

Remediation Program: Submission Requirements and Review Procedures

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Department of Environment and
Local Government

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1.0 INTRODUCTION

Contaminants, mainly in the form of solids, liquids and gases, such as a petroleum product spill or leak, are considered a release of a contaminant under the *Clean Environment Act* in New Brunswick. When a release of a contaminant occurs, there is the potential for contamination of soil and groundwater to affect drinking water supplies, adjacent properties and ecological receptors. Contaminant releases may also result in the presence of vapors at concentrations that may affect the health of some individuals. Once a release occurs, the New Brunswick Department of the Environment and Local Government (DELG) has the authority to direct a person/company to carry out containment, clean up, site rehabilitation, sampling or other remedial action in order to protect human health and the environment.

The DELG remediation process for managing contaminated sites has been used to remediate hundreds of contaminated sites in the province, based on the principle of protection of human health and the environment. A component of the remediation process is the application of a risk based approach to site cleanup, which allows efficient use of resources to clean up a contaminated site to appropriate levels.

The remediation process involves three primary participants: the Responsible Party (RP) who is charged with assessing and remediating the site, the Site Professional (SP) who directs this work and prepares reports, and the Regulator who verifies compliance with the remediation process, whether the incident is handled as an occurrence or a remediation file. The individual/company identified by DELG as the responsible party, is responsible for the costs associated with any emergency action, site assessment and or remedial action deemed necessary.

In general, this document describes the DELG remediation program, outlines report submission requirements for site professional documents, and DELG report review and auditing procedures. Site Professionals are responsible for submitting documents that meet DELG regulatory and technical guidance.

2.0 MANAGEMENT OF A CONTAMINATED SITE

2.1 Spill Incidents handled as an Occurrence File

Management of a spill incident can be dealt with in two ways, through the Occurrence system or the Contaminated Site Management (CSM) process (i.e. Remediation file, see Section 2.2). In general, an occurrence is used for smaller petroleum spills, such as motor vehicle accidents and domestic oil tank spills, where there is only contamination of soil and no impacts to groundwater or ecological receptors. Flowchart 1 (Appendix A) outlines the general process for how a spill is managed and where in the process the decision is made to handle the site through the Occurrence system or the CSM process.

All of the steps in Flowchart 1 that are outlined in green are generally led by a DELG Inspector and the Regional Office. Although the steps in the flowchart are shown linearly, the steps may not proceed in that exact order depending on site specific factors. Basically, all spills need to be reported to the appropriate Regional office, as prescribed by Legislation. The Inspector will open an Occurrence file for all reported spills and may visit the site, depending on the magnitude and

severity of the incident. For most spill incidents, the Responsible Party will be directed to engage a Site Professional to manage the incident.

Once the Inspector has sufficient information, they will conduct an incident screening to determine if the spill can continue to be handled through the Occurrence system, or if the file needs to be managed through the CSM process. A screening guidance document has been developed to assist with the determination (see Appendix B). In general, the document states that a spill incident can be handled as an occurrence if impacts are limited to soils; involves the removal of a maximum of 75 metric tons of soil; and can be cleaned up within 30 days (i.e. similar to the former Limited Remedial Action process).

The Inspector may determine the responsible party and may issue a compliance letter to the RP at any time after a spill incident. The DELG expects spills handled through an Occurrence file to be cleaned up within 30 days. Spills that are not cleaned up within 30 days will be transferred to the CSM Process and a remediation file will be opened. A remediation file will result in a notice being placed on the Land Gazette indicating that the DELG has information in its Remediation Sites Management System (hereafter referred to as the Remediation Database) with respect to environmental impacts on that property. In addition, the site will require remediation, monitoring and reporting through the CSM process (e.g. closure report and record of site condition).

If it has been determined that the spill can remain an occurrence, the spill should be cleaned up to the satisfaction of the DELG Regional staff. Following site cleanup, the Site Professional involved in the occurrence should submit a summary of the work that was completed. The incident summary should contain sufficient information to allow the Inspector to close the occurrence. A copy of the incident summary may be given to any 3rd party impacted property owner upon request. The Inspector can issue correspondence (i.e. e-mail or letter) to the RP/SP to indicate that the occurrence is closed. This correspondence is sufficient to conclude the incident. If the RP/SP requests an “official site closure” it should be noted that a remediation file would need to be opened, a notice will be placed on the Land Gazette for that property (i.e. the property will be flagged) and a full closure report and ROSC would need to be submitted to the DELG Authorizations Branch for review and acknowledgment.

2.2 Contaminated Site Management (CSM) Process

Contaminated sites in New Brunswick that are not handled as an occurrence are managed through the Contaminated Site Management (CSM) Process. In general, this process would apply to sites where the release has been found to have the potential to impact indoor air, ground or surface water, or ecological receptors.

The CSM Process is outlined in the New Brunswick Department of Environment and Local Government’s current version of the “**Guideline for the Management of Contaminated Sites**” The Guideline and other companion documents are located on the Atlantic RBCA website: www.atlanticrbc.com/new-brunswick. The Guideline document describes the step-by-step risk-based management process to be undertaken from discovery of contamination through to site closure.

The technical requirements for contaminated site management are presented in current version of the “**Atlantic RBCA (Risk-Based Corrective Action) for Impacted Sites in Atlantic Canada – User Guidance**”. The requirements have been adopted for use by all four Atlantic Provinces and provide a common, technical approach to site assessment and remediation. This risk-based approach involves development of clean-up criteria for a property using successively more

complex levels of evaluation and corrective action (application of Tiers I-III).

