GOVERNMENT OF
NEWFOUNDLAND AND LABRADOR

Department of Environment & Conservation

Policy Directive

Division: Pollution Prevention

P.D. PPD05-01

Prepared by: T. Matthews

Issue Date: February 22, 2005

Authorized by: _____ Director

Supersedes: PPD97-01

Authorized by: _____ ADM

Approved by: _____ DM

Approved by: _____ Minister

Subject Management of Impacted Sites.

Objective Update and Replace Contaminated Sites Cleanup Criteria PPD97-01

Background

Prior to May 2002, provisions of the Environment Act, Waste Material Disposal Act and associated Regulations, supplemented with policy and guidelines documents, provided authority to manage contaminated or impacted sites. Through national and regional initiatives, protocols have been updated. An example is the risk based (as an alternative to criteria based) approach to management of impacted sites. Other developments have also occurred in Canada-wide Standards, CCME Environmental Quality Guidelines and Atlantic PIRI software.

Legislative Authority

- *The Environmental Protection Act, 2002, Part VII, Section 26(2)*
- *The Storage and Handling of Gasoline and Associated Products Regulations, CNLR 58/03*

- *Heating Oil Storage Tank System Regulations, CNLR 60/03*(amended 103/03)
- *Used Oil Control Regulations, CNLR 82/02*
- *Environmental Control Water and Sewer Regulations, CNLR 65/03*

Definitions

CCME	means Canadian Council of Ministers of Environment
CEQG	means Canadian Environmental Quality Guidelines
Department	means Department of Environment and Conservation
GSC	means Government Service Centre
PIRI	means Partnership in Risk Based Corrective Action Initiative involving Government Regulators, Oil Industry and Environmental Consultants in Atlantic Canada.
Risk Based Approach	means characterizing potential risks, hazards and exposures of receptors to contaminants at a site that is or may be impacted or contaminated.

General Provisions:

- Harmonize with other jurisdictions in accordance with the Canada-wide Accord on Environmental Harmonization and the Canada-wide Environmental Standards Sub Agreement.
- Harmonize protocols with Canada-wide Standards for Petroleum Hydrocarbons in Soil.
- CCME CEQG as cleanup objectives for impacted sites.
- Criteria and risk based options to manage an impacted/contaminated site.
- Limited Remedial Action as an option for cleanup of a contaminated site.
- Scope of management to include metals, chlorinated and non-chlorinated organic compounds, pesticides and microbiologicals.
- Protect human health and the environment.
- Polluter pays principle.
- Scientifically defensible in each step of the management process.
- A voluntary procedure and process (unless prescribed in writing by the Minister as with designation of an area that is/is suspect to be contaminated).
- A phased approach to environmental site assessment consistent with national protocols.
- Removal of free product required prior to use of protocols.
- A flexible and cost effective approach.
- A management process to be completed in a timely manner.
- Defined duties and responsibilities of the province, responsible person and site professional.
- A formal structure for impacted site/contaminated site management.
- Clear language.
- Documentation for each step.
- 3 tiered approach for petroleum impacted sites.(Tier to be chosen by person responsible).
- A letter or other document to be issued by the department or its agents at the completion of management steps.
- Consistency via standard internal forms and formats.
- Updated software developed by Atlantic PIRI.
- Laboratory analyses to be conducted by laboratories having a form of accreditation as provided for in the Department's policy on Laboratory Accreditation
- Provision for 3rd party review when environmental professional and regulator positions conflict.

Policy

1. **The "Guidance Document for Management of Impacted Sites" as amended replaces Department Policy Document PPD97-01, Contaminated Sites Cleanup Criteria**.

2. The CCME CEQG,1999 (as amended) are adopted as the environmental quality standard in the absence of a specific regulation when assessing or in remediation of an impacted site.

3. In cases where the identified groundwater contamination has the potential to impact on-site or nearby wells that are used for drinking purposes, the relevant human health criteria for portable groundwater shall be used. Where this is not a concern the relevant non-potable groundwater criteria shall be used. For those sites with petroleum hydrocarbon impacts only, the use of the Atlantic RBCA Ecological Screening Checklist is required to evaluate the potential for impacts to off-site ecological receptors within 150m, although that distance is subject to professional judgement and must be justified in each case. Regardless for contaminant of concern, the nearest ecological habitat must be identified and the potential for impacts must be ruled out to the satisfaction of the Department, otherwise further qualitative or quantitative assessments may be required.

4. Specific risk based methodologies shall be approved by the Department

5. All remedial action plans shall include a confirmatory sampling program to demonstrate that applicable remediation objectives have been met.

6. In instances where naturally occurring background levels at a contaminated site exceed the criteria levels established by this policy, the remediation requirements may be modified, with Department approval, such that the objectives are not at levels below background concentrations.

Newfoundland Labrador

GOVERNMENT OF
NEWFOUNDLAND AND LABRADOR

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GUIDANCE DOCUMENT

Title: **Guidance Document for the Management of Impacted Sites**

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Issue Date: **September, 2005**
Revised Date: **January 29, 2014**

Approved By:
Derrick Maddocks, Director

GUIDANCE DOCUMENT FOR THE MANAGEMENT OF IMPACTED SITES VERSION 2.0

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Definitions

Adverse effect

Impairment of or damage to the environment, human health or ecological health.

Affected third party

A property owner, or occupier that is directly affected by contaminant(s) at concentrations exceeding the applicable guidelines, originating from a source property.

Aquifer

A water bearing formation that transmits water in sufficient quantities to supply a well for a beneficial use.

Atlantic PIRI

Atlantic Partnership in RBCA (Risk-Based Corrective Action) Implementation. Atlantic PIRI is a committee comprised of provincial environment regulators from Atlantic Canada, Environment Canada, regional oil industry representatives, and regional consultants.

Atlantic RBCA toolkit

A software model used to assess risk to human health and develop site-specific screening levels. The toolkit is currently endorsed by the four Atlantic Provinces for petroleum hydrocarbon contamination only.

Borehole

An open or cased subsurface hole created by drilling, often used to investigate soil conditions.

BTEX/TPH

Benzene, toluene, ethylbenzene and xylenes (BTEX) and Total Petroleum Hydrocarbons (TPH).

CCME

Canadian Council of Ministers of the Environment (www.ccme.ca).

CEQG

Canadian Environmental Quality Guidelines. Published in 1999 by CCME and updated as required. These, as well as others, are often referred to as "guidelines" throughout this document.

Closure Report

A final report prepared by a Site Professional following the successful completion of the Impacted Site Management Process. The closure report typically contains a completed Record of Site Condition.

Contaminant

A substance that causes or may cause an adverse effect

Contaminant of Concern (CoC)

A contaminant that is or may be present at a given site above an applicable guideline.

Department

The Department of Environment and Conservation or its successors.

Designated Contaminated Site

A site formally designated as a contaminated site by the Minister of Environment under Section 26 of the *Environmental Protection Act* SNL 2002 cE-14.2. In this Guidance, impacted site is used throughout.

Ecological Habitat

The environment within which populations of flora and fauna exist; the ecological habitat contains both living and non-living constituents.

Emergency Response

Remedial action required directly following the identification of contamination on a site in order to eliminate or prevent immediate unacceptable human or ecological risk. Action could include free phase product removal, provision of drinking water, building ventilation and diversion or treatment of water as deemed necessary by the Province or the Person Responsible, Site Professional or the Department/Province.

Engineered Controls

Designed and installed measures to limit the extent of risk posed by an impacted site to human or ecological receptors. These controls may require on-going monitoring or maintenance to be effective. Some examples of engineered controls are ground covers, ventilation systems and water treatment systems.

ENVC

Acronym for the Newfoundland and Labrador Department of Environment and Conservation or the Department.

Environmental Protection Officer (EPO)

An inspector with Service Newfoundland and Labrador (Service NL), who can act as an agent of the Department of Environment and Conservation.

