



**Best Practices for  
Qualified Persons for  
Consideration with:**

**O. Reg. 406/19:  
Onsite and Excess Soil  
Management in Ontario**

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# 1. Background

These best practices are intended to complement legal requirements; they are not themselves legal requirements or approvals and must not be taken to be, and they are subject to and do not replace legislation or legally binding documents of other kinds. Those who create, manage, transport, receive or store excess soil must be familiar with and remain responsible for complying with all applicable legislation and other legal requirements.

These best practices are intended to provide general concepts which may be used to address the general management of excess soil for beneficial reuse purposes.

## 1.1 Use of this Document

This document applies only to excess soils, which is defined as soil, crushed rock or soil mixed with rock or crushed rock, that has been excavated, mainly during construction activities, which cannot or will not be reused at the site where the soil was excavated and requires relocation off site. This document does not apply to materials outside the scope of the above definitions, such as compost, engineered fill products, asphalt, concrete, re-used or recycled aggregate product and/or mine tailings, other products, including soil mixed with debris such as garbage, shingles, painted wood, ashes, or other refuse.

This document has been created for the use of Qualified Persons (QPs). This document summarizes the responsibilities of the QP in dealing with excess soils as outlined under Regulation 406/19 On-Site and Excess Soil Management (hereafter referred to as O. Reg. 406/19 or the Regulation). Additional information has been provided in this document that does not fall under the responsibility of the QP in the regulation. This information has been included for the QPs to present as considerations to other members of the project team.

These best practices are intended to provide general concepts which may be used to address the general management of excess soil for beneficial reuse purposes. The regulatory requirements apply to all projects; however, some aspects of the best practices may not be as relevant for small, low-risk projects and movements. Those involved with smaller-scale projects and management activities are encouraged to consider whether the best practices may be useful for their project and adopt the best practices accordingly.

### **Regulatory Definition of a Qualified Person (QP) (O. Reg. 406/19 Section 1 (1))**

- 1.(1) "qualified person" means,
- (a) subject to clause (b), a **qualified person** within the meaning of Section 5 of Ontario Regulation 153/04, and
  - (b) for the purposes of subsections 5 (2) to (5), 6 (4), paragraph 7 of subsection 19 (4), section 20 and section 13 of Schedule 1, a **qualified person** within the meaning of section 5 or 6 of Ontario Regulation 153/04

### **Plain Language Summary**

Within the meaning of Section 5 of Ontario Regulation 153/04 Records of Site Condition, QPs for the purposes of undertaking environmental site assessments are

professional Geoscientists and professional Engineers. Further, within Section 6 of O. Reg. 153/04, a QP for the purposes of risk assessments can be an experienced Risk Assessment professional. A QP is someone who can exercise professional judgment based on his or her education and professional experience in order to advise on appropriate reuse options for the excavated soil or excess soil, and make these decisions based on appropriate analysis and characterization of the soil.

A QP defined in Section 6 may complete a beneficial reuse assessment tool (BRAT) or risk assessment. A QP in Section 5 may complete the BRAT (with appropriate experience) and/or any of the other tasks identified as requiring a QP in the excess soil regulations and rules, with the exception of a risk assessment (unless they also meet the definition of a QP under Section 6).

## **1.2 Context**

In December 2019, the Government of Ontario announced new regulations governing the use of Excess Soils under O. Reg. 406/19: On-Site and Excess Soil Management and the accompanying Rules and Soil Quality Standards Document that is adopted by reference in the Regulation. An amendment was released changing the initial in force date to January 1, 2021 from July 1, 2020. Additional amendments were made in December 2020 under [O. Reg. 775/20](#).

Soil is an important resource. The protection and conservation of soil in Ontario is a valuable component of maintaining the environment for present and future generations. The Ministry of the Environment, Conservation and Parks (MECP) encourages the beneficial reuse of excess soil in a manner which promotes sustainability and the protection of the environment. The best practices described within this document are intended to assist those managing excess soil, particularly when the soil may be affected by contamination, in preventing and mitigating the potential for adverse effects.

It should be noted that the MECP has stated the goals of the On-site and Excess Soil Management Regulatory Framework are to:

- Provide clear rules on managing and reusing excess soil,
- Limit soil being sent to landfill,
- Reduces greenhouse gas emissions from soil transportation,
- Reduce the current burden and cost of excess soil management, while continuing to ensure strong environmental protection,
- Remove barriers to brownfield redevelopment, and,
- Encourage the environmentally responsible beneficial reuse of excess soils.

### **1.2.1 Greenhouse Gas Reduction**

Of particular note in the MECP goals for the excess soil Regulation is the reduction of greenhouse gas (GHG) emissions. As such, every aspect of applying the Regulation and employing these best practices should include considerations for climate change and GHG reduction, wherever possible. Steps should be taken throughout the project to:

- Where possible, promote the use of local firms and resources,
- Minimize the generation of excess soils from project areas through early project planning,

- Reuse the soil on the project site as much as possible,
- Consider the establishment and use of Temporary Sites to maximize beneficial reuse options locally, where applicable,
- Where transportation of excess soils is required for a project, care should be taken to identify reuse sites that reduce the distance the soil travels, and
- Integrate technology and tracking systems to provide route optimization for hauling, to reduce fuel costs, time and GHG emissions. Carefully select routes and transport times of day that includes not only the shortest distance, but also with consideration to traffic congestion and idling times.

QPs should communicate these considerations to the appropriate project parties and stakeholders as early as possible in the project life cycle and serve to provide reminders, as opportunities arise.

Please see [Appendix I - Case Study on Temporary Sites & GHG Reduction](#) for a Case Study demonstrating how site selection and the use of a Temporary Site has not only provided significant cost and schedule savings but has provided significant green-house gas reductions over other alternatives.

### 1.3 Definitions

The following definitions are applicable for this document (and are provided for convenience). Official Definitions should be reviewed in the relevant Regulations.

Term	Definition
<b>Soil</b>	As defined in Ontario Regulation 153/04 (Records of Site Condition Part XV.1 of the Act): “unconsolidated naturally occurring mineral particles and other naturally occurring material resulting from the natural breakdown of rock or organic matter by physical, chemical or biological processes that are smaller than 2 millimetres in size or that pass the US #10 sieve.”
<b>Excess Soils</b>	Soil, crushed rock or soil mixed with rock or crushed rock, that has been excavated as part of a project and removed from the project area for the project. Excess soils cannot or will not be reused at the site where the soil was excavated and must be moved off site. In some cases, excess soil may be temporarily stored and/or processed at another location before the excess soil is brought back to be used for a beneficial reuse at the site where the soil was originally excavated. Excess soil is non-hazardous, hazardous soil is by definition not excess soil and is considered waste.
<b>Liquid Soil</b>	Soil that has a slump of more than 150 millimetres using the Test Method for the Determination of “Liquid Waste” (slump test) set out in <a href="#">Schedule 9 to Regulation 347</a> .