One of the key principles of the Guideline is the increased responsibility of the Site Professional in the collection and interpretation of data used to prepare an environmental site assessment (ESA) report, remedial action plan (RAP), monitoring report (MR), closure report, and the Record of Site Condition (RSC). Site Professionals are responsible for the accuracy, conclusions, and professional quality of documents they submit during the sequential steps of the CSM Process.

Site Professionals must be members of The Association of Professional Engineers and Geoscientists of New Brunswick (APEGNB). ESA reports, RAP's, monitoring reports, closure reports and the RSC must be professionally sealed (i.e. stamped and signed) by the Site Professional.

2.2.1 CMS Process – Monitoring Well Exclusion

For many smaller petroleum spills, such as motor vehicle accidents and domestic oil tank spills, the contamination can be limited to soils with no impacts to groundwater. These instances can often be handled as an occurrence; however, if the site does not meet the criteria outlined in the Screening Guidance for an Occurrence (see Appendix B) then the site will need to be managed under the CSM process. Within the CSM process, in cases where contamination is limited to soils only and where there are no impacts to groundwater, the DELG can allow a contaminated site to proceed through the CSM Process with no requirement to install monitoring wells. In this case, the Site Professional is required to provide the appropriate DELG Engineer with a site specific rationale to exclude the installation of monitoring wells from the site. The rationale must meet the requirements outlined in the "Rationale for the Exclusion of Monitoring Well Installation" (see Appendix C) and be submitted as early as possible in the process. The Site Professional must also obtain written acknowledgment from the Department confirming that the rationale for excluding monitoring wells has been accepted. The rationale and acceptance must be included in the Closure Report.

Note:

- for sites with an approved monitoring well exclusion, the DELG will permit a variance of the minimum site assessment requirements, as outlined in the most recent version of the Atlantic RBCA User Guidance (Best Management Practices for Environmental Assessment of Petroleum Impacted Sites and Site Assessment and Tier I/II Checklist (Appendix 6)); and
- even if a monitoring well exclusion has been approved for a site (i.e. no requirement to install monitoring wells), on sites where there is a potable water well or spring water source, the well or spring must be sampled. It is also possible that air quality impacts may need to be evaluated due to residual soils impacts under or near a building.

Excluding monitoring wells from a contaminated site is not appropriate if the site is an operating service station and/or a bulk storage facility or for a site with multiple sources of contamination.

2.3 Historical Contamination

When historical contamination (i.e. not a recent or active spill) is discovered the Department must be notified by the person who discovered the contamination. After notification of historical

contamination is made by phone (during office hours) to the Regional Office, the Inspector will direct the caller to submit a Historical Contamination Site Registration (HCSR) Form to the DELG Remediation Administrator by e-mail (remediation@gnb.ca). The HCSR form replaces the Notification/Remediation Site Registration Form (dated April 2006). The HCSR form can be found on the Atlantic RBCA website under Provincial Information/New Brunswick (<https://atlanticrbc.com/new-brunswick/>).

In general, all historical contamination should be dealt with through the CSM Process (i.e. remediation file), although there may be exceptions for sites where only soil has been impacted. In certain cases, the Engineer III responsible for the region may request additional information from the Site Professional in order to determine if the Administrator should open a remediation file.

2.4 Creation of a Remediation File by the DELG

The DELG Remediation Administrator will open a remediation file once information is received from an Inspector or a HCSR form is received from a SP. The Administrator will enter the pertinent information in the Remediation Database and the site will be assigned a remediation file number. The Administrator will also ensure that a notice is placed on the Land Gazette for the appropriate PID(s) to indicate that the DELG has information in its Remediation Sites Management System with respect to environmental impacts on that property. The Administrator will then e-mail the remediation file number, and associated information, to the DELG Engineer I/II and III assigned to the territory where the site is located and to the Site Professional/Consulting Firm (if known).

2.5 Remediation File Management

When a DELG Engineer receives notification that a remediation file has been opened, they will issue a remediation compliance letter to the responsible party, requesting compliance with the CSM process. The letter will include a date with which the RP (or SP representing the RP) must contact the Engineer in order to confirm compliance with the CSM process and outline the approach for addressing the contamination.

If there is no response to the compliance letter or follow-up communication, or the site is not being remediated in a timely manner, there are a number of compliance and enforcement options that will be considered (e.g. warnings, orders), as outlined in the DELG Compliance and Enforcement Policy (dated October 2010), which can be found at the following link:

<http://www2.gnb.ca/content/dam/gnb/Departments/env/pdf/Publications/ComplianceEnforcementPolicy.pdf>

2.6 Report Submission Format

All CSM reports (ESA/RAP, MR, and Closure) must be submitted to the DELG Administrator, who will log the submission in the Remediation database. An electronic copy of the full, final report is required and can be submitted to remediation@gnb.ca. For report submissions that are too large to be submitted by e-mail (file size limit approximately 10 MB), a USB flash drive (i.e. memory stick) or the DELG FTP site (<https://ftps.gnb.ca/>) can be used to submit documents. The SP

should contact the Administrator for the current Username and Password in order to access the FTP site. The SP must send a follow-up e-mail to the Administrator notifying them that a report has been submitted to the FTP site. Note that the Closure report and the Record of Site Condition must be submitted as separate electronic files. A hard copy of the report does not need to be submitted but may be requested by the DELG in certain instances.

To ensure proper review and processing of documents, all submissions to the Department must be accompanied by the appropriate report submission form. There are three different submission forms depending on the type of report that is being submitted (ESA/RAP, Monitoring, or Closure report). The current version of the submission forms can be found on the Atlantic RBCA website under Provincial Information/New Brunswick (<https://atlanticrbca.com/new-brunswick/>). The form must be fully completed and clearly indicate the DELG remediation file number. Reports will not be reviewed if the submission form is not included or is incomplete.

