment will be issued in writing by the Administrator or Inspector in accordance with the *Contaminated Sites Regulations*.

APPENDICES

Appendix 1

Checklist CHK-200 ESA for Limited Remediation Checklist