<b>Dry Soil</b>	Soil that is not liquid soil.
<b>Regulation</b>	The Regulation refers to <a href="#">O. Reg. 406/19: On-Site and Excess Soil Management</a> , unless stated otherwise.
<b>Soil Rules</b>	Rules or Soil Rules refers to the document entitled “Part I: Rules for Soil Management”, published by the Ministry and as amended from time to time, available on a website of the Government of Ontario as Part I of the document entitled “Rules for Soil Management and Excess Soil Quality Standards”, unless stated otherwise.
<b>Standards</b>	Standards, refers to the document entitled “Part II: Excess Soil Quality Standards”, published by the Ministry and dated December 8, 2020, available on a website of the Government of Ontario as Part II of the document entitled “Rules for Soil Management and Excess Soil Quality Standards.
<b>Qualified Person (QP)</b>	<p>Within the meaning of Section 5 of Ontario Regulation 153/04, QPs are Professional Geoscientists and Professional Engineers. A QP is someone who can exercise professional judgment based on his or her experience in order to advise on appropriate reuse options for the excavated soil or excess soil, and make these decisions based on appropriate analysis and characterization of the soil.</p> <p>QPs either have a licence under the <i>Professional Engineers Act</i> 1990, or a certificate of registration under the <i>Professional Geoscientists Act, 2000</i>.</p>
<b>Supervisee</b>	An individual who is supervised by a Qualified Person.
<b>Project</b>	Any project that involves the excavation of soil and includes: <ul style="list-style-type: none"> <li>a. any form of development or site alteration,</li> <li>b. the construction, reconstruction, erecting or placing of a building or structure of any kind,</li> <li>c. the establishment, replacement, alteration or extension of infrastructure, or</li> <li>d. any removal of liquid soil or sediment from a surface water body.</li> </ul>
<b>Project Area</b>	In respect of a project, a single property or adjoining properties on which the project is carried out.

	A project area can include various forms of development involving the excavation of soil including site alteration, construction and removal of liquid soil or sediment from a stormwater management pond or a surface water body.
<b>Project Leader</b>	In respect of a project, the person or persons who are ultimately responsible for making decisions relating to the planning and implementation of the project.
<b>Hauler</b>	The owner or operator of a vehicle used to transport excess soils. Referred to in this document as the hauler, but may also be identified as shippers, transporters or drivers.
<b>Hauling Record</b>	Information required to accompany each load of excess soil and to be carried by the person operating a vehicle for the transport of excess soil. Details must include: location, date and time the excess soil was loaded for transportation; the quantity of excess soil in the load; name and contact details for the person that can be contacted for inquiries about the load and the soil quality; name of the hauler, the driver and the license plate; the location where the soil is to be deposited. There is no specific form provided that needs to be filled. <u>[Note:</u> from the period of January 1, 2021 to January 1, 2022, fewer hauling record details are required and it can be provided verbally.]
<b>Bill of Lading/Manifest/Ticket</b>	These are records required by companies and entities engaged in the tracking and movement of excess soils. They may not refer to the required Hauling Record document required by the regulation though they are likely to have similar information included on them. If all Hauling Record required information is included on these documents they can also serve as the Hauling Record.
<b>Class 1 Soil Management Facility</b>	A soil bank storage site or a soil processing site; [must be operated under a waste-Environmental Compliance Approval].
<b>Class 2 Soil Management Facility</b>	A waste disposal site, at which excess soil is managed on a temporary basis and that is: <ul style="list-style-type: none"> <li>a. located on a property owned by a public body or by the Project Leader for the project from which the excess soil was excavated, and</li> <li>b. operated by the Project Leader for the project from which the excess soil was excavated.</li> </ul>

<p><b>Soil Bank Storage Site</b></p>	<p>A waste disposal site, other than a Class 2 soil management site, at which excess soil is managed on a temporary basis and that is operated, by a person who is <b>not the Project Leader</b> for all of the projects from which the excess soil was excavated, for the primary purpose of storing the excess soil from one or more projects until the excess soil can be transported to a site for final placement or disposal [must be operated under a waste-Environmental Compliance Approval].</p>
<p><b>Soil Processing Site</b></p>	<p>A waste disposal site, other than a Class 2 soil management site or soil bank storage site, at which excess soil is managed on a temporary basis, that is operated for the <u>primary purpose of processing excess soil in order to reduce contaminants</u> in the excess soil [must be operated under a waste-Environmental Compliance Approval].</p>
<p><b>Low Risk Processing Activities</b></p>	<p>Must occur at the Project Area, at a Class 2 Soil Management Sites or at a Local Waste Transfer Facility and includes:</p> <ul style="list-style-type: none"> <li>i. Passive aeration;</li> <li>ii. Mixing of soil [for Class 2 Soil Management Sites: from projects that have the same Project Leader] and provided that the soil being mixed with it is of similar quality to it, is destined for the same reuse site and the mixing is not carried out for the purpose of diluting the concentration of contaminants in the soil.</li> <li>iii. Soil turning;</li> <li>iv. Size-based sorting;</li> <li>v. Sorting it for the purpose of removing debris; and</li> <li>vi. Passive or Mechanical dewatering [only at Project Area or Local Waste Transfer Facility].</li> </ul> <p>Under certain circumstances, and if regulatory rules are followed, natural additives or polymers can be mixed with liquid soil, this is for the purpose of solidification/dewatering soils for transport and is not intended for the purpose of reducing concentration of contaminants into the soil. These can occur without the need to obtain a waste ECA.</p>
<p><b>Local Waste Transfer Facility</b></p>	<p>Has the same meaning as in Regulation 347 and is a site:</p> <ul style="list-style-type: none"> <li>a. at which waste from field operations is received, bulked, temporarily stored and transferred,</li> <li>b. that is owned or controlled by the person who undertakes the field operations referred to in clause (a)</li> </ul>



	<p>or by a person on whose behalf those field operations are undertaken,</p> <p>c. at which no waste is received other than waste from field operations,</p> <p>d. that is used primarily for functions other than waste management, and</p> <p>e. that engages in low risk processing activities.</p>
<b>Registry</b>	The registry is described in <a href="#">Section 50 of the Resource Recovery and Circular Economy Act, 2016</a> .
<b>Reuse Site</b>	A site at which excess soil is used for a beneficial purpose and does not include a waste disposal site.
<b>Waste Disposal Site</b>	<p>Has the same meaning as in the EPA and means:</p> <p>a. any land upon, into, in or through which, or building or structure in which, waste is deposited, disposed of, handled, stored, transferred, treated or processed, and</p> <p>b. any operation carried out or machinery or equipment used in connection with the depositing, disposal, handling, storage, transfer, treatment or processing</p> <p>[operated under a waste-Environmental Compliance Approval]</p>
<b>Waste</b>	Regulation 406/19 does not address non-soil materials classified as waste. Please refer to Regulation 347 (as amended) for the full list and conditions for which materials are classified as wastes and how they should be appropriately managed.

Additional definitions can be reviewed in the current versions of [O. Reg. 406/19](#), the adopted [Rules for Soil Management and Excess Soil Quality Standards](#), [O. Reg. 153/04](#), [O. Reg. 347](#) and the [Environmental Protection Act \(EPA\)](#).  
For additional relevant legislation see **Additional Information**.

## 2. Ethics & Public Trust

### 2.1 Ethics, Appropriate Knowledge, Skills and Experience

#### **Other Regulatory Considerations**

As a portion of the QP population is represented by Professional Engineers, it is aptly pointed out that the Code of Ethics under the [Professional Engineers Act of Ontario \(1990\)](#) states:

*"it is the duty of a practitioner to the public, to the practitioner's employer, to the practitioner's clients, to other licensed engineers of the practitioner's profession, and to the practitioner to act at all times with:*

- *fairness and loyalty to the practitioner's associates, employers, clients, subordinates and employees;*
- *fidelity to public needs;*
- *devotion to high ideals of personal honour and professional integrity;*
- *knowledge of developments in the area of professional engineering relevant to any services that are undertaken; and*
- *competence in the performance of any professional engineering services that are undertaken."*

Similarly, an additional portion of the QP population is represented by Professional Geoscientists, the Code of Ethics under the [Professional Geoscientist Act of Ontario \(2000\)](#) states:

*"A professional geoscientist shall be guided in his or her professional conduct by the principle that professional ethics are founded upon integrity, competence and devotion to service and to the advancement of human welfare and by the conviction that his or her actions enhance the dignity and status of the profession."*

Further,

*"A professional geoscientist shall undertake only work that he or she is competent to perform by virtue of knowledge and experience and shall prepare reports and express opinions on geoscientific matters only on the basis of adequate knowledge and scientific data and of honest conviction."*

As such, it is the assumption of this best practice document that Professional Engineers and Professional Geoscientists are working within their appropriate knowledge, skills, and experience. This applies to activities around Excess Soil Management and practices.