Under the CSM Process a Site Professional must oversee the site remediation and professionally seal ESA reports, RAP's, monitoring reports, closure reports, and the RSC. Site Professionals must be members of the Association of Professional Engineers and Geoscientists of New Brunswick (APEGNB). The DELG will not accept and/or review report submissions from Site Professionals unless they have been stamped and signed. An electronic stamp/seal is acceptable.

Note that for a RAP, any introduction of active chemical or biological agents, or the release of potential contaminants associated with the remediation process to the environment, requires approval of the DELG prior to implementation. In addition, monitoring well exclusion rationale for a site must be pre-approved by the DELG.

All reports (ESA/RAP, MR, and Closure reports) must meet the requirements specified in the most recent versions of both the Guideline and the Atlantic RBCA User Guidance, as well as other New Brunswick provincial documents posted on the Atlantic RBCA website. In addition the DELG requires that:

- ESA/RAP's and monitoring reports contain specific information in the executive summary or within the body of the report, which is outlined in Appendix D and E, respectively.
- Closure reports contain information and specific statements, which are outlined in Appendix F. Not all the information/statements listed in Appendix F will apply to every site, it will depend on what remedial activities or assessment was completed, or if a site was approved for a monitoring well exclusion.
- All types of reports have a site plan(s) that displays specific criteria (see Appendix D for ESA/RAP reports, Appendix E for monitoring reports, and Appendix F for Closure reports).

2.7 DELG Assignment of Reports and Report Review

When a report is submitted to the Administrator, they will record the relevant information in the Remediation Database under the appropriate file number and send the report to the appropriate DELG Engineer for review. Table 1 indicates the general responsibilities for DELG Engineer I/II and III's with respect to report review.

Report submissions for files being managed under the Tier I Risk Based Screening Levels (RBSLs), Tier II Pathway Specific Screening Levels (PSSLs), or Tier I Environmental Quality

Standards (EQS) and Tier II Pathway Specific Standards (PSS) for petroleum hydrocarbons for both Human Health and Ecological will be reviewed/processed by the Engineer I/II for that territory. Submissions for files being managed using Tier II Site Specific Target Levels (SSTLs), Tier II Vapour Intrusion Screening Levels (VISLs), Tier III SSTLs, which can include ecological risk assessments and air quality (soil vapour, sub-slab, indoor air sampling) assessment for volatile contaminants for which there are no VISLs, Tier I EQS (except petroleum hydrocarbons) and Tier II PSS (except petroleum hydrocarbons) for Human Health and Ecological will be reviewed by the Engineer III for that territory. The Engineer III will also review any reports that involve non-petroleum hydrocarbon contaminants of concern (non-PHC COC), such as chlorinated solvents (e.g. PERC), metals, and polycyclic aromatic hydrocarbons (PAHs).

If a report is using more than one criteria (i.e. Tier) due to multiple contaminants at the site, then the highest Tier level will determine which Engineer reviews/processes the report.

Table 1: Engineer Responsibilities

Engineer I/II	Engineer III
Petroleum hydrocarbon only	Petroleum hydrocarbon and other contaminants of concern
Tier I Risk Based Screening Levels (RBSLs)	Tier II Site Specific Target Levels (SSTLs)
Tier II Pathway Specific Screening Levels (PSSLs) for Petroleum Hydrocarbons (PHs)	Tier II PSSLs for Chlorinated volatile organic carbons (CVOCs) - PERC
Tier I Environmental Quality Standards (EQS) for petroleum hydrocarbons for Human Health or Ecological	Tier II Vapour Intrusion Screening Levels (VISLs) for petroleum hydrocarbons and CVOCs
Tier II Pathway Specific Standards (PSS) for Human Health or Ecological for petroleum hydrocarbons	Tier I EQS (except petroleum hydrocarbons) for Human Health or Ecological
Tier II Vapour Intrusion Screening Levels (VISLs) for petroleum hydrocarbons (certain cases)	Tier II Pathway Specific Standards (PSS) for Human Health or Ecological (except for petroleum hydrocarbons)
	Tier III Site Specific Target Levels (SSTLs), ecological risk assessment, human health risk assessment, air quality assessment (other than VISLs)

The appropriate Engineer will send correspondence (e-mail or letter) to the SP if there are any comments or questions on the ESA/RAP or MR. Although correspondence will generally be with the SP, there may be occasions when information concerning the file should be communicated to the RP, as they are the regulated party.

The SP (and possibly the RP) must address any questions/deficiencies related to the report to the satisfaction of the DELG Engineer.

Requirements for Closure reports are detailed in Section 2.8.

2.8 Closure report review

Closure reports will be reviewed by the DELG Engineer for accuracy and completeness. Closure reports must contain information and specific statements in the executive summary and the body of the report (see Appendix F). In addition, the report must have a site plan(s) that displays specific criteria. Not all the information/statements listed in Appendix F will apply to every site, it will depend on what remedial activities or assessment was completed, or if a site was approved for a monitoring well exclusion.

The Closure Report must be accompanied by a Record of Site Condition, which includes a corresponding site plan. The SP must ensure that the RSC meets the specific requirements as outlined in the current version of the “**Instructions for Completing the Record of Site Condition (RSC)**”, which can be found at <https://atlanticrbca.com/new-brunswick/>. The RSC must be submitted electronically and although it can be included in the Closure Report file, a separate stand-alone file must also be submitted to the DELG.

If the DELG Engineer determines that there is a deficiency in the Closure report or RSC, or if the Engineer has any questions on the work completed or conclusions, they will send correspondence (e-mail or letter) to the SP outlining the deficiency and requesting a response. In certain circumstances, correspondence may need to be sent to the RP as they are the regulated party. Depending on the nature of the questions/deficiencies an updated Closure Report may need to be submitted.