Environmental Site Assessment (ESA)

An assessment of the environmental conditions at a site, conducted in accordance with applicable guidance from Atlantic PIRI, CCME and Canadian Standards Association. A Phase I ESA includes a review of current and historical activities associated with the subject site and adjacent properties, in order to determine the potential for contamination. A Phase II ESA involves the preliminary collection and laboratory analysis of samples of potentially impacted media (soil, sediment, groundwater and/or surface water). A Phase III ESA involves further sampling and laboratory analysis to delineate the extent of impacts identified during the Phase II ESA. Subsequent Phases involve remedial action planning and remediation/risk management.

Environmental Sites Registry

An internal listing of sites that have been reported as containing, potentially containing or previously containing CoCs. Information is added to the registry as it is received by the Pollution Prevention Division of ENVC.

Exposure Pathway

A unique mechanism by which an individual or population is exposed to contaminants of concern originating from a site. This requires an exposure route such as inhalation, ingestion and dermal contact.

Grout

Approved cement, concrete or bentonite sealing material used to fill in the annular spacing of a monitoring or recovery well or to abandon a monitoring or recovery well.

Guidelines

Tier I Risk-Based Screening Levels (defined below), CEQGs or guidelines from any other jurisdiction deemed appropriate, that may be used for screening at impacted sites.

Hazard

The inherent adverse effect that a contaminant poses. It is that which has the potential for creating adverse effects.

Inspector

A person appointed under Section 89 of the Newfoundland and Labrador *Environmental Protection Act* or otherwise appointed by the provincial Minister responsible for environmental protection in Newfoundland and Labrador. The appointed inspector is often an EPO with Service NL.

Impacted Site

A site that contains an identified contaminant.

Impacted Sites Letter

A letter issued to the Person Responsible from the Province, informing them of their requirement to hire a Site Professional and follow the Impacted Site Management Process. This letter is issued following notification of impacts and an initial site inspection.

Impacted Site Management Process

A series of steps laid out in this document relating to the process of managing impacted sites in Newfoundland and Labrador.

Minimum Site Assessment Requirements

Minimum requirements that must be satisfied in order to use the Atlantic RBCA process. These are outlined in Section 4, and detailed in the Atlantic PIRI document entitled "*Atlantic RBCA User Guidance for Petroleum impacted sites in Atlantic Canada*" (www.atlanticrbca.com).

Monitoring

The routine collection of environmental quality data and/or operational data related to impacted site conditions. This can include, but is not limited to, regular groundwater or air sampling, or annual monitoring of a ground cap or other engineered controls.

Monitoring Well

A borehole or other artificial excavation, completed with casing/piping, constructed to measure or monitor the quality and/or quantity or movement of substances, elements, chemicals, or fluids, beneath the surface of the ground.

Person Responsible

The person(s), association of persons, corporate entity, or municipality determined, by the Province, to be responsible for the remediation of an impacted site, as defined in Section 2(y) of the Newfoundland and Labrador *Environmental Protection Act*.

Petroleum Hydrocarbon

A hydrocarbon is a molecule consisting primarily of carbon and hydrogen. Hydrocarbon groups present in petroleum products include: alkanes, alkenes, alkynes, aromatics, polynuclear aromatics, and complex hydrocarbon compounds containing oxygen, nitrogen, and sulfur. These compounds are found in or derived from geological sources such as oil, coal and bitumen. In this document, petroleum hydrocarbons refer to BTEX and Modified Total Petroleum Hydrocarbons (TPH), which is TPH minus BTEX.

Pollution Prevention Division (PPD)

The Division of ENVC that is responsible for the Management of Impacted Sites.

Receptor

A human or ecological being that may be exposed to CoCs originating at a given site.

Record of Site Condition

A document completed by the Site Professional which summarizes the environmental findings and remedial work at an impacted site. In order to achieve regulatory closure, this document must be reviewed and signed by Service NL or PPD.

Recovery Well

Sub-surface infrastructure, which can be installed for the purpose of bulk recovery of free phase contaminants

Remedial Action Plan (RAP)

A report describing the remedial approach and methodology to be used on a site to mitigate potential unacceptable risks to human and/or ecological receptors and to achieve regulatory closure.

Remediation

Mitigation of potential unacceptable risks to identified receptors through the removal or treatment of impacted media (i.e., soil, sediment, groundwater, surface water).

Risk Assessment

The scientific determination of potential adverse effects to a receptor, from exposure to CoCs at a site. It involves qualifying or quantifying risks to identified receptors. Tier I Risk Assessment involves comparing site analytical data to published risk-based guidelines/screening levels. Tier II Risk Assessment involves use of published pathway specific guidelines/screening levels or the calculation of site specific target levels through use of approved risk assessment models. Tier III Risk Assessment involves use of other risk assessment tools or techniques, beyond the basic approved methods.

Risk-Based Screening Level (RBSL)

RBSLs are acceptable levels of concentrations of petroleum hydrocarbon impacts. These are often referred to as Tier I RBSLs and are found in Appendix 3 of the *Atlantic RBCA User Guidance for Petroleum Impacted Sites in Atlantic Canada* (www.atlanticrbca.com). These, as well as others, are often referred to as “guidelines” throughout this document.

Risk Management

The implementation of measures to mitigate potential unacceptable risks to receptors. Risk Management is often used instead of or in addition to remediation. Some examples of risk management approaches include, but are not limited to, capping, limiting site access, ventilation systems and building exclusion zones.

Site

A defined area of the environment that has been impacted by contaminants. For convenience, the site is often identified by the civic address(es) of the property on which the site is located.

Site Professional

An individual meeting the provincial requirements listed in Section 6 that manages the completion of remedial tasks and that is authorized to sign a Record of Site Condition.

Site-Specific Target Levels (SSTL)

Risk-based remedial criteria for a specific site that are derived using site-specific conditions and accepted risk assessment / risk management methods at Tier II or III.

Source Property

The property where CoCs have been released into the environment.

Substance

Matter, energy, odour, organism or combination thereof that may become dispersed in the environment.

Unacceptable Risk

A level of risk at which potentially adverse effects may occur to human or ecological receptors. When concentrations of CoCs in site media are above acceptable risk levels defined by regulatory agencies, there is a potential for unacceptable risks.

Valued Environmental Component (VEC)

VECs are the key indicator species that may have important social or economic value or ecological significance. Assessment of VEC species may serve as a baseline from which the significance of impacts can be evaluated.

Acronyms

BTEX	Benzene, toluene, ethylbenzene and xylenes
CALA	Canadian Association for Laboratory Accreditation
CCME	Canadian Council of Ministers of the Environment
CEQG	Canadian Environmental Quality Guidelines.
CoC	Contaminant of Concern
CWS	Canada Wide Standards
ENVC	Newfoundland and Labrador Department of Environment and Conservation
EPO	Environmental Protection Officer
ESA	Environmental Site Assessment
ERA	Ecological Risk Assessment
HHRA	Human Health Risk Assessment
PAHs	Polycyclic Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
PIRI	Partnership in RBCA (Risk-Based Corrective Action) Implementation
PPD	Pollution Prevention Division
PSSL	Pathway-Specific Screening Level
RAP	Remedial Action Plan
RBCA	Risk-Based Corrective Action
RBSL	Risk-Based Screening Level
Service NL	Service Newfoundland and Labrador
SSTL	Site- Specific Target Level
TPH	Total Petroleum Hydrocarbons
VEC	Valued Environmental Component
VOCs	Volatile Organic Compounds

1 INTRODUCTION

This guidance document specifies the Impacted Site Management Process to be followed during the assessment and remediation of impacted sites in Newfoundland and Labrador (herein referred to as the Province). This document outlines a specific process which includes Environmental Site Assessment (ESA), as well as risk management and remediation. This process can also be applied to federally owned or controlled properties, particularly those that are subject to divestiture to provincial agencies directly, or to those governed by provincial departments and agencies. This guidance is applicable to both designated and non-designated contaminated/impacted sites (referred to as impacted sites throughout). The Guidance is controlled by the Newfoundland and Labrador Department of Environment and Conservation (herein referred to as the Department).