Just as important, QPs have a responsibility to protect the health and safety of the public in their practice.

#### **Best Practices**

As stated above, it is not only a best practice, but also a matter of ethics and professional conduct for Professional Engineers and Professional Geoscientists to only work within areas of appropriate knowledge, skills, and experience. Management of excess soil is no different. QPs should only provide excess soil management services if they have the

appropriate education and experience to practice. This includes attending and participating in outreach opportunities, training activities and workshops when available. It is noted that O. Reg. 406/19 also recognizes professionals listed under [Section 6 of O. Reg. 153/04](#) for the performance of Risk Assessments. Many of these recognized professionals are not bound to Professional Regulation and Codes of Ethics like the Professional Engineers and Professional Geoscientists; however, a Best Practice for these professionals would be to abide by the Codes of Ethics for Professional Engineers or Geoscientists. Taking opportunities to refresh and upgrade knowledge and skills around the topic of excess soil management is also considered a best practice for those non-Engineers or non-Geoscientists.

## **2.2 Conflicts of Interest**

Beyond the requirements for ethical behaviour by QPs, avoiding conflicts of Interest is an ethical requirement. Failure to avoid conflicts of interest can cause someone to face disciplinary action or lose their license. Further, procedures to identify potential conflicts may be an insurance requirement for QPs and their companies.

### **Regulatory Requirement for Conflict of Interest (O. Reg. 406/19 Section 26)**

- 1) No **qualified person** shall prepare or supervise the preparation of documents under this Regulation in respect of a project in which the **qualified person** holds a direct or indirect interest.
- 2) No **qualified person** shall develop and apply site-specific excess soil quality standards under this Regulation in respect of a reuse site in which the **qualified person** holds a direct or indirect interest.
- 3) Despite subsections (1) and (2), a **qualified person** may act in respect of a project or reuse site in which his or her employer holds a direct or indirect interest.
- 4) Nothing in this section shall be construed so as to derogate from any obligations imposed on the **qualified person** under the *Professional Engineers Act* or the *Professional Geoscientists Act, 2000*.

### **Plain Language Summary**

The QP cannot hold a direct or indirect interest in the properties or businesses that are involved in the excess soil management activities; however, the QP can be employed by a firm that does hold a direct or indirect interest. Further, the QP's obligations as a Professional Engineer or Professional Geoscientist remain paramount under the excess soil management regulations and rules.

### **Best Practices**

Where the QP holds an interest in the project, whether direct or indirect, a third party QP should be contracted for the project who does not hold an interest in the project. For the purposes of this document, "interest" is interpreted to represent a financial benefit or the potential for financial benefit arising from the outcome(s) of the project.

In addition to the Regulatory Requirement, the same QP should avoid representing both the Project Area and the Reuse Site(s). However, there may be limited circumstances where it is advantageous for the project to be represented by a single QP. If this is to

occur, QPs should ensure that all parties with an interest in the management of excess soils generated by a project are aware of the role that they play in the overall project, ensure that all interested parties acknowledge the actual or potential conflict of interest and agree to allow the QP to represent all interested parties. The roles and responsibilities around the excess soil management project should be fully established in the contracts established by the QPs and their client(s). A pre-determined conflict resolution process or third-party review shall be established where a QP has been contracted to represent both the Project Area and the Reuse/Deposit Site.

Relations between source site and receiving site QPs should always be maintained in a professional and courteous manner. Full and open communications between QPs should always also be maintained. Overall, with the engagement of QPs for both the source site and the receiving site there are opportunities for peer review and improved confidence in the project outcomes and conclusions.

## **2.3 Other Considerations**

### **Insurance**

Not only a sound business practice, but also a best practice for excess soil management is for the QP to ensure that their professional insurance coverage recognize services associated with excess soil management activities.

### **Agreements for Services**

The QP should ensure that agreements for services specifically outline the expectations, deliverables, timelines and costs for the excess soil management services for which the QP is being contracted to provide. Changes to scope or expectations should be appropriately documented and confirmed.

### **Responsible Recommendations to Project Leaders**

The Project Leader is ultimately responsible for the management of excess soils. However, it is a best practice of the QP to ensure the Project Leader is aware of their responsibilities in managing excess soils and to provide guidance to the Project Leader and other involved parties on the Regulatory requirements and roles and responsibilities. The QP ultimately provides guidance and makes recommendations to the Project Leader, and makes them aware of the risks associated with their choices; however, the Project Leader is responsible for the final management choices.

### 3. Responsibilities of QPs

As the QPs expertise and informed judgement will be relied upon through many aspects of the excess soil management project cycle, responsibilities of the QP at each point should be fully understood by the QP and by those who rely on the QP's services. The ethics and public trust placed upon the QP (as identified in Section 2, above) need to be fully understood in accepting any responsibility.

It should be noted that the QP is engaged for a Project Area by the Project Leader, who holds the ultimate responsibility for the excess soil management activities and appropriate final placement of excess soils. However, the QP plays a role in the appropriate management activities and is looked upon for their analyses, sound judgement and experience. As such, it is imperative that the QP has the requisite training, knowledge, and experience to deliver the services to the Project Leader.

Further, involvement in providing services as a QP should include considerations for minimizing GHG emissions at every stage of the project. This could include providing guidance to the Project Leader on methods and procedures that can be employed for minimization of GHGs.

#### 3.1 Project Area (Source Site)

QP duties for the Project Area, when contracted, include but are not limited to preparation of the:

- Assessment of Past Uses,
- Sampling and Analyses Plan,
- Soil Characterization Report, and
- Excess Soil Destination Assessment Report.

The Regulatory requirements for the QP in preparing these documents are detailed below, along with the Plain Language Summaries and Best Practices. Specific details from the Soil Rules in the preparation of these documents are contained in **Appendix II** for reference.

#### **Regulatory Requirements for the Project Area (O. Reg. 406/19 Section 11)**

##### 11. Assessment of Past Uses

- 1) Subject to subsection (2) and section 14, if the project leader for a project is required to file a notice under section 8 in respect of the project, the project leader shall ensure that, before filing the notice, a **qualified person** prepares or supervises the preparation of an assessment of past uses of the project area in accordance with the Soil Rules.
- 2) An assessment of past uses of the project area is not required if either of the following circumstances applies:
  1. The project relates to the excavation of soil at a stormwater management pond.
  2. A phase one environmental site assessment within the meaning of Ontario Regulation 153/04 has been prepared in respect of the project.

### **Plain Language Summary**

If the site falls into the Registry reporting requirement [refer to Schedule 2 of the regulation for the non-reporting circumstances], an Assessment of Past Uses report is required to be prepared by a **QP** unless the project is excavation of soil at a stormwater management pond or if an RSC-compliant Phase One Environmental Site Assessment has already been prepared.