All deficiencies must be addressed before the file closure can be completed.

The DELG will issue a signed acknowledgement of the Closure Report and RSC, which signals the completion of the CSM process for a site. Any orders associated with the site remediation will be dealt with in conjunction with the file closure.

The DELG Remediation Administrator will close the file in the Remediation Database once the copy of the signed Closure letter is received.

2.9 Presentation of submissions to DELG

In instances where the Responsible Party needs to expedite closure report processing (e.g. imminent or pending property transaction), the Site Professional, on behalf of the RP, may request that the Closure report be presented to the Department. This can be in person or online, depending on the location of the Engineer responsible for the file.

Presentation to the Department should be arranged in advance, with a minimum of one week’s notice. An electronic copy of the final report (with submission form) should be submitted in advance of the meeting. DELG staff may ask questions or request clarification on certain issues during and after the presentation.

The DELG Engineer will give official feedback (e.g. comments, file closure) to the Site Professional as soon as possible following the presentation.

3.0 FILE AUDITING

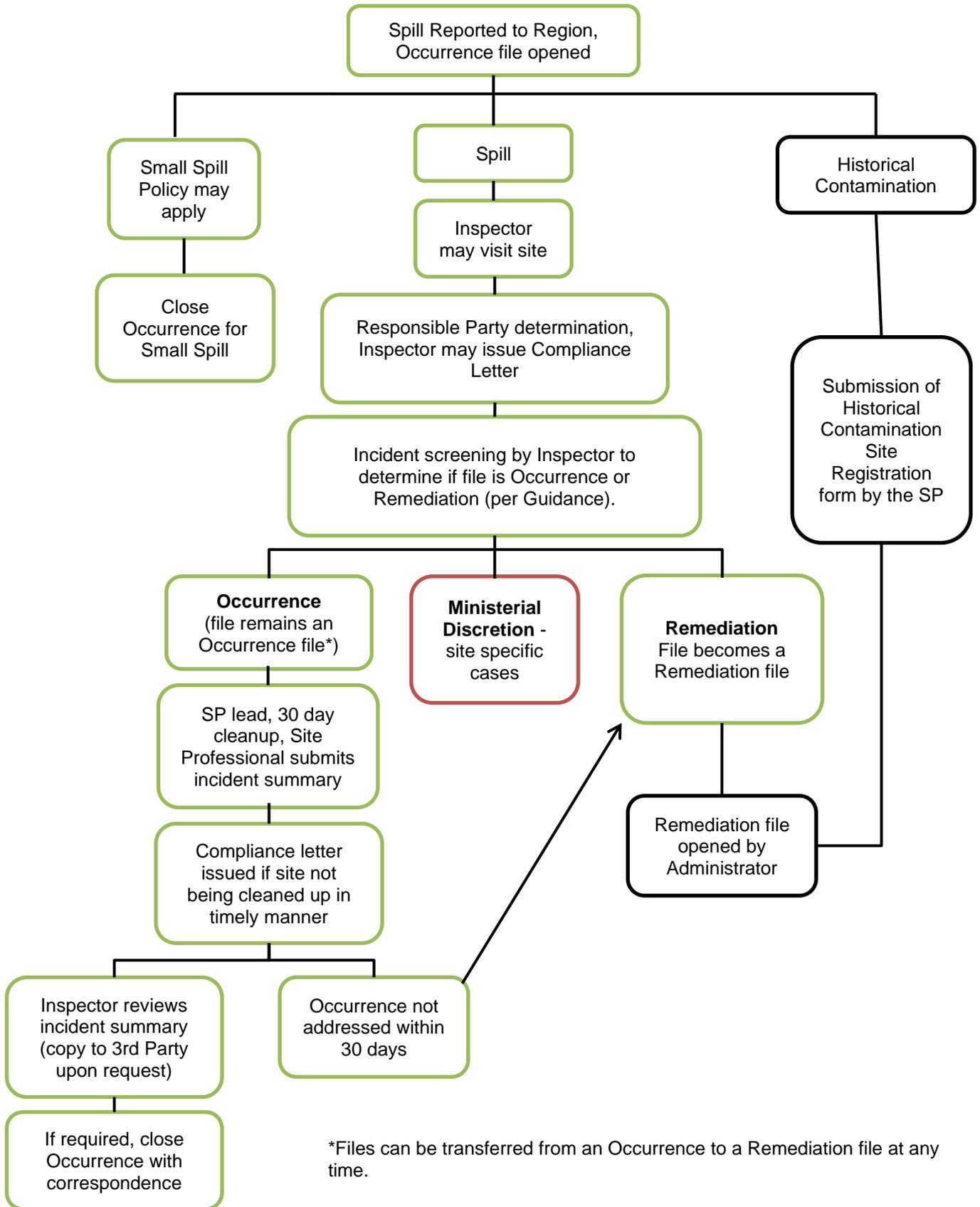
Audits are necessary to continuously improve compliance with the CSM program. Annual auditing will be completed for some aspect of the CSM program in order to evaluate compliance with the program requirements, the CSM Guideline, the Atlantic RBCA User Guidance, as well as other

New Brunswick technical documents and guidance.

Auditing will be completed separately from standard report processing. If the Engineer conducting an audit requires information or clarification on a particular file, they will reach out to the SP who is/was responsible for file submissions. Results of annual auditing may result in changes to an aspect of the CSM program, guidance, submission requirements, etc.

APPENDIX A: PROCESS FLOWCHART

Flowchart 1 – General Spill Handling and Occurrence or Remediation File



APPENDIX B: SCREENING GUIDANCE FOR AN OCCURRENCE

Screening Guidance for an Occurrence

This screening document is intended to be used as guidance for determining when a spill event should remain as an occurrence file or be registered as a remediation file. The Inspector will evaluate the site specific conditions and may request information and/or a professional opinion from the Site Professional on potential impacts to groundwater and/or ecological receptors.