This document replaces the Guidance Document for the Management of Impacted Sites, Version 1.01, September 2005, the Guidelines for Decommissioning of Monitor Wells and Boreholes (Guidance Document GD-PPD-024rev.1) and Conflict of Interest and Site Clean-up (Guidance Document GD-PPD-038). The associated Policy Directive for the management of Impacted Sites, PPD05-01 remains in place.

The process applies to impacted areas regardless of property boundaries. The resulting closure documents may be for entire sites, if fully assessed, or may just address identified impacts, provided that a proper description of the area being managed is provided in the text and site plans of closure reports and other related documentation.

This guidance document is applicable to all contaminants of concern (CoCs) that have been released into the environment that may require assessment, remediation and/or risk management to ensure protection of human health and the environment. The guidance document is applicable to historical contamination or active contamination.

1.1 GUIDING PRINCIPLES

This guidance document is based on the following guiding principles:

- Human health and the environment must be protected through the timely and proper management of impacted sites;
- The Person Responsible for an impacted site must ensure that the Impacted Site Management Process is taken to completion to provide adequate protection of human health and the environment;
- The Site Professional providing the technical expertise and final documentation is responsible for the results of their work;

- The Department requires final documentation of the Site Professional's opinion stating the condition and safe uses of the site. This is achieved through completion of a Record of Site Condition by the Site Professional and subsequent acknowledgement by the Pollution Prevention Division of the Department (PPD) or Service NL; and
- The management process shall be applicable to all impacted sites and provide a flexible, cost-effective approach to achieving regulatory closure for identified impacts.

1.2 REGULATORY RATIONALE

This guidance document details the steps to be followed for impacted sites. Once impacts are reported, the Person Responsible is fully entered into the process and this guidance shall be followed and brought to completion. If followed correctly, this process should result in regulatory closure.

It is required under Section 8.1 of the *Environmental Protection Act* that **all releases of a contaminant into the environment are to be reported**. It is required under Section 9 of the *Environmental Protection Act* that a person responsible for the release of a substance shall take all reasonable measures to prevent, reduce, and remedy the adverse effects of the substance, and to remove or otherwise dispose of the substance in a manner that minimizes adverse effects. They also shall take other measures required by an inspector or the Department and rehabilitate the environment to a standard that the department may adopt or require.

The Minister's responsibility and authority for the management of impacted sites is contained in Part VII of the *Environmental Protection Act*, the *Heating Oil Storage Tank System Regulations,* and the *Storage* and the *Handling of Gasoline and Associated Products Regulations*. Where action by the Person Responsible is inappropriate or untimely, the Minister has the authority to order specific actions or to prosecute.

This process is mandatory for all impacted sites. The Person Responsible is required to hire a Site Professional to conduct an ESA and if required, submit a Remedial Action Plan (RAP) to the Department or its designate, for review and acceptance. Following the Impacted Site Management Process facilitates regulatory closure of impacted sites.

1.3 TIERED APPROACH

The risk-based approach to management of impacted sites is based on a three-tier system of assessment of risk that is commonly accepted in North America. Each tier provides an equivalent level of health protection. The tiered approach can be applied to a wide variety of contaminants. The three tiers of risk assessment and risk management accepted by regulators are summarized in the following sections.

1.3.1 Tier I

The Tier I method minimizes the technical complexity of selecting remedial criteria published by the Canadian Council of Ministers of the Environment (CCME) and the Atlantic Partners in RBCA (Risk-Based Corrective Action) Implementation (Atlantic PIRI).

The presence of contaminants at concentrations above the Tier I values does not necessarily indicate that an unacceptable risk exists at the site. It does generally indicate that additional investigation and evaluation of potential environmental concerns is warranted, likely at a Tier II or Tier III level, or that remedial action is required.

1.3.1.1 Petroleum Hydrocarbons

The Tier I Risk-Based Screening Levels (RBSLs) are used to screen sites for petroleum hydrocarbon impacts. The Tier I RBSLs were calculated with the Atlantic RBCA Toolkit which uses conservative default parameters typical of many sites in Atlantic Canada. These parameters are also consistent with most CCME Canada Wide Standards (CWS) assumptions. Using the Atlantic RBCA toolkit, screening levels are derived for a variety of exposure pathways, and the most conservative (i.e., lowest) calculated levels are published as Tier I RBSLs.

The Tier I RBSLs are specific to the type of land use at the source and surrounding properties (i.e., agricultural, residential, commercial or industrial), groundwater use (potable or non-potable) and soil type (course or fine-grained) and are developed based on the protection of human health. The Tier I RBSLs can be found in Appendix 3 of the *Atlantic RBCA Guidance Document for Petroleum Impacted Sites in Atlantic Canada* (herein referred to as the Atlantic RBCA Guidance Document).

In order for the Tier I RBSLs to be used, the following must be satisfied:

- All minimum site assessment requirements as listed in Section 4 must be fulfilled. If some of these requirements are not met, full professional justification acceptable to PPD or Service NL must be provided; and
- All mandatory conditions as listed in Section 4 must be met; and
- All default site characteristics as listed in Section 4 must be applicable to the site and surrounding properties.

Ecological concerns are addressed separately using Tier I Ecological Screening Values. These guidelines were developed by Atlantic PIRI in 2012 to provide a more reliable method for evaluating the effects of contaminants on ecological receptors and habitat. Further details are provided in Section 3.2 of this Guidance Document. The Tier I Ecological Screening Values can be found in Appendix 2 of the Atlantic RBCA Guidance Document.

1.3.1.2 Other Contaminants

Besides petroleum hydrocarbons, there are a variety of other contaminants that may be present at a given site including, but not limited to, metals, Polychlorinated Biphenyls (PCBs), Polycyclic Aromatic Hydrocarbons (PAHs) and Volatile Organic Compounds (VOCs). For a listing of contaminant types, refer to Section 5. In most instances the CCME Canadian Environmental Quality Guidelines (CEQG) provide the basis for Tier I assessment. Where there are no CCME guidelines available, guidelines from other jurisdictions can be used for comparison, as deemed appropriate by Site Professionals and PPD.

1.3.2 Tier II

Tier II site-specific or pathway-specific guidelines are developed by a Site Professional using site-specific information to determine the need for and extent of remedial work required for a site. The Tier II approach can be applied to all types of contaminants governed by Atlantic PIRI or CCME (i.e., where guidelines exist). Generally, the Tier II approach is only used to assess potential unacceptable risks to human health.

1.3.2.1 Petroleum Hydrocarbons

Atlantic PIRI has produced Tier II Pathway-Specific Screening Levels (PSSLs) which were derived using the same defaults as the Tier I RBSLs. The Tier II PSSLs can be applied when certain exposure pathways are not present on a site (i.e., no buildings on a site). The use of the PSSL table requires detailed evaluation of existing/potential future land and/or groundwater use. In order for the Tier II PSSLs to be applicable, the same minimum site assessment requirements, mandatory conditions and default characteristics, as discussed in Section 1.3.1.1, must be met. The Tier II PSSLs are in Appendix 4 of the Atlantic RBCA Guidance Document.

The Tier II method can also involve the calculation of Site-Specific Screening Levels (SSTLs) using the Atlantic RBCA toolkit. This involves incorporation of site-specific information to derive screening levels to be applicable at that site only. In order for the Atlantic RBCA Toolkit to be used, the same minimum site assessment requirements and mandatory conditions outlined in Sections 4.1 and 4.2 must be satisfied. The use of the toolkit to develop SSTLs requires a higher level of Site Professional expertise and additional site-specific information.

1.3.2.2 Other Contaminants

As noted previously, for contaminants other than petroleum hydrocarbons, CCME often provides the basis for assessment. For many parameters, CCME has developed fact sheets that provide pathway-specific guidelines (similar to the Tier II PSSLs for petroleum hydrocarbons) that can be applied when certain exposure pathways are not present on a site. The use of the pathway-specific guidelines requires detailed evaluation of existing and potential future land use.