If a Phase One ESA document is older than 18 months old, it is a regulatory requirement as referenced in the Soil Rules in reference to O. Reg. 153/04 that the document should be reviewed in detail and an updated Assessment of Past Uses document should be prepared to bridge the time gap since the previous report, and to assess the presence of any recent or new potentially contaminating activities. Refer to **Appendix II** for specific details about Assessment of Past Uses documents.

### **Best Practices**

It is noted that although there are details within an RSC-compliant Phase One ESA that may be beyond the needs of the Assessment of Past Uses, it is recognized that a Phase One ESA does contain the components of the Assessment of Past Uses, and as such, the document satisfies these requirements. If there is a Phase One ESA previously prepared, the QP should review and confirm the required contents are present and are representative of the current conditions of the property assessed. Further, any on-site activities that have occurred since the document was prepared should be examined for potentially contaminating activities and documented, as necessary.

The requirements of the Assessment of Past Uses should be fully understood by the QP and, in turn, clearly communicated to the Project Leader, along with any uncertainties associated with the findings. Clear communication will provide the opportunity for a clear scope of work and agreement between the Project Leader and QP.

### **Regulatory Requirements for the Project Area (O. Reg. 406/19 Section 12)**

#### 12. Sampling and analysis plan, soil characterization report

- 1) Subject to subsection (3) and section 14, if the project leader for a project is required to file a notice under section 8 in respect of the project and any of the circumstances set out in subsection (2) apply, the project leader shall ensure that, before filing the notice, a **qualified person** prepares or supervises the preparation of a sampling analysis plan in accordance with the Soil Rules.
- 2) For the purposes of subsection (1) a sampling and analysis plan is required if any of the following circumstances apply:
  1. The assessment of past uses prepared in accordance with section 11 or phase one environmental site assessment mentioned in paragraph 2 of subsection 11 (2) identifies a potentially contaminating activity within the meaning of Ontario Regulation 153/04.
  2. Any part of the project area is or has ever been an enhanced investigation project area.
  3. The project involves the excavation and removal of excess soil from a stormwater management pond.

- 3) A sampling and analysis plan is not required if the soil to be excavated is deposited at a Class 1 soil management site.
- 4) If a sampling and analysis plan is required to be prepared in respect of a project, the project leader shall,
  - a) ensure that the **qualified person** implements or supervises the implementation of the plan;
  - b) develop and apply procedures to ensure that, as soil is excavated and stored in stockpiles, the soil is segregated and stockpiled in accordance with the Soil Rules and that any soil that is sampled and analysed is kept segregated from other soil; and
  - c) before filing the notice on the Registry under section 8, ensure that a **qualified person** prepares or supervises the preparation of a soil characterization report in accordance with the Soil Rules.
- 5) A soil characterization report mentioned in clause (4) (c) shall include the following information:
  1. The results of sampling and analysis and an assessment of those results, including a description of the parts of the project area that were sampled and analysed.
  2. A description of which soil may be reused within the project area, with or without processing at the project area, and which soil may be deposited at a Class 1 soil management site, landfilling site or dump.
  3. Having regard to the Excess Soil Standards, identification of the type of potential reuse sites to which excess soil from the project area may be transported for final placement.

### **Plain Language Summary**

If the site falls into the Registry reporting requirement, a Sampling and Analysis Plan is required to be prepared by a **QP** for sites where:

- a) Potentially contaminating activities have been identified,
- b) Any part of the Project Area is or was previously an enhanced investigation site (i.e. gas station, dry cleaning plant or industrial use property, as defined in O. Reg. 153/04), or
- c) Excess soil is removed from a stormwater management pond.

A Sampling and Analysis Plan is not required for soil that is known to be destined for a waste management or processing facility that has an ECA.

When a Sampling and Analysis Plan is required, the Project Leader shall ensure that a QP implements or supervises the implementation of the plan.

Once the Sampling and Analyses is complete and prior to filing the notice on the Registry, a soil characterization report shall be prepared. The report is to contain descriptions of which parts of the project area were sampled and analyzed, descriptions of which areas of soil will be reused on-site and sent for processing and disposal, or reused at a beneficial reuse site, and identification of what types of final placement sites can be used based on the excess soil standards (i.e., Table 2.1 sites, Table 3.1 sites etc.).

The QP should be aware that for information that is older than 18-months, it is a regulatory requirement that a review of the current validity of the information be conducted and documented. If necessary, updated documentation should be prepared.

### **Best Practices**

The areas of potential environmental concern (APECs) and potential contaminating activities (PCAs) identified in the Assessment of Past Uses (or Phase One ESA report) are to form the basis for designing the Sampling and Analysis Plan. Past Phase II ESA or Phase Two ESA reports can be used to inform of potential soil impacts or contaminants; however, depending upon the age and intent of the previous report, the previous results may not adequately characterize the excess soil. To comply with the Regulation and Rules, a Sampling and Analysis Plan must be implemented and a Soil Characterization Report need to be prepared. Refer to **Appendix II** for specific details about the Sampling and Analysis Plan and the Soil Characterization Report documents. The requirements of the Sampling and Analysis Plan and Soil Characterization Report should be fully understood by the QP and, in turn, clearly communicated to the Project Leader. Clear communication will provide the opportunity for a clear scope of work and agreement between the Project Leader and QP.

There are minimum sampling and analyses requirements identified in the Rules document (see **Appendix II**). However, the minimum number of samples may not fully characterize the site for geological changes and depths or where segregation of soil may be needed for differing management options (i.e., reuse or final placement sites). In addition, the QP



should consider what sampling and analyses may be required at the final deposit location, or what analyses may be needed for appropriate characterization for processing or disposal. Additional considerations include collecting sufficient sample volumes for further leachate analyses or having leachate analyses completed based on the results of the bulk analyses. Collecting and analysing the minimum number of samples for analyses based on the anticipated soil volume may prove problematic if the project changes at a later date and the originally estimated soil volumes increases and additional analyses results would be needed. As such, it may be a best practice to ensure that an adequate number of samples have been analyzed from appropriate locations, including leachate analyses, and the appropriate analytical testing is performed to provide any project adjustments that may occur.

Further consideration should be given to the geotechnical properties of the soil and any changes that may be observed during assessment and/or excavation activities. The geotechnical properties of fill versus native soils and soil horizons also may dictate the beneficial reuse opportunities (i.e. may not compact for structural stability, contains debris, etc.). As such, the QP should consider sampling and analyzing differing soil types and horizons for the appropriate number of samples and analytes. Further, suggestions for excavation and separation of the differing soil types and depth horizon could be provided by the QP for consideration by the Project Leader.

For those few situations that may occur when sampling and analyses may not be required in the Regulation and Rules, a Best Practice for sampling and analyses would be to collect a representative number of samples for the minimum analyses recommended (refer to minimums in [Appendix II - Annotated Soil Rules QP Documents](#)) to evaluate the risk of an adverse impact of placing soil at a receiving site.

Further, where the QP is relying on information prepared by others than cannot be validated or reliance has not been extended, updated sampling and analyses may need to be completed.

### **Regulatory Requirements for the Project Area (O. Reg. 406/19 Section 13)**

#### **13. Excess soil destination assessment report**

- 1) Subject to section 14, if the project leader for a project is required to file a notice under section 8 in respect of the project, the project leader shall ensure that, before filing the notice, a **qualified person** prepares or supervises the preparation of an excess soil destination assessment report in accordance with the Soil Rules.
- 2) The report shall be based on the results of any required assessment of past uses of the project area, any required soil characterization report and any information gathered in respect of the potential sites at which the excess soil may be deposited, and shall include the following:
  1. Identification of each Class 1 soil management site, reuse site, local waste transfer facility, landfilling site or dump at which the excess soil will be deposited, including the location of each site.