All the following criteria should apply for the incident to remain an **occurrence file**:

- 1) Either of the following:
 - a) Spill is contained on an impermeable surface (i.e. asphalt, concrete pad/floor, etc.) and/or in an isolated area with no potential for human health and/or ecological impacts (e.g. motor vehicle accident, parking lot, vacant lot); or
 - b) A spill event that requires no further remedial measures other than:
 - short-term actions to protect human health and the environment (e.g. spill containment, free product recovery); and/or
 - soil excavation.
- 2) There is no staining remaining at surface after initial remedial action(s), which is defined as <30cm below the ground surface.
- 3) Spill resulting in the removal of less than 75 metric tons (approx. 5 tandem truckloads) of contaminated soil (note that contaminated soils must be disposed of at an approved facility). For incidents that are located in a remote area or sections of roadways where no residential dwellings are present, the removal of greater than 75 metric tons of soil may be considered if all other criteria are met.
- 4) The contamination has been removed within 30 days and meets applicable Tier I criteria within the excavation (i.e. confirmatory and representative samples);
- 5) Groundwater is not impacted or likely to be impacted at the subject or adjacent properties. No residual impact (i.e. grab sample > Tier I) in water within an excavation (e.g. precipitation, surface runoff, shallow groundwater entering the excavation) after remedial action has taken place.

If the spill event does not meet any one of the above criteria then a remediation file should be opened.

Note:

- If it can be determined that the incident can be handled as an occurrence, the Site Professional shall submit a summary of the incident to the appropriate DELG Inspector in order to close out the occurrence.

**APPENDIX C: RATIONALE FOR THE EXCLUSION OF
MONITORING WELL INSTALLATION**

Rationale for the Exclusion of Monitoring Well Installation

For simple cases of contamination (e.g. motor vehicle accidents, residential furnace oil releases, etc.) where impacts are limited to soils and there are no impacts to groundwater, the DELG may consider allowing a site to proceed through the CSM process with no requirement for monitoring wells to be installed. The purpose of this document is to provide guidance to the Site Professional on when this rationale may be applied, in order for the site to be closed in a timely manner.

In order for the rationale to be accepted by the DELG, the impacted site must meet all of the following conditions:

- contaminant impacts limited to soils;
- contaminated soils removed within 30 days;
- no residual impact (i.e. grab sample >Tier I) in water within an excavation (e.g. precipitation, surface runoff, shallow groundwater entering the excavation) after remedial action has taken place;
- final confirmatory samples and analyses for a minimum of five representative soil samples within the excavation; and
- residual contaminants in soil are less than the applicable screening criteria.

Note that for sites that do not meet all of the above conditions, DELG may consider additional lines of evidence provided by the Site Professional.

In all cases, the Site Professional shall submit a site-specific rationale for excluding monitoring wells to the appropriate Engineer for review as early as possible in the process. The Site Professional must obtain written approval from the Engineer confirming the rationale has been accepted. The rationale and DELG approval must be included in the closure report.

Note, for sites with an approved monitoring well exclusion, the DELG will permit a variance of the minimum site assessment requirements, as outlined in the current version of the Atlantic RBCA User Guidance (Best Management Practices for Environmental Assessment of Impacted Sites and Site Assessment and Tier I/II Checklist).

Mandatory Statements:

Each of the following statements must be included in the executive summary of the closure report.

- 1. Monitoring wells were not installed at the site in accordance with the current version of the *Rationale for the Exclusion of Monitoring Well Installation*.**
- 2. Residual soil impacts have been delineated to the applicable screening criteria.**

The Site Professional must determine that impacts have been delineated to the applicable screening criteria in soils. Representative soil samples (i.e. from each wall and the floor of the excavation) must be collected and analyzed for the constituents of concern to confirm the applicable screening criteria have been achieved. Although a minimum of five (5) samples must be collected, additional samples may be needed for larger excavations. Analytical results must be below the applicable screening criteria.

3. In the Site Professional's opinion, residual contaminants in soil do not pose a risk to receptors through groundwater exposure pathways.

The Site Professional must confirm that, in their professional opinion, residual contaminants in soil do not pose a risk to receptors through groundwater exposure pathways and remedial action was only required in soils. This opinion must be supported with an examination of local geology (e.g. soil type, thickness of soils, stratigraphy, presence of an aquitard, etc.) and any other relevant information pertaining to the site.

APPENDIX D: SUBMISSION REQUIREMENTS
for ESA/RAP REPORTS

Environmental Site Assessment/Remedial Action Plan (ESA/RAP) Report Submission Requirements

The following is a list of information that shall be included in an ESA/RAP report and statements that shall be included in the Executive Summary of the report. All reports must have a site plan and the information that must be included on the plan is listed at the bottom. All reports must be stamped and signed by the Site Professional (electronic stamp/seal is acceptable).