SSTLs can be calculated for contaminants other than petroleum hydrocarbons using the CCME *"Protocol for the Derivation of Environmental and Human Health Soil Quality Guidelines"* and the most recent version of Health Canada's "*Guidance on Human Health Preliminary Quantitative Risk Assessment (PQRA),*" and associated documents.

1.3.3 Tier III

The Tier III approach involves the use of additional risk assessment models and scientific approaches to derive SSTLs for sites where Tier II is not applicable or does not fully address the range of issues present at the site. Tier III may be required to address issues or routes of exposure that can not be adequately handled at Tier II such as contamination in air, bedrock, potential ecological impacts or a lack of toxicological or other data. Some examples of Tier III assessment include, but are not limited to: soil vapour testing, ambient air testing, ecological risk assessment and use of risk assessment models other than Atlantic RBCA, CCME and Health Canada.

Due to the complexity of Tier III Risk Assessments, peer review may be required at the expense of the Person Responsible.

1.4 RESPONSIBILITIES

There are three key parties in the Impacted Site Management Process, including the Person Responsible, the Site Professional and the Province. The responsibilities of each of these parties are outlined in subsequent sections.

It is important to note that the Person Responsible is not necessarily the polluter. **The Minister of Environment and Conservation does not determine or apportion liability.** Any civil or legal issues between the polluter and the Person Responsible, if not the same person, are not dealt with through the Impacted Site Management Process. The advantage for all parties is that the process provides unbiased steps to be followed and a documented end to the process.

1.4.1 The Person Responsible

The Person Responsible shall:

- Notify the Province of the presence of impacts on a source property, as follows:
    1. For active spills/releases, immediately notify the Province, through contacting the Newfoundland and Labrador Environmental Emergency telephone line; or
    2. For historical impacts, notify the regional Service NL office. Provide information on how impacts were identified (Phase I or Phase II ESA, etc), the extent of impacts, if known, any remedial actions completed to date and what recommended remedial actions are.
- Take action necessary to ensure human health and the environment are protected during and after the completion of the Impacted Site Management Process, through the hiring of a Site Professional;
- Proceed through the Impacted Site Management Process in a timely manner;
- Immediately notify third party property owners, in writing, that they may be adversely affected by impacts from the source property (i.e., when impacts at the property line are in exceedance of applicable guidelines), and provide proof of notification to PPD or Service NL; and
- Remain informed and involved throughout the Impacted Site Management Process.

The Person Responsible is responsible for due diligence and financing of the assessment and remediation.

1.4.2 The Site Professional

The Site Professional shall:

- Advise the Person Responsible of their responsibilities;
- Advise the Person Responsible of any necessary emergency response required to mitigate immediate threats to human health or the environment;
- Provide the necessary level of professional competence to resolve all technical issues in the Impacted Site Management Process;
- Advise the Province when, in his/her opinion, the Person Responsible fails to act in a manner necessary to mitigate an immediate threat to the safety or health of the public;
- Ensure the appropriate level of characterization and contaminant delineation is achieved (i.e., that the minimum site assessment requirements are met); and

- Provide all applicable technical reports and a completed Record of Site Condition to PPD or Service NL, in a timely manner, demonstrating that the site has been managed in compliance with the Impacted Site Management Process and is safe for the intended use.

1.4.3 The Department

The Department, on behalf of the Province, shall:

- Ensure the protection of human health and the natural environment;
- Identify the Person Responsible for management of each impacted site;
- Give written notice to the Person Responsible through issuing an Impacted Sites letter, to notify them of their requirement to hire a Site Professional (note that this is generally only completed for active spills);
- Ensure the Impacted Site Management Process is properly followed in a timely manner;
- Establish applicable standards, criteria or guidelines for impacted sites;
- Provide technical verification of the work of the Site Professional;
- Provide acknowledgement when satisfied that the Impacted Sites Management Process has been followed (Regulatory Closure is achieved);
- Record and maintain information on sites managed through this process using the provincial Environmental Sites Registry;
- Revise/review and update this guidance document as deemed necessary; and
- Provide direction and guidance to Service NL Environmental Protection Officers (EPOs) and other Government Departments and Agencies on the management of impacted sites.

The Province has the discretionary authority to enforce compliance if the Person Responsible is delinquent or negligent, including ensuring that any necessary emergency action is taken, through issuance of a Ministerial Order or Designation of a Contaminated Site;

2 PROCESS STEPS

The Impacted Site Management Process is divided into five steps discussed in detail in the following sections. The five steps are:

- Initial Actions;
- Environmental Site Assessment and Risk Assessment;
- Remedial Action Planning and Implementation;
- Regulatory Closure; and
- Monitor Well Decommissioning (if applicable).

2.1 STEP 1 – INITIAL ACTIONS

2.1.1 Active Impacts

Upon notification of an active spill/impact on a site, an EPO will complete an initial investigation in order to:

- Assess the type and potential extent of contamination;
- Determine any potential for immediate human health and ecological concerns as well as identify any potentially sensitive receptors on or in the vicinity of the site;
- Determine the Person Responsible for emergency and remedial actions; and
- Determine if the initial emergency response is satisfactory.

Once the EPO has completed their initial investigation, they will issue an impacted sites letter to the Person Responsible informing them of their requirement to hire a Site Professional to complete an Environmental Site Assessment (ESA).

2.1.2 Historical Impacts

Historical impacts are generally identified through the ESA process. The ESA process is often started if there is a property transaction, re-financing, construction on a site, etc. Upon identification of impacts, they must be reported to Service NL or PPD. Once reported, the site professional generally continues with the site assessment and remediation process.

The initial actions of an EPO would depend on the type and extent of impacts identified and other site specific information.

2.2 STEP 2 – ENVIRONMENTAL SITE ASSESSMENT AND RISK ASSESSMENT

The Person Responsible must employ a Site Professional meeting the requirements outlined in Section 6. The Site Professional is required to complete an ESA that meets the Minimum Site Assessment Requirements set out in the most recent version of the Atlantic RBCA Guidance Document. The Site Professional is responsible for determining what CoCs require investigation during the ESA, based on all available information. If there are any issues related to assessment of non-petroleum hydrocarbon compounds, it is the responsibility of the Site Professional to apply good judgement to meet the intent of the Minimum Site Assessment Requirements.

If contaminant concentrations exceed Tier I guidelines, the Site Professional has the option to remediate or further assess the site using a Tier II or Tier III Risk Assessment approach based on site-specific conditions, as discussed in previous sections. If Tier II or Tier III SSTLs are calculated, the Site Professional must provide supporting details that will allow duplication of all steps of the Risk Assessment process. Where default parameters are changed, the Site Professional must provide full justification for these changes.

If actual or potential impacts are identified at the property line in excess of applicable guidelines, the Person Responsible must immediately notify third party property owners, in writing, that they may be adversely affected by impacts from the source property and provide proof of notification to the PPD and/or Service NL.

Part of the Minimum Site Assessment Requirements is to conduct an ecological screening following the Atlantic PIRI Ecological Screening Protocol in Appendix 2 of the Atlantic RBCA Guidance Document. Further discussion of this protocol is provided in Section 3.2. For non-petroleum CoCs, it is the responsibility of the Site Professional to apply good judgement in the assessment of ecological exposures.

2.3 STEP 3 – REMEDIAL ACTION PLANNING AND IMPLEMENTATION

Remediation or risk management is required to mitigate any impacts where there are exceedances of selected guidelines, whether Tier I, II or III. Remediation or risk management may include eliminating the exposure pathway, the receptor and/or the contaminant.

The Person Responsible and the Site Professional must determine if they wish to use a Tier I, Tier II or Tier III approach to direct necessary remedial action. Any remedial activities beyond soil excavation and disposal will require the preparation and submission of a RAP, which must mitigate unacceptable risk to both human health and the environment.