2. Identification of contingency measures to be implemented in the event that the excess soil cannot be deposited at a site identified under paragraph 1, including the location of an alternate site.
3. An estimate of the quality and quantity of excess soil that will be deposited at each location identified under paragraph 1.

### **Plain Language Summary**

For sites to be listed on the Registry, the QP is to prepare a review of potential reuse and disposal sites that the excess soil placement, given the quality and quantity of excess soil. The Excess Soil Destination Assessment Report is to consider the acceptance requirements and Standards for the quality to be reused. Multiple sites may be used depending on the quantities and quality of the soil to be relocated. The Report is to summarize the estimated volumes to be deposited at each site and type of site.

### **Best Practices**

To consider the reduction of GHG emissions related to the relocation of excess soil, local sites with the shortest hauling distances should be assessed, reviewed and recommended where possible. Further, consultation with the Project Leader, operators and contractors to assist with identifying applicable sites is recommended. The potentially differing qualities of the excess soil, both geotechnical and chemical quality, should be considered when evaluating receiving sites for the soil destination assessment report.

A cost benefit analysis considering tipping costs and hauling rates may also be required in comparing reuse sites. The QP may be asked to assist the Project Leader with this analysis.

Each potential destination site should be reviewed to confirm acceptance standards versus the needs of the soil relocation. Other considerations for a destination site review may include whether a QP is involved with the destination site, audit procedures and confirmation sampling, rejection procedures, and records sharing. If additional analysis is needed in order to satisfy the requirements of the reuse site, that sampling should be done as soon as possible to reduce uncertainty. As identified above, minimizing GHG emissions should be a significant factor in the site evaluation process.

### **Regulatory Requirements for the Project Area (O. Reg. 406/19 Section 14)**

14. Exception, documents not required

- 1) Subject to subsection (2) a project leader is not required to ensure the preparation of documents under sections 11,12 and 13 if one of the following circumstances applies:
  1. All of the project area from which soil is to be removed is an agricultural or other use within the meaning of Ontario Regulation 153/04.
  2. All of the project area from which soil is to be removed is a parkland use, residential use or institutional use, each within the meaning of Ontario Regulation 153/04, or any combination of these three types of use, and the soil to be removed from the project area will not be transported for final placement at a reuse site that is an agricultural or other use within the meaning of that regulation.

- 2) Subsection (1) does not apply with respect to a portion of a project area known by the project leader to be affected by the discharge of a contaminant.

### **Plain Language Summary**

The planning documents (Assessment of Past Uses, Sampling and Analysis Plan, Soil Characterization Report and Excess Soil Destination Assessment Report) are not required for project areas that are fully on Agricultural properties, or for Parkland, Residential or Institutional use properties provided the excess soil will not be relocated to an Agricultural use property. These exceptions do not apply where contaminants are known or suspected to exist on any portion of the Project Area.

### **Best Practices**

Where the exemption clause for not needing to complete the planning documents is chosen by the Project Leader, a best practice would include contracting the QP to prepare a brief document with a full summary of justification of the property uses and confirmation of no known contaminants. The justification document should be provided to the Project Leader and retained on-file for future discussions or consultations with the MECP and/or local municipalities, if necessary.

It should be noted that although exemptions may be based on the historical use of the Project Area being agricultural use, there are potential contaminants that could result from agricultural activities (e.g. pesticides and herbicides, metals and inorganics from biosolids use, fuel tank leaks, etc.). Further, many urban parks have been constructed on former landfills and dumps, or received fill of unknown quality, so park use alone may not be sufficient justification to forego a sampling and analyses plan. As such, an Assessment of Past Uses should be completed at a minimum, and the need for sampling and analyses should then be determined and at the least, the minimum sampling and analyses requirements should be met.

The exemption clause requires that the QP and Project Leader fully understand the Project Area history and the property use designations as outlined in O. Reg. 153/04.

### **Regulatory Requirements for the Project Area (O. Reg. 406/19 Section 15)**

15. Documents to be updated

- 2) This section applies to a project leader who is required to ensure that a **qualified person** prepares or supervises the preparation of a document under section 11, 12 or 13.
- 3) If the project leader or the operator of the project area or any other person working in the project area becomes aware of any of the following circumstances, the project leader or the operator of the project area shall ensure that a written record of the circumstance is immediately created, including the date on which the circumstance became known to the project leader, operator of the project area or other person:
  1. Additional testing of excess soil reveals that the soil characterization report does not accurately reflect the quality of excess soil that is to be transported to a reuse site for final placement.

2. An area of potential environmental concern, within the meaning of Ontario Regulation 153/04, that is not identified in the assessment of past uses is identified within the project area.
3. Excess soil is intended to be transported to a reuse site for final placement and the reuse site is not identified in the excess soil destination assessment report.
- 4) The project leader or the operator of the project area shall ensure that within 30 days after the day the project leader or the operator of the project area becomes aware of the circumstance under subsection (2), a **qualified person** or a supervisee reviews all documents required to be prepared by or under the supervision of a **qualified person** under sections 11, 12 and 13 and makes any necessary amendments to those documents to reflect the circumstance.
- 5) In addition to complying with subsection (3), the project leader or the operator of the project area shall ensure that the **qualified person** or supervisee provides to the project leader or operator of the project area any further recommendations in writing to ensure that excess soil is disposed of in accordance with the requirements of this Regulation.

### **Plain Language Summary**

When additional information (e.g. a change of conditions) is uncovered that may alter the findings of the soil characterization report or the assessment of past uses, the affected documents must be appropriately updated by the QP within 30 days. Any recommendations that are generated as a result of the document updates, shall be provided to the Project Leader or designate in writing and in accordance with the Regulation. The Project Leader will also be responsible for ensuring any information in the registry is also updated.

### **Best Practices**

Until the excess soil management project is complete, the planning documents (Assessment of Past Uses, Sampling and Analysis Plan, Soil Characterization Report and Excess Soil Destination Assessment Report) should be considered “living documents” that could and for larger projects likely will be updated throughout the project. To assist with document version control, the planning documents should be clearly labelled with a version number and date to ensure that the most up-to-date and appropriate version can be easily identified.

### **Additional Best Practices for Consideration**

Even when not required, it is considered a best practice for the Project Leader to retain a QP for the Project Area (source site) to assess the excess soil for contaminants and suitability for reuse.

The following represents additional best practices for the QP engaged by the Project Leader for the Project Area:

- Summarize information a Project Leader needs to provide to a deposit site such as, but not limited to:

- Soil volumes,
  - Any potential contaminants of concern,
  - Soil types and sources, and
  - Laboratory Certificates of Analyses and any summary tables with Comparisons to Standards.
- Characterize soils as much as practical (within agreed budgetary and timing limits and ensuring that regulatory minimums are met) prior to construction beginning.
  - Where the Project Leader is not required to file notice under Section 8 (Registry), it is a best practice to ensure that all documents and records generated are prepared in the spirit of the standards of the Excess Soil Planning Activities as appropriate (Assessment of Past Uses, Sampling and Analysis Plan, Soil Characterization Report, and Excess Soil Destination Assessment Report) as presented in the Soil Rules.
  - Where the Project Leader requests documentation or records be produced that do not meet the minimum requirements of the Excess Soil Planning Activities, this request shall be documented in the project agreement and clearly identified/described in the documentation or records prepared, with corresponding limitations on the findings summarized.