1. Source property information: street address and PID
2. Responsible party, property owner, and insurance company: names and contact information, including mailing address, e-mail address, and telephone number.
3. Third party impacted properties: street address and PID(s) of any property that the Site Professional has determined has been affected by contamination (i.e. soil or groundwater samples above the detection limit) from the source property.
4. The Executive Summary and report must include a statement that third parties determined by the Site Professional to be affected by contamination from the source property have been notified by a registered letter. Note that this step is required as soon as possible after impacts are identified on a third party property.
5. Site classification of the source and adjacent properties, as per the Atlantic RBCA process. The main classifications are residential/commercial/agricultural/industrial, potable or non-potable groundwater use, coarse or fine grained soil type, and contaminant of concern.
 - a. Note that the use of the fine-grained soil type requires at least one grain size analysis to be completed and included in the report and the SP must confirm that geological conditions are uniform across the site. The report should include the results of any TPH fractionation.
6. Indicate if the source property located within a wellfield or watershed protected area (designated or not yet designated). If yes, the property must be evaluated using the *"Guidance on the Application of RBCA in Municipal Wellfields and Watersheds"*.
7. Presence and type (e.g. drilled well, dug well) of potable wells on the source and third party impacted properties. Available well information (e.g. well depth, casing length, well log, etc.) should be included in the report.
8. Presence and type of buildings (including foundations) on the source and third party impacted properties.
9. The type, amount and date of the contaminant release, if known.
10. A brief summary of any emergency actions that were carried out on the site (if applicable).
11. Details on the field procedures used, including a description of testing and sampling methods on the source and 3rd party properties.
12. The results of the site assessment (sampling results) that have been completed up to this point. This should include soil sampling results and groundwater results from monitoring wells if they have been installed, but may also include soil vapour, sub-slab vapour, or indoor air quality results. All lab certificates for any sampling that was completed should be included in the report.
 - a. At most sites, a minimum of 3 groundwater sampling events should be completed and

- the events need to cover high and low groundwater level periods (i.e. seasonal sampling). It may be possible to close a site with only two sampling rounds, provided that the sampling was completed during a high and low groundwater level period and a) for potable sites, all groundwater sampling results are below detection or b) for non-potable sites, the two sets of sampling results are an order of magnitude below the appropriate criteria and clearly show stable to shrinking conditions. Deviations from the minimum standard should be discussed with the DELG.
- b. The *Atlantic RBCA Guidance for Vapour Intrusion Assessments* (December 2016) shall be followed in order to assess the potential for vapour intrusion, and the appropriate Vapour Intrusion Screening Levels (VISLs) that can be used to screen soil vapour, sub-slab, and indoor air monitoring results for potentially unacceptable risk.
 - c. The report should include the results of any testing carried out on monitoring or potable wells, such as hydraulic conductivity testing or pumping tests (if completed).
13. The results of the risk assessment - the criteria that will be applied to the site, such as Tier I/II/III and RBSLs, PSSSLs, EQSs, PSSs, etc. The report must justify why the criteria chosen are acceptable for the site.
- a. For Tier I RBSLs/EQSs and Tier II PSSSLs/PSSs, the Executive Summary and report must include a statement that site conditions met (i.e. are consistent with or conservative with) the Atlantic RBCA model default parameters. If Tier II exposure pathways (e.g. soil ingestion, indoor air, etc.) have been eliminated the report must explain in detail why these pathways are not considered active.
 - b. If Tier II SSTLs are generated using the RBCA model, the model runs must be included in the report and any deviations from the model default parameters must be outlined with appropriate rationale for the change.
 - c. If Tier III SSTLs are being applied to the site, justification for the use of Tier III SSTLs and a full presentation of all Tier III information.
14. Results of the ecological screening, if completed. For petroleum hydrocarbons and CVOCs the report should include the Summary Table - Ecological Screening Protocol.
15. A summary of the results of any potable well sampling. Note, for spills involving petroleum hydrocarbons, MtBE must be included in the analysis and meet the current guideline. The detection limit for modified TPH must be <0.02 mg/L.
16. If remediation must be carried out then include a brief summary of the remedial action plan (RAP) in the Executive Summary. The report itself should include the full RAP, along with a monitoring and reporting schedule and timelines for completion. If the RAP includes introduction of active chemical or biological agents, or release of potential contaminants to the environment, the DELG must review and approve the RAP prior to implementation.
17. The Executive Summary and report must include a statement confirming that the site assessment met the minimum site assessment requirements as outlined in the most recent version of the Atlantic RBCA Guidance (Best Management Practices for Environmental Assessment of Impacted Sites and Site Assessment and Tier I/II Checklist).

18. The Executive Summary and report must include a statement confirming the presence or absence of free product on the site in soils or in groundwater.
19. The Executive Summary and report must include a statement that the soil and groundwater contamination was delineated to the applicable Tier I criteria on- and off-site (3rd party impacted property) if completed at this point. Note that in certain cases more stringent criteria, such as ecological criteria, may govern delineation.
20. The Site Professionals conclusions and recommendation as to the next steps for the site. This may include recommending further site assessment, remediation, monitoring, or moving to site closure.

All reports must contain a site plan. For sites with a high density of sampling points, the information may be presented on multiple site plans. The following information shall be included on the site plan(s); however, for sites where some requirements may not be applicable, a note on the site plan should be made to that effect.

1. Site plan to scale;
2. North arrow;
3. Locations of ecological receptors, which may be impacted;
4. PID numbers on source and 3rd party affected properties;
5. Property lines;
6. Building footprints;
7. Location of potable wells or springs;
8. Preferential pathways (ditches, tile drain, sewers, septic systems, underground lines);
9. Sources, such as tanks, lines, etc., including those that were removed;
10. Excavated areas;
11. Paved areas;
12. Confirmatory soil and groundwater sample locations;
13. Location of monitoring wells and test pits;
14. Contaminant concentrations in soil, groundwater and air (if applicable) for each monitoring point with exceedances of the criteria (RBSL's, PSSL's, SSTL's, or other applicable guidelines) highlighted;
15. Confirmed groundwater flow direction and gradient; and
16. Surface slope

**APPENDIX E: SUBMISSION REQUIREMENTS
FOR MONITORING REPORTS**

Monitoring Report (MR) Submission Requirements

The following is a list of information/statements that shall be included in the Executive Summary of a Monitoring Report. All reports must have a site plan and the information that shall be included on the plan is listed at the bottom. All reports must be stamped and signed by the Site Professional (electronic stamp/seal is acceptable).