The RAP must be submitted to Service NL or PPD for review and approval prior to completing the remedial activities. If the site is remediated to Tier I guidelines, it is the responsibility of Service NL to oversee the process and ensure that it is brought to completion. Anything beyond remediation to Tier I guidelines falls under the responsibility of the PPD.

2.3.1 Monitoring

The Site Professional must determine, through the work completed in Steps 2 and 3, if a monitoring program is required. In cases where a monitoring program is required to demonstrate the success of the RAP, details on the program shall be included in the RAP.

Typical components of a monitoring program include:

- A clear definition of the monitoring objectives;
- Identification of the parameters to be monitored and measured;
- Description of when, where, and how data is to be collected, analyzed and reported;
- Description of how RAP or site management performance will be confirmed; and
- Detailed interpretation of monitoring results.

The Person Responsible and the Site Professional implement remediation and any proposed monitoring. The period of implementation and extent of monitoring will depend on the method of remediation selected. If deviation in method or schedule from the RAP occurs or is planned, the Person Responsible must inform the PPD or Service NL in writing.

2.4 STEP 4 – REGULATORY CLOSURE

Once the Site Professional is satisfied that impacts have been satisfactorily addressed and unacceptable risks are not expected, the Person Responsible or Site Professional will submit a Closure Report to PPD or Service NL, demonstrating that the site meets remedial objectives. PPD or Service NL will review the Closure Report to ensure the site has been managed in accordance with this guidance document and, if necessary, return it for correction.

The Closure Report must include a completed Record of Site Condition that is valid only for the land use and conditions stated by the Site Professional. The risk to receptors must be reassessed if there are changes in land use or site conditions that could potentially increase risk (e.g., commercial to residential land use or removal of an asphalt cover).

The Record of Site Condition is important as it provides a high level of certainty to the PPD, Service NL, current and future property owners and lenders that any concerns associated with the identified impacts have been satisfactorily addressed.

2.4.1 Closure Options for Site Professionals

On the Record of Site Condition, there are two options for Closure that the Site Professional may recommend, on behalf of the Person Responsible. These are Final Closure and Conditional Closure.

Final Closure is recommended once it has been demonstrated that remedial objectives have been achieved and no further work is required.

Conditional Closure is recommended when all remediation is complete and a monitoring program is required to verify that all of the remedial objectives have been achieved. Once monitoring demonstrates to the satisfaction of the Province that site conditions are stable, the Site Professional can submit a new Record of Site Condition recommending Final Closure, on behalf of the Person Responsible.

2.4.2 Closure Options for the Department

Following review of the Closure Report and Record of Site Condition, the site is acknowledged by Service NL or PPD for either Unconditional or Conditional Regulatory Closure. Unconditional Regulatory Closure is achieved by demonstrating that Tier I, II, or III guidelines have been met. Unconditional closure usually permits unrestricted future development or use within the particular land use designation (agricultural, residential, commercial or industrial).

Conditional Regulatory Closure requires on-going site management using engineered controls, institutional controls, or periodic monitoring to ensure adequate protection of human and environmental health for the land uses specified in Part 5 of the Record of Site Condition.

Conditional Regulatory Closure will require someone, such as the Person Responsible, current and future property owners and bonding or other financial guarantors, to accept long-term responsibility for the ongoing site management, in writing. On sites where institutional or building restrictions are required, the Site Professional or Person Responsible is required to consult with/notify any affected stakeholders (e.g., Regulator, Municipality). As an example, a municipality would have to be informed of any building exclusion zones on a property. Prior to Regulatory Closure, PPD or Service NL must be satisfied that the necessary site management controls will be maintained in future.

Examples of site management controls include:

- Engineered controls such as slurry walls, asphalt covers, imported soil covers, forced or passive air ventilation systems, retention ponds, groundwater pumping systems and long-term treatment equipment; and
- Institutional controls such as building location limitations, building construction limitations (i.e. slab on grade), fish advisories and potable groundwater well location and/or construction.

When institutional or engineered controls are part of the risk management selected for the site, the Closure Report and Record of Site Condition must disclose the relevant limitations and requirements associated with the controls.

Regulatory Closure is achieved once the PPD or Service NL signs Part 7 of 7 of the Record of Site Condition and returns the original signed document to the Person Responsible. Copies are also forwarded to the Site Professional and any other interested parties (i.e., any affected third party properties, insurance companies, etc.).

PPD will ensure that the internal environmental sites registry is updated to include information regarding the work completed and the type of Regulatory Closure achieved.

PPD reserves the right to re-evaluate sites should new information become available or should site activities or circumstances change that may pose a risk to human health or environment.

2.5 STEP 5 – DECOMMISSIONING OF MONITORING WELLS

The last step after Final/Unconditional Regulatory Closure is achieved is the decommissioning of monitoring wells and remedial infrastructure, where applicable.

Monitoring wells are specifically designed and used for aquifer assessment purposes including groundwater flow and water quality observations. Monitoring wells and other types of boreholes that penetrate into the water table depth, such as remediation wells, can provide potential pathways for contaminants to impact groundwater. Following completion of assessment and remediation, these shall be properly decommissioned to prevent both vertical movement of water within the well bore and infiltration of surface water into the well.

The objectives of the decommissioning procedure are to:

1) Eliminate the vertical migration of fluids down the borehole;

2) Eliminate physical hazards;

3) Eliminate improper use; and,

4) Conserve groundwater resources.

This guidance does not apply to:

1) Seismic shot holes and mineral exploration holes (addressed by Department of Natural Resources);

2) Piezometers, and monitor wells where active long term monitoring is required (eg. dams, service stations, landfills);

3) Boreholes advanced above an aquifer for the purpose of characterizing local geology;

4) Water wells, oil and gas wells; and,

5) Special cases with prior approval of the Department.

2.5.1 Decommissioning Protocol

Monitoring wells and boreholes shall be decommissioned in accordance with the following protocols.

2.5.1.1 Monitoring/Recovery Wells

1) Wells that have not been monitored for 1 year shall be considered abandoned unless written permission is obtained from PPD to continue usage of the well. This permission is contingent upon inspection and verification that the well is in good condition.

2) Monitoring wells shall be checked to ensure they are free from obstructions prior to sealing. In all cases, the casing must be cut below the natural ground level so as not to interfere with future land use. In no case should the casing be cut less that 1 m below ground level.

3) Decommissioned monitoring wells must be filled with material of equal or lower permeability than the original geologic formation.

4) Monitoring wells up to and including 50 millimetres (mm) in diameter shall be completely filled with a sealant such as bentonite pellets or chips sized no more than 1/4 of the minimum well diameter. The rate of pouring the pellets/chips into the well shall be at a rate to prevent bridging. Where pellets/chips are poured above the water level, the addition of water is required to properly hydrate the bentonite.

5) Monitoring wells and other vertical structures greater than 50 mm and less than or equal to 300 mm diameter are to be filled with alternating layers of 3.0 m sand and 0.3 m bentonite to the bottom of the well, starting with a minimum of 0.3 m of bentonite.

6) Vertical infrastructures with a diameter greater than 300 mm are to be removed and the void filled with material having permeability lower than the native, on site material.

7) Where the abandonment will be completed below grade, the area of the well boring shall be covered with a layer of bentonite, grout, or other sealant before back filling.

8) Acceptable sealants are bentonite grout, pellets, and chips.

9) A monitoring well abandonment record is required for each well that is decommissioned and forwarded to PPD. As a minimum, the log must contain the client name, site name, monitor well/borehole identification, list of materials used, abandonment method, name of site professional, total well depth and borehole log (schematic) showing zone(s) of grout placement.

2.5.1.2 Boreholes

1) Boreholes that are advanced into an aquifer for the purpose of characterizing local geology and are not developed into a monitor well are to be backfilled with material of equal or lower permeability.

2) The back filling material must be compacted and a mound placed over the hole to allow for future settling.

3) Boreholes in which a monitor well is not installed shall be decommissioned immediately upon completion of the relevant site investigation activities.