### **Regulatory Requirements for the Project Area (O. Reg. 406/19 Section 23)**

#### **23. Procedure required**

- 1) The project leader or the operator of a project area shall ensure that a procedure is developed and applied with respect to what must occur if any person working in the project area makes an observation during soil excavation within the project area, including any visual or olfactory observation, that suggests that the soil being excavated may be affected by the discharge of a contaminant.
- 2) At a minimum, the project leader or the operator of the project area shall ensure that the procedure mentioned in subsection (1) sets out the following:
  1. All soil excavations in the project area must immediately cease upon the observation being made, until such time as the project leader directs that soil excavations may be resumed.
  2. The project leader or the operator of the project area must immediately be notified of the observation.
  3. The project leader or the operator of the project area, upon being notified of the observation, must, before directing that soil excavations may be resumed, ensure that all necessary steps are taken to ensure that,
    - i. all excavated soil that is affected by the discharge of a contaminant is identified and is segregated from other excavated soil in the project area,
    - ii. the portion of the project area that is affected by the discharge of a contaminant is determined, and
    - iii. any excess soil from that portion of the project area is disposed of in accordance with this Regulation.
  4. Identification of If a project leader was required to ensure that a **qualified person** prepared or oversaw the preparation of documents under this

- Regulation, the project leader shall, before authorizing any soil to be removed from the project area where the observation was made,
- iv. obtain the advice of a **qualified person** regarding what steps are necessary in order to ensure the outcomes mentioned in subparagraphs 3 i, ii and iii [when potential contaminants are observed or suspected], and
  - v. request that the **qualified person** advise on whether any of the documents required under this Regulation require revision as a result of the observation.

### **Plain Language Summary**

Observation procedures during the excess soil excavation shall be developed and followed along with a procedure for occasions when contamination is observed or suspected. If the Project Area is required to be listed on the Excess Soil Registry, then a QP shall be consulted for advice on managing the suspected contaminated soils and, where necessary, planning documentation shall be appropriately updated.

### **Best Practices**

A generic contamination review procedure for observation and reporting suspected contaminants in the field during excavation activities has been developed and is provided in Appendix III. This procedure can be tailored for project specific situations and followed by the Project Leader, operator and contractors to ensure consistency throughout the project duration.

Where suspected contamination is encountered, it is a best practice that the QP be contacted for advice and recommendations for managing the suspected contaminated excess soil. Confirmatory sampling and analyses to delineate impacts should be completed by the QP under the request and approval of the Project Leader. Understanding that the appropriate assessment and management of the suspected contamination will likely stop or slow the project, appropriate temporary measures should be considered such as segregation and stockpiling during assessment. Further, appropriate reporting turnaround times for the laboratory analyses should be selected and the incremental costs should be fully communicated to the Project Leader.

When a change in the excess soil quality relative to the original soil characterization report has been confirmed, the excess soil planning documentation is to be updated to reflect the new discovery (referred to earlier in this Section and discussion on Section 15 of the Regulation). However, on project sites that the planning documents and activities were not originally triggered, once possible contamination has been identified, a QP must be retained and the Soil Regulation planning requirements are triggered and must be followed.

#### **3.1.1 Leachate Testing**

### **Regulatory Requirement for Leachate Testing (Soil Rules Section B)**

*Note: Fall 2020 proposed amendments alter Leachate Testing methods.*

Section B 2(5) Mandatory Leachate Analyses Requirements:

1. If subsection 1 (7) in Section A of Part II requires leachate analysis, then the following soil sampling frequencies for in-situ characterization must be satisfied to determine if the soil meets the applicable excess soil quality standards:
  - i. A minimum of three soil samples must be submitted for leachate analysis if less than 600 cubic metres of soil will be excavated.
  - ii. The soil samples submitted for leachate analysis shall be collected from the sampling locations where the highest contaminant concentrations were found.
  - iii. Leachate analysis should be completed on at least 10% of the soil samples as described in paragraph 15 of subsection 2 (3) in Section B of PART I of this document, in addition to the three minimum samples, unless the **qualified person** can provide a rationale regarding why leachate analysis is not necessary in order to meet the general and specific objectives of the excess soil characterization.
2. For soil excavated from an area of potential environmental concern (APEC) that is stored in stockpiles, the minimum leachate sample frequency is three samples, plus 10% of the required number of soil samples detailed in Table 2 of Schedule E, to O. Reg. 153/04, Minimum Stockpile Sampling Frequency.
3. For sediment excavated from a stormwater management pond the minimum leachate sample frequency is three samples, plus 10% of the required number of soil samples detailed in clauses iii or iv of paragraph 17 of subsection 2 (3).
4. Where a sample of soil is submitted for leachate analysis, the leachate extraction shall be completed using the Synthetic Precipitation Leaching Procedure (US EPA SW-846 Method 1312), the Toxicity Characterization Leaching Procedure (US EPA SW-846 Method 1311) or another method approved by the Director [modified Synthetic Precipitation Leaching Procedure (mSPLP)]. The subsequent analysis of the leachate must be completed in accordance with the requirements of section 47 of O. Reg. 153/04 (Analytical procedures), including the requirements in relation to the handling and storage of the samples, the requirement that the analyses of the samples be carried out by an accredited lab and the requirements to comply with the "Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the *Environmental Protection Act*" published by the ministry and as it may be amended from time to time.

### **Plain Language Summary**

As outlined above, leachate testing is required to be completed on a specified number of samples that is dictated by the volume of excess soil to be generated. Further the leachate testing is to be completed on the samples with the highest bulk concentrations of the contaminant of concern. As identified in the Soil Rules Document, Synthetic Precipitation Leaching Procedure (SPLP) or Toxicity Characterization Leaching Procedure (TCLP) may be performed to satisfy the leachate testing requirement; however, it is noted that the pH of the leaching acids is slightly different. Further, it is also noted that some contaminants of concern may react differently, depending upon which method is chosen for the Leachate Testing.

The modified SPLP (mSPLP E9003) will be the required testing procedure for excess soils as of January 1, 2022. Further, the requirement for leachate testing on excess soils that meet background standards (Table 1) has been clarified to be unnecessary.

### **Best Practices**

The best practices for leachate testing include:

- Awareness that not all contaminants of concern have Leachate Screening Level Standards.
- Until additional Leachate Screening Level Standards have been established, having leachate testing for other contaminants may create some confusion around what to compare the result to. Thus, leachate analyses should only be completed on parameters that have leachate screening level values in the Rules Document until new leachate screening level values are added. Additional testing may be done if there is a documented reason and/or specific scientific modelling is planned beyond the routine excess soil characterization (e.g. to support a risk assessment).
- Ensuring that more than adequate sample volume is supplied to the laboratory to ensure that the leachate testing may be performed after the bulk analyses for the contaminants of concern has been completed.
- Ensuring the Analytical Laboratory is aware that the project is an excess soil management project and that leachate testing may be required following the reporting of the bulk analyses for the contaminant of concern.
- Ensuring there is adequate time for the second run of the analyses to meet the reporting timeframe and within the appropriate cost tolerance.
- Communicate to the Project Leader the scope and cost that covers the leachate testing samples analyses and possible timing delays for second runs at the laboratory.
- Use of mSPLP analytical method (E9003), reserving the TCLP analytical method for characterization of soil to be disposed of as waste only.
- Where the excess soil meets the background standards (Table 1), leachate testing should not be completed, unless pH is outside the normal range.