1. Source property information: street address and PID
2. Responsible party, property owner, and insurance company: names and contact information, including mailing address, e-mail address, and telephone number.
3. Third party impacted properties: street address and PID(s) of any property that the Site Professional has determined has been affected by contamination (i.e. soil or groundwater samples above the detection limit) from the source property.
4. Site classification of the source and adjacent properties, as per the Atlantic RBCA process. The main classifications are residential/commercial/agricultural/industrial, potable or non-potable groundwater use, coarse or fine grained soil type, and contaminant of concern (e.g. gasoline, diesel, lube oil, etc.).
 - a. Note that the use of the fine grained soil type requires a grain size analysis to be completed and included in the report. The report should include the results of any TPH fractionation.
5. A description of the monitoring schedule (e.g. sampling frequency and parameters).
6. A summary of the monitoring results. The report should include the results and any long term trending of results (e.g. results over time, graphing, statistics). Comparison of the monitoring results to milestones established in the Remedial Action Plan (RAP), if applicable.
7. The results of the risk assessment - the criteria that will be applied to the site, such as Tier I/II/III and RBSLs, PSSSLs, EQSs, PSSs, etc. The report must justify why the criteria chosen are acceptable for the site.
8. Proposed additional measures to be implemented should the RAP milestones not be achieved, and a schedule for their implementation.

All reports must have a site plan attached. For sites with a high density of sampling points, the information may be presented on multiple site plans. The following information shall be included on the site plan; however, for sites where some requirements may not be applicable, a note on the site plan should be made to that effect.

1. Site plan to scale;
2. North arrow;
3. Locations of ecological receptors, which may be impacted;
4. PID numbers on source and 3rd party affected properties;
5. Property lines;
6. Building footprints;
7. Location of potable wells or springs;
8. Preferential pathways (ditches, tile drain, sewers, septic systems, underground lines);

9. Sources, such as tanks, lines, etc., including those that were removed;
10. Excavated areas;
11. Paved areas;
12. Confirmatory soil and groundwater sample locations;
13. Locations of monitoring wells and test pits;
14. Contaminant concentrations in soil, groundwater and air (if applicable) for each monitoring point with exceedances of the criteria (RBSL's, PSSL's, SSTL's, or other applicable guidelines) highlighted;
15. Confirmed groundwater flow direction and gradient; and
16. Surface slope

APPENDIX F: SUBMISSION REQUIREMENTS
for CLOSURE REPORTS

Closure Report Submission Requirements

The following is a list of information that shall be included in a Closure Report and statements that shall be included in the Executive Summary of the report. All reports must have a site plan and the information that must be included on the plan is listed at the bottom. All reports must be stamped and signed by the Site Professional (electronic stamp/seal is acceptable).

1. Source property information: street address and PID
2. Responsible party, property owner, and insurance company: names and contact information, including mailing address, e-mail address, and telephone number.
3. Third party impacted properties: street address and PID(s) of any property that the Site Professional has determined has been affected by contamination (i.e. soil or groundwater samples above the detection limit) from the source property.
4. A statement in the Executive Summary that third party properties determined by the Site Professional to be affected by contamination from the source property have been notified by a registered letter.
5. Site classification of the source and adjacent properties, as per the Atlantic RBCA process. The main classifications are residential/commercial/agricultural/industrial, potable or non-potable groundwater use, coarse or fine grained soil type, and contaminant of concern (e.g. gasoline, diesel, lube oil, etc.).
 - a. Note that the use of the fine grained soil type requires at least one grain size analysis to be completed and included in the report and the SP must confirm that geological conditions are uniform across the site. The report should include the results of any TPH fractionation.
6. Indicate if the source property located within a wellfield or watershed protected area. If yes, the property must be evaluated using the DELG "*Guidance on the Application of RBCA in Municipal Wellfields and Watersheds*".
7. Description of source and third party properties including site use, presence and type of buildings (including foundations), water/sewer services, underground services and any preferential pathways.
8. Presence and type (e.g. drilled well, dug well) of potable wells on the source and third party properties. Available well information (e.g. well depth, casing length, well log, etc.) should be included in the report.
9. Information on the physical site characteristics, such as descriptions of topography, soils, geology, hydrogeology, surface water features, etc.
10. The type, amount and date of the contaminant release, if known.
11. A brief summary of any emergency actions that were carried out on the site (if applicable).
12. A description of the remediation and monitoring carried out on site (was the RAP completed and timelines met). This would include information such as tank and line removal, soil removal, installation of monitoring wells, soil and groundwater sampling, etc.
 - a. If the site remediation included the introduction of active chemical or biological agents, or release of potential contaminants to the environment, include correspondence on the pre-approval by the DELG in the Closure report.