3 TECHNICAL CONSIDERATIONS

3.1 LAND USE AND RECEPTORS

Identification of the human and ecological receptors that will be exposed to residual contaminants is critical to the selection of Tier I or Tier II guidelines. There are four land use categories specified by Atlantic PIRI and CCME that are adopted by the Department as follows:

- Agricultural;
- Residential/Parkland;
- Commercial; and
- Industrial.

The Site Professional is responsible for identifying the reasonable future land use prior to the selection of applicable guidelines.

For more information on exposure assumptions for these land uses, refer to the Atlantic RBCA User Guidance Document and CCME documentation.

3.2 ECOLOGICAL RISK ASSESSMENT

The accepted approach to Ecological Risk Assessment (ERA) is based on the CCME document, *A Framework for Ecological Risk Assessment at Contaminated Sites: General Guidance (1996).* ERA is the formal process that has been developed for assessing and quantifying risk to ecological receptors from exposure to one or more stressors.

A three-tier framework is typically followed and is composed of sequentially more sophisticated and complex evaluations. Tiers in the framework include:

- Screening or Qualitative Assessment,
- Preliminary Quantitative ERA, and
- Detailed Quantitative ERA.

There is a potential for unacceptable risk when a hazard (e.g., a high concentration of contaminant) co-exists with a receptor, and there are active pathways that may cause the receptor to be exposed to the hazard.

Hazard identification involves the identification of CoCs that may pose a risk to organisms and relates toxicity information obtained from literature for the contaminants. Receptor identification involves the identification of organisms that may be exposed to the potential hazards. Exposure assessment involves the evaluation of the likelihood or degree to which receptors will be exposed to the hazard, and the pathway(s) by which exposure may occur. Finally, risk characterization involves the assessment of risk of each hazard to each receptor, based on degree of exposure.

When assessing potential impacts to ecological receptors from petroleum hydrocarbons, the site professional must complete an initial screening in accordance with the *Atlantic RBCA Ecological Screening Protocol for Petroleum Impacted Sites in Atlantic Canada,* herein referred to as the ecological screening protocol, located in Appendix 2 of the Atlantic RBCA Guidance Document. The protocol contains Tier I Ecological Screening Levels for soil, sediment, groundwater and surface water for the protection of ecological receptors and provides guidance for receptor and exposure identification. Completion of this protocol is therefore considered a Tier I approach.

If the ecological screening levels are exceeded, if potential or actual ecological habitat is identified within 200 m, and if there is a potential for ecological receptors to be exposed to the impacts, more detailed ecological assessment (i.e., higher tiers of risk assessment) is required. Further details on what is classified as ecological habitat are provided in the Ecological Screening Protocol in Appendix 2 of the Atlantic RBCA Guidance Document.

At any point during the process, the site professional may recommend remediation/risk management.

3.3 LABORATORY ANALYTICAL METHODS

Samples are to be collected using standard defensible methods, kept cool until delivery to the laboratory and must respect storage and handling requirements of the laboratory.

For all CoCs, all laboratories analyzing samples must be accredited by the Canadian Association for Laboratory Accreditation (CALA) for the specific parameters being analyzed.

In Canada, there are various methods for the analysis of petroleum hydrocarbons. For Atlantic Canada, the accepted laboratory method is the Atlantic RBCA Method, discussed in the Atlantic PIRI document entitled *Atlantic RBCA Guidelines for Laboratories, Tier I and Tier II Petroleum Hydrocarbon Methods*. In this method, the samples are analyzed for TPH, comprised of both purgeable and extractable hydrocarbons (gas/diesel/lube oil ranges - C_6 to C_{32}), as well as the BTEX compounds.

3.4 GROUNDWATER ASSESSMENT

As discussed in Section 2.2, assessment work carried out at a site must meet the Minimum Site Assessment Requirements detailed in the most recent version of the Atlantic RBCA Guidance Document. This will typically include the installation of monitoring wells to assess the quality and characteristics of groundwater. However, there may be instances where the Province may permit groundwater at some impacted sites to remain unevaluated if full justification is provided by the Site Professional. In order for this to be approved, one of the following requirements must be met:

1. All of the following conditions must be satisfied:

    - Approximate volume of spill is known;
    - Emergency spill response and remedial actions must have been initiated within a timely manner (i.e., before leaching to groundwater or off-site migration of contaminants could take place);
    - Groundwater at the site and on surrounding sites is not used for potable purposes;
    - There are no aquatic receptors within 200 m of the site; and
    - Groundwater is not encountered during excavation.

Or,

2. If the conditions outlined the above have not been met, and the site professional believes that groundwater assessment is not required and can support this through other lines of evidence, this can be discussed with the PPD prior to submission of the report for closure. If PPD agrees with the site professional's justification, groundwater may be permitted to be unevaluated.

Site Professionals must consult with the Province if groundwater is not going to be assessed, prior to submission of the report for closure. If approved, full justification as to why groundwater is believed not to be impacted must be provided in the closure reporting.

In cases where monitoring wells cannot be installed due to space constraints or geological limitations, Site Professionals must provide supporting evidence to the Province to demonstrate this. In these cases, it is recommended that the Site Professional meet with the PPD or Service NL on the site to discuss potential groundwater assessment options.

3.5 DISPOSAL OF IMPACTED MATERIALS

Once soil is excavated at a site, it must be managed based on recommendations and guidance provided by the Waste Management Section of PPD. The closure report shall include documentation providing proof of proper disposal.

If removal of impacted groundwater is required, a licenced waste disposal contractor can be utilized for removal or it can be treated on site. If a waste disposal contractor is used, the closure report must include the name of the contractor used and the volume of impacted groundwater removed. If on-site treatment is conducted, approval must be requested in advance and any discharge must meet the Provincial *Environmental Control Water and Sewage Regulations*, or a guideline acceptable to the Department (for CoCs not included under the *Environmental Control Water and Sewage Regulations*).

3.6 SCIENTIFIC ADVANCEMENTS

Site Professionals are responsible for maintaining current technical and guidance/policy knowledge in impacted sites management. There will be times when changes in criteria or protocols, laboratory methods, risk assessment software and other directly related issues occur prior to changes to the Department's guidance document. Site Professionals must incorporate these types of changes into their work once they become generally accepted and consult with the Department if they are in doubt about application.

4 RBCA REQUIREMENTS

4.1 MINIMUM SITE ASSESSMENT REQUIREMENTS

As discussed previously, in order for the Tier I RBSLs or Tier II PSSLs to be applied or use the Atlantic RBCA Toolkit to calculate Tier II SSTLs, the following requirements must be met:

- PID (if applicable), owner, location identified;
- Current and anticipated future land use identified;
- Review of underground services as conduits;
- Historical review completed;
- Local groundwater use identified;
- Adjacent land uses and receptors identified;
- Ecological screening completed;
- Soil and groundwater samples from all source areas obtained;
- Soil and groundwater impacts delineated to Tier I RBSLs for potential receptor (adjacent property receptor may be lower Tier I RBSLs);
- Groundwater flow direction and gradient established;
- Combination of surface and sub-surface soil samples analysed;
- Free product observations made in soil and groundwater;
- Low lab detection level for benzene in soil if potable water area;
- Grain size and organic carbon analysis completed on soil;
- TPH fractionation done on soil and water if calculating Tier II SSTL;
- Scaled site plan showing all relevant site features; and,
- Receptor building characteristics obtained (storeys, floor condition, ceiling height, etc).

4.2 MANDATORY CONDITIONS

As discussed previously, in order for the Tier I RBSLs or Tier II PSSLs to be applied or use the Atlantic RBCA Toolkit to calculate Tier II SSTLs, the following conditions must be met:

- Non-aqueous phase liquids not present in groundwater;
- Potable water free of objectionable taste and odour;
- Soils do not contain liquid and/or free petroleum product;
- Residual hydrocarbons do not create objectionable odours or explosive conditions in indoor or outdoor air;
- Surface soils are not stained;
- No dirt basement floors, sumps with dirt bottoms, etc;
- Confirmed that correct TPH type selected in RBSL or PSSL Table; and,
- Confirmed that correct soil type selected in RBSL or PSSL Table.