As it is expected that there will continue to be developments in the science around Leachate Testing and laboratory capabilities, as well as possible changes to regulatory requirements, it is incumbent upon the QP to be fully up-to-date on Leachate Testing developments.

## **3.2 Reuse Sites**

### **Regulatory Requirement for Reuse Sites (O. Reg. 406/19 Section 5)**

#### **5. Reuse Sites, not governed by an instrument**

- 1) For the purposes of paragraph 5 of subsection 3 (2), the following conditions must be satisfied:
  1. The quality of the excess soil that has been finally placed or that is intended to be finally placed at the reuse site must not exceed,
    - i. the applicable excess soil quality standards as determined in accordance with the Excess Soil Standards, or



- ii. subject to subsection (4), the site-specific excess soil quality standards developed for the reuse site in accordance with subsections (3) and (5).
  - 2. The primary use of the reuse site must not be the deposit of excess soil.
  - 3. There must be an identified beneficial purpose in connection with the undertaking for which the excess soil is to be used at the reuse site, such as,
    - i. backfill for an excavation carried out for the purposes of any form of development,
    - ii. final grading carried out for the purposes of any form of development,
    - iii. achieving the grade necessary for,
      - A. any development,
      - B. an infrastructure project,
      - C. landscaping, or
      - D. another project governed by an instrument issued by a public body, or
    - iv. the placement of fill to assist in the rehabilitation of the reuse site.
  - 4. The quantity of excess soil deposited or to be deposited at the reuse site must not exceed the quantity necessary for the beneficial purpose identified.
  - 5. Subject to subsections (6) and (7), the excess soil must be finally placed no later than two years after it is deposited at the reuse site.
  - 6. The excess soil must be finally placed in accordance with any requirements set out in the Soil Rules.
- 2) For the purposes of subparagraph 1 ii of subsection (1), the operator of a reuse site shall retain a **qualified person** to develop and apply site-specific excess soil quality standards for the reuse site or to supervise the development and application by a supervisee.
  - 3) The **qualified person** retained as described in subsection (2) or the supervisee shall use the Beneficial Reuse Assessment Tool to develop and apply site-specific excess soil quality standards in accordance with the Soil Rules.
  - 4) The **qualified person** or supervisee shall not use the Beneficial Reuse Assessment Tool to develop and apply a site-specific excess soil quality standard for the purposes of subparagraph 1 ii of subsection (1) in circumstances that are identified in the Soil Rules as circumstances in which the Beneficial Reuse Assessment Tool can only be used under the authority of a site-specific instrument mentioned in paragraph 4 of subsection 3 (2).
  - 5) The **qualified person** shall,
    1. complete a declaration attesting to the accuracy of the information and the assumptions provided as inputs for the Beneficial Reuse Assessment Tool; and
    2. ensure that the operator of the reuse site is given a copy of the declaration and the output worksheet generated when using the Beneficial Reuse Assessment Tool.

### **Plain Language Summary**

When site-specific standards are to be used for governing acceptability of excess soils to be accepted at a reuse site, not governed by a site-specific instrument, a QP is to be retained by the operator of reuse sites that are not governed by a site-specific instrument. The QP shall develop site-specific standards using the BRAT model and apply the site-

specific soil quality standard as outlined in the Soil Rules. The QP is to be aware of when a site-specific instrument is required. When the BRAT model is complete, the QP is to complete the declaration of the accuracy of the input information and ensure the reuse site operator is provided a copy of the declaration and BRAT output worksheet. It is noted that a full risk assessment is an acceptable alternative to the BRAT.

### **Best Practices**

The BRAT is used to develop site-specific standards for a reuse site, specific details about the inputs and the sensitivities around the input parameters need to be fully understood by the QP. As the BRAT model is based on the Modified Generic Risk Assessment model, the QP who will be applying the model should have some working knowledge of Risk Assessment, if not a Risk Assessment professional.

Once the QP is requested to consider the BRAT for the reuse site, existing details for the property should be acquired and assessed. For sites that do not have specific details, there are some ranges in specific input fields that can be used, however, details such as depth to groundwater, soil characteristics and hydraulic conductivities need to be known. As such, on-site investigations may be necessary and conveyed to the reuse site operator and appropriately detailed in a proposed scope of work.

The QP that uses the BRAT model should fully review the BRAT guidance documentation before running the model. The BRAT User Guide is embedded in the BRAT tool. Further, a trial run of the model should be completed for the QP to become familiar with the nuances of the BRAT.

As there are six pre-determined “site use characteristics” (e.g. soil caps, building restrictions or prohibitions) that can be applied for the site in the BRAT model with the provision of a Site Instrument, it is recommended that inquiries to the reuse site owner/operator be made to ascertain the future intentions for the property align with the application of any of the pre-determined “site use characteristics” and to have a Site Instrument filed for the property.

If a Site Instrument is to be applied to the property, sufficient time to have this process completed should be afforded and communicated to the reuse site owner/operator, as well as the incremental costs identified in the proposed scope of work.

### **Regulatory Requirement for Reuse Sites (O. Reg. 406/19 Section 20)**

#### **20. Beneficial Reuse Assessment Tool**

If an owner or operator of a reuse site retains a **qualified person** to develop or to supervise the development of site-specific excess soil quality standards using the Beneficial Reuse Assessment Tool, whether or not the site is governed by an instrument mentioned in paragraph 4 of subsection 3 (2), the **qualified person** shall ensure that a copy of each of the following is given to the Ministry in accordance with the Soil Rules:

1. A declaration attesting to the accuracy of the information and the assumptions provided as inputs for the Beneficial Reuse Assessment Tool.

2. The output worksheet generated when using the Beneficial Reuse Assessment Tool.

### **Plain Language Summary**

The QP shall ensure that the Ministry is provided with a declaration attesting to the information accuracy and assumptions provided as inputs to the BRAT, as well as the output worksheet.

### **Best Practices**

The best practice for the QP will be to prepare a comprehensive “BRAT package document” that includes all necessary assumptions, inputs, outputs and declarations and should be expected to be provided to the MECP by the QP.

Where possible, any site investigations and data collection, along with any historical information referred to in the preparation of the BRAT model should be compiled and assembled into a comprehensive package for retention by the site owner and available by the QP for a minimum of 7 years, as required by the regulation.

## **3.2.1 Reuse Site-specific Standards Using BRAT and Risk Assessments**

### **Regulatory Requirements for BRAT (Soil Rules Section D: 3, 4)**

3. ...The **qualified person** shall review and understand all requirements in this document and the guidance before using the BRAT...

The BRAT shall be used to develop site-specific excess soil quality standards in accordance with the following requirements:

- (1) The BRAT shall only be used by a **qualified person** as determined in accordance with section 5 or section 6 of O. Reg. 153/04. In respect of subsections (2), (5) and (6) below, it is recommended that the **qualified person** have experience in risk assessment or consults with professionals with expertise in risk assessment.
- (2) The **qualified person** shall ascertain that the site conditions are appropriate for use of the BRAT to develop site-specific excess soil quality standards. To assist the **qualified person** in recognizing the types of site conditions that may be important in this respect, some key conditions are listed in Appendix 1 of this document. Some limitations related to the use of the BRAT are also listed directly in the BRAT user guide. These limitations must be reviewed and understood by the **qualified person** in order to confirm the applicability of using the BRAT to develop site-specific excess soil quality standards.
- (3) Where a default value or an assumption is modified from those published by the ministry in the development of the generic excess soil quality standards, an assessment is carried out which satisfies the minimum requirements and meets the objectives set out in Table 4 of Schedule E of O. Reg. 153/04. Additional requirements are also presented directly in the BRAT user guide.
- (4) The BRAT shall not be used in relation to a project or beneficial use for which Table 1 of the excess soil quality standards as found in the Appendices in PART II of this document would be required to apply (e.g., excess soil placed in an environmentally sensitive area, or excess soil placed for growing crops).