- b. Similarly, if no monitoring wells were installed on-site, include correspondence on the pre-approval by the DELG in the Closure report.
 - c. Summary of any testing carried out on monitoring or potable wells, such as hydraulic conductivity testing or pumping tests (if completed). Results should be included in the report.
13. For excavated contaminated soil, details on the amount of soil disposed of and where the soil was sent for disposal (i.e. name of approved facility).
14. Details on the field procedures used, including a description of testing and sampling methods on the source and 3rd party properties. There should also be a section that details the QA/QC procedures and sampling that was completed (e.g. collection of sample duplicates, field blanks).
- a. For soil vapour/sub-slab vapour/air quality sampling, the sampling program must meet the criteria outlined in the current version of the *Atlantic RBCA Guidance for Vapour Intrusion Assessments* (e.g. lateral and horizontal distance from source, sampling locations, duration, density, seasonality, probe integrity and leak testing, etc.).
15. Laboratory analytical certificates for all sampling completed at the site and on 3rd party properties. This may include fine grained soil sieve analysis, TPH fractionation, etc.
16. Test pit, borehole logs, and monitoring well logs (if applicable). The logs may indicate the depth of any soil samples collected. Monitoring well logs should indicate the depth of the water table and stratigraphy encountered.
17. The results of the site assessment - all soil, groundwater, and soil vapour/sub-slab vapour/indoor air (if applicable) sampling data. The data needs to be presented in a way that clearly shows how delineation was achieved, if there are areas remaining that exceed Tier I/II criteria, and if plumes are stable to shrinking.
- a. At most sites, a minimum of 3 groundwater sampling events should be completed and the events need to cover high and low groundwater level periods (i.e. seasonal sampling). It may be possible to close a site with only two sampling rounds, provided that the sampling was completed during a high and low groundwater level period and
 - a) for potable sites, all groundwater sampling results are below detection or
 - b) for non-potable sites, the two sets of sampling results are an order of magnitude below the appropriate criteria and clearly show stable to shrinking conditions. Deviations from the minimum standard should be discussed with the DELG.
 - b. The current version of the *Atlantic RBCA Guidance for Vapour Intrusion Assessments* shall be followed in order to assess the potential for vapour intrusion, and the appropriate Vapour Intrusion Screening Levels (VISLs) that can be used to screen soil vapour, sub-slab vapour, and indoor air monitoring results for potentially unacceptable risk.
 - c. The report should include the results of any testing carried out on monitoring or potable wells, such as hydraulic conductivity testing or pumping tests (if completed).
18. A summary of the results of any potable well sampling. For spills involving petroleum hydrocarbons, MtBE must be included in the analysis and meet the current guideline. The detection limit for modified TPH must be <0.02 mg/L. For any potable well that was impacted, include in the report the results of four (4) consecutive, seasonal potable water samples.

19. Results of the Ecological Screening Protocol for petroleum hydrocarbons and CVOCs.
20. The criteria applied to close the site (Tier I/II/III) and a statement that the appropriate RBSL, PSSSL, SSTL, VISL, EQS, and/or PPS criteria has been achieved. The report must justify why the criteria chosen are acceptable for the site.
 - a. For Tier I RBSLs/EQSs and Tier II PSSSLs/PSSs, the Executive Summary and report must include a statement that site conditions met (i.e. are consistent with or conservative with) the Atlantic RBCA model default parameters. If Tier II exposure pathways (e.g. soil ingestion, indoor air, etc.) have been eliminated the report must explain in detail why these pathways are not considered active.
 - b. If Tier II SSTLs are generated using the RBCA model, the model runs must be included in the report and any deviations from the model default parameters must be outlined with appropriate rationale for the change.
 - c. If Tier III SSTLs are being applied to the site, justification for the use of Tier III SSTLs and a full presentation of all Tier III information.
21. The Executive Summary and report must include a statement confirming that the site assessment met the minimum site assessment requirements as outlined in the most recent version of the Atlantic RBCA Guidance (Best Management Practices for Environmental Assessment of Petroleum Impacted Sites and Site Assessment and Tier I/II Checklist).
22. The Executive Summary and report must include a statement confirming the presence or absence of free product on the site in soils or in groundwater. If a responsible party is proposing to close a site with immobile free product, it must meet the criteria in the current version of Atlantic RBCA for Impacted Sites in Atlantic Canada, User Guidance.
23. The Executive Summary and report must include a statement that the contamination in soil and groundwater was delineated to the appropriate Tier I criteria on- and off-site (3rd party impacted property). Note that in certain cases more stringent criteria, such as ecological criteria, may govern delineation. For sites that have been approved for a monitoring well exclusion, there will be no groundwater samples and no delineation of contamination in groundwater (instead #21 is applicable).
24. The Executive Summary and report must include a statement that groundwater plumes are in a stable to shrinking phase. For sites that have been approved for a monitoring well exclusion this statement is not required (instead, #27 is applicable).
25. The Executive Summary and report must include a recommendation for site closure (i.e. unconditional or conditional closure, engineered controls, land use restrictions, etc.) based on the Site Professionals opinion.

For sites with no monitoring wells (must be pre-approved by DELG), the following statements must be included in the Executive Summary and in the report:

26. Monitoring wells were not installed at the site in accordance with the current version of the *Rationale for the Exclusion of Monitoring Well Installation*.
27. Residual soil impacts have been delineated to the applicable screening criteria.
28. In the Site Professional's opinion, residual contaminants in soil do not pose a risk to receptors through groundwater exposure pathways.

Closure reports must have a site plan attached. For sites with a high density of sampling points, the information may be presented on multiple site plans. The following information should be included on the site plan; unless the site has been approved for no installation of monitoring wells, where the underlined statements do not apply. For sites where some requirements may not be applicable or present (e.g. preferential pathways, no paved area, no monitoring wells), a note on the site plan should be made to that effect.

1. Site plan to scale;
2. North arrow;
3. Locations of ecological receptors, which may be impacted;
4. PID numbers on source and 3rd party affected properties;
5. Property lines;
6. Building footprints;
7. Location of potable wells or springs;
8. Preferential pathways (ditches, tile drain, sewers, septic systems, underground lines);
9. Sources, such as tanks and lines, including those that were removed;
10. Excavated areas;
11. Paved areas;
12. Confirmatory soil and groundwater sample locations;
13. Locations of monitoring wells and test pits;
14. Contaminant concentrations in soil, groundwater and air (if applicable) for each monitoring point with exceedances of the criteria (RBSL's, PSSL's, SSTL's, or other applicable guidelines) highlighted;
15. Confirmed groundwater flow direction and gradient; and
16. Surface slope