4.3 DEFAULT SITE CHARACTERISTICS AND EXPOSURE SCENARIOS

As discussed previously, in order for the Tier I RBSLs or Tier II PSSLs to be applied, the following site characteristics must conform to the following defaults and exposure scenarios:

- Depth to groundwater approximately 3.0 metres;
- Impacted soil thickness is less than 3.0 metres;
- Default foundation crack fraction is appropriate;
- Default foundation thickness is appropriate;
- Two floors exist if using a residential scenario;
- Hydrocarbon impacts above RBSL or PSSL Table soil values are not within 0.3 m of foundation walls or floor slab;
- Confirmed that RBSL or PSSL Table values is correct for adjacent property receptors (i.e. use residential at property line if adjacent property is residential);
- Where exposure pathways have been eliminated at Tier II, detailed explanation provided in report explain why pathways are not relevant;
- Where PSSLs tables are used based on elimination or control of a pathway that could be reopened by changes in site use, this condition is specified as a limitation in the report; and,
- Where Tier II SSTLs have been calculated by changing default values, the report includes the parameter changed, the default value, the site-specific value used, and the rationale and/or detailed written justification.

5 CONTAMINANT GROUPS

GROUP 1 – PETROLEUM HYDROCARBONS	
Benzene	Gasoline
Toluene	#2 Fuel oil (furnace & diesel)
Ethylbenzene	Heavy oil (Bunker & waste oil)
Xylenes	TPH fractions (C6-10, C11-16, C17-34)
GROUP 2 – PAHs	
Benzo(a)pyrene	Fluoranthene
Naphthalene	Pyrene
2-methylnaphthalene	Benz(a)anthracene
1-methylnaphthalene	Chrysene
Acenaphthyene	Benzo(a)fluoranthene
Acenaphthene	Benzo(k)fluoranthene
Fluoranthene	Perlene
Phenanthrene	Indeno(1,2,3-cd)pyrene
Anthracene	Dibenz(a,h)anthracene
	Benzo(ghi)perylene
GROUP 3 – HEAVY METALS (inorganic forms only)	
Antimony	Lead
Arsenic	Mercury
Barium	Nickel
Beryllium	Selenium
Cadmium	Thallium
Chromium (total)	Uranium
Chromium (hexavalent)	Vanadium
Copper	Zinc
GROUP 4 – NON-CHLORINATED ORGANIC COMPOUNDS	
MTBE	Ethylene glycol
Phenol	Cyanide (free)
GROUP 5 – CHLORINATED ORGANIC COMPOUNDS	
Polychlorinated Biphenyls (PCB)	Trichloroethane
Tetrachloroethylene (PCE)	Methylene chloride
Trichloroethylene (TCE)	1,1,1-trichloroethane
Chlorophenols (Penta and daughters)	
GROUP 6 – PESTICIDES	
DDT insecticide and daughters	Phenoxy Acid Herbicides
Organochlorine insecticides (excl DDT)	Carbamate insecticides
Organophosphate insecticides	Fungicides
GROUP 7 – MICROBIOLOGICAL	
e-coli	Cryptosporidium
total coliform	Giardia

Note: Microbiological contaminants are listed above but no screening level guidelines are provided in the Tier I Look Up Tables. The technical tools discussed are not suitable for assessing risk from this Group. The Province should be contacted for site-specific guidance on methods of assessing microbiological contamination as regulated criteria may be used to supplement the Look Up Tables for bacterial impacts (e.g., sewer regulations, health regulations, ecological regulations). Testing for the presence of microbiological contaminants should be conducted when microbiological contaminants are identified as likely or known as contaminants of concern.

6 SITE PROFESSIONAL

6.1 QUALIFICATIONS

The work on which the Record of Site Condition is based shall be reviewed, overseen or conducted by the person signing it (Site Professional). There are minimum requirements that must be met in order to become a Site Professional due to the high level of confidence placed upon them. The Department has developed a registration process for Site Professionals to ensure that impacted sites in Newfoundland and Labrador are managed by qualified individuals. In order to become registered, the application form on the next page must be completed and submitted for approval to the Director of Pollution Prevention.

The following are the minimum standards for application review:

1) The individual shall:
    a. be full member in good standing with the Professional Engineers and geoscientist of Newfoundland and Labrador (PEGNL); or
    b. hold a minimum of a related Masters Degree in science, applied science, engineering, applied technology, or one otherwise acceptable to the Department. If Masters Degree is from a post-secondary institution is outside of Canada, further information may have to be provided prior to acceptance.

And;

2) The individual shall also have, and shall successfully demonstrate, a minimum of five (5) years direct experience in the conduct, supervision, and review of environmental site assessment, risk assessment, and/or remediation projects.

And;

3) The individual or the company the individual represents shall hold professional errors and omissions liability insurance coverage of at least $1,000,000 for environmental work.

Once approved by the Director of Pollution Prevention, the Site Professional will receive a registration number. This number shall be clearly identified on the Record of Site Condition.

If professional competency and/or conduct issues occur, the Department has the discretion to review the standing of an individual's site professional privileges.

If any changes to site professional status occur, such as no longer in good standing with PEGNL, the Site Professional or the company that the Site Professional represents shall inform PPD of these changes.

Management of Impacted Sites, Site Professional Application Form			
Name of Applicant:			
Company:			
Qualifications			
The applicant (check applicable statement(s)):			
1. Is a full member in good standing with the Professional Engineers and Geoscientists of Newfoundland and Labrador (PEGNL) ☐			
2. Holds a minimum of a related Master's Degree in science, applied science, engineering, applied technology or one otherwise acceptable to ENVC. ☐			
If 2. Please provide details:	Degree:	Post-secondary institution :	
Note: If the post-secondary institution is outside of Canada, further information on the program may be requested.			
Insurance:			
Does the Applicant or Company that the applicant represents hold professional errors and omissions liability insurance coverage of at least $1,000,000 for environmental work? **Please attach insurance certificates.** ☐ Yes ☐ No			
Work Experience:			
Does the Individual have a minimum of five (5) years direct experience in the conduct, supervision, and review of environmental site assessment, risk assessment and/or remediation projects? **Please attach CV for review.** ☐ Yes ☐ No			
Notification of Changes			
Does the individual agree to notify ENVC of any changes in Site professional status? ☐ Yes ☐ No			
Does the individual agree to notify ENVC of any changes in PEGNL membership status and/or standing? ☐ Yes ☐ No			
DECLARATION— I solemnly declare that the statements made in this application are true.			
Signature of Applicant:		Date:	

ENVC USE ONLY:			
Approved:	☐ Yes ☐ No	Site Professional Registration # :	
Approved By:		Date:	

6.2 CONFLICT OF INTEREST

To ensure independence and to maintain public faith in the Department's mandate and any environmental clearance documentation, no individual shall act as the Site Professional on a project or property where the individual or company the individual represents has direct or indirect interests. Specifically, the Department's policy is as follows:

- Remediation may be performed by a contracted party; or it may be performed by the property owner, responsible party, or another party themselves.
- Sampling and reporting confirming compliance with Department's legislation, policies, and guidelines must be done by a qualified consultant (site professional) independent of the property owner, responsible party, or any other with an interest in the property.
- Laboratory analysis must be conducted by a laboratory independent of the property owner, responsible party, or any other with an interest in the property.

7 RECORD OF SITE CONDITION

Part 1 of 7: Source Property Information

Civic Address:

Person Responsible (name and address):

Part 2 of 7: List of Reports

Prepared by Others - The following reports pertaining to the source property cited in Part 1 and/or any other related impacted properties have been prepared by others and reviewed under the supervision of the Site Professional (expand the table as required):

Report Title	Prepared by	Date

Prepared by and/or overseen by the Site Professional - The following reports pertaining to the source property cited in Part 1 and/or any other related impacted properties have been prepared by and/or overseen by the Site Professional (expand the table as required):

Report Title	Date

Part 3 of 7: Remedial Action

List the potential Contaminants of Concern **(CoCs) on the property (i.e., what was analysed?):**

List the CoCs on or originating from the source property (i.e., CoCs above applicable guidelines):

Summarize the assessment and remedial actions completed at the site complete with timelines:

Was a risk assessment completed at the site (includes human health, ecological, vapour sampling, etc)? ☐ Yes ☐ No

If yes, identify the risk assessment methodology and the resulting site-specific remedial criteria in the below table (expand the table as required). If no site-specific remedial criteria were derived, please provide additional details of the assessment:

Risk Assessment Methodology Used:			(Tier II PSSLs/SSTLs, Tier III, Soil Vapour, etc.)		
Media	**Units**	(insert CoC #1)	(insert CoC #2)	(insert CoC #3)	(insert CoC #4)
Soil					
Groundwater					
Vapour/Subslab/Indoor Air					
Sediment					
Surface Water					
Other					

If no, list the selected Tier I guidelines used for all analysed parameters, noting the guideline reference (i.e., CCME, RBCA, CWS, etc): (expand the table as required)

Media	**Units**	(insert CoC #1)		(insert CoC #2)		(insert CoC #3)		(insert CoC #4)	
		Guideline	Ref.	Guideline	Ref.	Guideline	Ref.	Guideline	Ref.
Soil									
Groundwater									
Vapour/Subslab/Indoor Air									
Sediment									
Surface Water									
Other									

If a peer review of the Remedial Action Plan and/or the Risk Assessment/Closure Report was requested by Service NL or DOEC, provide the following information:

Consultant Name:

Consultant Address:

Date & Title of Report:

Part 4 of 7: Off-Site Impacts

Precautionary duty of the Person Responsible: Based on the work completed, the following third party properties (identified by civic address or property description) were identified by the Person Responsible/Site Professional, in accordance with section 5.8(1)d of the *Environmental Protection Act*, as being affected or threatened by the contamination originating from the source property.

Where appropriate, indicate the type of impact and summarize what assessment was completed and if any mitigative/remedial actions were taken: (expand the table as required)

Civic Address or Property Description	Type of Impact Identified	Summary of Actions and Outcome

Part 5 of 7: Site Activities

Based on the work completed, the source property cited in Part 1 is suitable for the following site activity(s), subject to any conditions and assumptions stated in the report(s) listed in Part 2. Check appropriate box and provide comments if necessary.

IF LAND USE CHANGES – LEVEL OF RISK MUST BE RE-EVALUATED

☐ Agricultural ☐ Residential/Parkland ☐ Commercial ☐ Industrial

Are there any monitoring requirements for this site? ☐ Yes ☐ No

If yes, please provide details:

Are any engineered controls in place to mitigate potential unacceptable risks? ☐ Yes ☐ No

If yes, please provide details:

Are any institutional controls in place to mitigate potential unacceptable risks? ☐ Yes ☐ No

If yes, please provide details:

Additional comments or special considerations:

Part 6 of 7: Summary Statement of Site Professional

The Minister considers Statements 1 to 7, below to be **mandatory** for submission of the Record of Site Condition. The signature of the Site Professional on this form indicates the fulfillment of these mandatory requirements as well as the requirements of all other checked statements. Please check appropriate statements:

1. This Record of Site Condition form is identical to the one provided in the Province of Newfoundland & Labrador Guidance Document for the Management of Impacted Sites and the content of the form has not been altered. ☐
2. All work on which this Record of Site Condition is based was prepared, overseen and/or reviewed by the Site Professional. ☐
3. The site was managed in accordance with the current version of the Province of Newfoundland & Labrador Guidance Document for the Management of Impacted Sites. ☐
4. The applicable quality criteria (Tier I, II or III) for the site as defined by the Site Professional and as cited in Part 3 have been achieved for the current or reasonably foreseeable future site activities as cited in Part 5. ☐
5. A site plan with scale indicated, identifying the referenced properties is attached to this Record of Site Condition. ☐
6. All reports cited in Part 2 and other related documents that have been prepared by the Site Professional have been delivered to the Person Responsible. ☐
7. With respect to notification, the requirements of section 8(d) of the Environmental Protection Act have been fulfilled ☐
8. The Remedial Action Plan, Risk Assessment or Closure Report was peer reviewed by a qualified, independent Site Professional. ☐
9. If peer reviewed, the results of the Peer Review were appropriately incorporated into the final Remedial Action Plan and/or Closure Report. ☐
10. Based on the results of the site evaluation, the applicable quality criteria (Tier I, II or III) were not exceeded on the source property and therefore, remedial action and/or on-going site management is not required for the current or reasonably foreseeable future site activities. ☐
11. Based on results of the site evaluation, the applicable quality criteria (Tier I, II or III) were not exceeded on the third party properties and therefore, remedial action and/or on-going site management is not required for the current or reasonably foreseeable future site activities. ☐
12. The source property has been remediated to an acceptable level for the current or reasonably foreseeable future site activities as cited in Part 5. ☐
13. The source property requires on-going site management to satisfy the current or reasonably foreseeable future site activities as cited in Part 5. ☐
14. Third party properties affected by the contamination of the source property have been addressed and remediated to an acceptable level for the current or reasonably foreseeable future site activities as cited in Part 5. ☐
15. Third party properties affected by the contamination of the source property have been addressed and require on-going site management to satisfy the current or reasonably foreseeable future site activities as cited in Part 5. ☐

☐ The source property is recommended for **Conditional Closure,** subject to monitoring requirements specified in Part 5.
☐ The source property is recommended for **Final Closure**

Signature _____ Date:

Name (Please Print):
Site Professional Registration No:
Company:
Address:

Part 7 of 7: Acknowledgement by Newfoundland and Labrador Department of Environment and Conservation

The Department acknowledges receipt of this Record of Site Condition. The Department has processed the report(s) cited in Part 2 of this Record of Site Condition for the purpose of ensuring the site has been managed in accordance with the Newfoundland and Labrador Department of Environment and Conservation *Guidance Document for the Management of Impacted Sites.*

Based solely on the report(s) cited in Part 2 and on the conclusions of the Site Professional stated in Part 6 of this Record of Site Condition, the Department is satisfied, at this point in time, that the stated level of contamination remaining on the subject property, in the portions of the subject property addressed by the report(s), does not pose an unacceptable risk to human health or to the environment. Notwithstanding this opinion, the Department reserves the right to re-evaluate this decision should new information come to light, or should site activities, site uses or circumstances change which may result in an increase in contamination or in contaminant migration or which may cause changes in site conditions or site classification that may pose a risk to human health or to the environment.

The Department has not directly supervised the work undertaken at the site and does not assume any responsibility or liability for this work, or for notifying future owners, or for notifying present or future occupants of the property, of the work completed. In no way does this acknowledgement make any representation with respect to any environmental damage or liability that may have occurred at the above mentioned property due to contamination that was not discovered, reported or investigated. Any persons intending to purchase or occupy the property should make their own independent determination of the environmental condition of the property and the extent of responsibility and liability, if any, that may arise from taking ownership or occupancy. In addition, workers that are engaged in future sub-surface excavations on site must be made aware of the potential risks of exposure to the remaining contamination.

Unconditional Closure

☐ It is understood from the information provided that the site has been managed in accordance with the Newfoundland and Labrador Department of Environment and Conservation *Guidance Document for the Management of Impacted Sites* and that **further remedial action and/or site-specific engineered or institutional controls are not required** to ensure compatibility with the current or reasonably foreseeable future site activities (as cited in Part 5).

Conditional Closure

☐ It is understood from the information provided that the site has been managed in accordance with the Newfoundland and Labrador Department of Environment and Conservation *Guidance Document for the Management of Impacted Sites* and that **site-specific engineered or institutional controls are required** to ensure compatibility with the current or reasonably foreseeable future site activities (as cited in Part 5).

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Department of Environment and Conservation Date

8 REFERENCES

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