- (5) For the purpose of subsection 5 (4) of the regulation, if the **qualified person** utilizes any of the six site use characteristics included in the BRAT to develop site-specific excess soil quality standards, a site-specific instrument must be obtained which authorizes the use of the site use characteristic(s), including reference in the instrument to the site-specific excess soil standards developed from the BRAT. This provision does not apply if the BRAT is being used for the deposit and final placement of excess soil in respect of an infrastructure undertaking.
- (6) For the purpose of subsection 5 (4) of the regulation, the BRAT can be used to generate site-specific excess soil quality standards with and without application of a maximum threshold based on a multiplier of the applicable generic excess soil quality standards. If the **qualified person** uses the BRAT to generate excess soil quality standards that exceed the maximum threshold, a site-specific instrument must be obtained and specifically allow for exceedance of the maximum threshold.

As per item (3) of sub-section 4 in Section D of the Rules Document, when risk assessment is used to develop site-specific excess quality soil standards for a reuse site, the public body responsible for issuing the site-specific instrument shall consider the following:

1. The risk assessment be prepared by a **qualified person** as referred to in Section 6 of O. Reg. 153/04 (**qualified person**, risk assessment).

### **Plain Language Summary**

The BRAT Model can only be run by a QP or a supervisee of a QP that has experience in preparing Risk Assessments, the QP must sign-off on the final BRAT.

The QP must fully understand the BRAT model, and the requirements and limitations. Fully reading the BRAT user guide should precede running of the model to ensure the applicability of the model for the site-specific use.

When any of the six site use characteristics are employed in developing the BRAT generated site specific Standards, a site-specific instrument must be obtained. When Standards are developed that exceed the maximum threshold values, a site-specific instrument must be obtained.

If a Risk Assessment is used to develop the site-specific Standards for the Reuse Site, the Risk Assessment must be prepared by a QP defined in Section 6 of O, Reg. 153/04 and must be accompanied by a site-specific instrument.

If reuse sites are receiving amounts larger than 10,000m<sup>3</sup>t, the reuse site owner will be required to develop procedures for the site and key information will need to be added to the Registry. If site-specific standards are developed for the reuse site, the name and contact info of QP will be added to the registry by reuse owner.

### **Best Practices**

For the use of the BRAT model in developing site-specific Standards for a reuse site, best practices for the QP include:

- Unless the QP has experience in preparing Risk Assessments, an experienced Risk Assessor should be consulted during the BRAT model preparation.
- The QP shall ensure that all input requirements are understood at the project outset and prior to site characterization. The requirements shall be communicated to the Reuse Site owner/operator and appropriately presented in a scope of work and cost estimate to develop the site-specific standards.
- Discuss with the Reuse Site owner/operator the intended use of the property and whether the use of the six site use characteristics is a possibility or desirable for the future use, and whether a site-specific instrument is acceptable for the future and planned use of the reuse site.
- Assist the Reuse Site owner/operator with understanding the requirements of the excess soil management regulations around operating a reuse site.
- Ensure that the site-specific standards are well summarized and presented for the Reuse Site owner/operator for procuring correct soil quality and reuse volumes needed.
- Be prepared to answer questions from the local MECP or municipal government on the site-specific standards and process in developing the standards.

### **3.3 Temporary Sites (Class 2 Soil Management Facilities)**

There are no regulatory requirements for QPs around the operation and management of a Temporary Soil Storage Sites (Class 2 Soil Management Facility, SMF). However, some larger scale temporary sites may electively hire a QP to provide oversight of soil management activities.

It is expected that Class 2 SMFs will be constructed, operated and maintained in a manner that ensures the health and safety of all persons and prevents adverse effects within the meaning of the [EPA](#) or impairment of water quality within the meaning of the [Ontario Water Resources Act](#).

#### **Best Practices (from Temporary Sites Best Practices Document)**

Although there are no specific regulatory requirements for QPs in the management and operation of a Class 2 SMF, there are general expectations that activities at the site will be completed in consultation with a QP.

A [Best Practices Document for the operation and management of Temporary Sites](#) has been prepared for consideration by the site operators (Project Leader).

As a Class 2 SMF will be part of a specific Project managed by a specific Project Leader, the QP for the Class 2 SMF may, and will most likely, be the QP for the Project. However, as there are no Regulatory requirements, direct QP involvement with a Class 2 SMF will be under the appointment/request by the Project Leader or manager of the Class 2 SMF. As such, with respect to the QPs involvement at the Class 2 SMF, the following Best Practices should be considered as possible activities by the QP:

- Assist with site selection and appropriateness (zoning, neighbouring uses etc.),
- Assist with soil and groundwater assessment of the temporary site to establish baseline conditions prior to receipt of excess soils,
- Assist with assessment/audit of temporary site restrictions and storage requirements,
- Assist with designing environmental controls (e.g. use hard surfaces, control stormwater, dust, security features),
- Provide input into traffic management and control into and out of the site as well as within the Class 2 SMF,
- Assist with audit sampling and documentation,
- Assist with and educate the Project Leader around the volume limitations and stockpiles sizing requirements as outlined in the Regulation and Rules,
- Provide guidance around the segregation and separation of excess soils with varying geotechnical properties for the ease of reuse at a deposit site,
- Verification of soil quality and quantities sent back to the Project Area, reuse sites or disposal facilities,
- Assist with notifications and communications to MECP and local municipalities,
- Assist with post-condition assessment and site rehabilitation/closure, and,
- Provide recommendations with sound judgement and with considerations for minimizing GHG emissions.

### **3.4 Public and Large Infrastructure Sites**

There are no Regulatory Requirements for QPs specifically with respect to the Public and Large Infrastructure Sites. However, there are some exemptions for public and large infrastructure sites that the QP should be aware.

#### **Regulatory Requirements (O. Reg. 406/19 Schedule 2)**

Non-application of Section 8 of the Regulation

6. Both of the following circumstances apply:

1. The excess soil is excavated as part of an infrastructure project.
2. The project leader for the infrastructure project intends, after removing the excess soil from the project area, to finally place it at a reuse site that is owned by the project leader or a public body and that is part of an undertaking related to another infrastructure project.

#### **Plain Language Summary**

Filing of the excess soil project on the Registry is not required if both of the following are observed:

- a) Soil is generated from an infrastructure project [highways, transit lines and railways, gas and oil pipelines, sewage collection and water distribution systems, stormwater management systems, electrical transmission and distribution systems, telecommunication systems (including towers), and any structures related to infrastructure construction and operations, and any rights-of-way for the infrastructure], and
- b) The Project Leader intends to relocate the excess soil to a reuse site owned by the project leader or a public body for another infrastructure project.

#### **Best Practices**

Although there are exemptions around registry filing for public and infrastructure projects and the specific details around the planning activities, meeting the excess soil quality standards (or a site-specific standard in conformance with the regulations and rules) is still always required.

As best practice, infrastructure projects exempt from the regulation and rules, should still consider completion of an Assessment of Past Uses, Sampling and Analyses Plan, Soil Characterization Report, and Destination Assessment Report. It is noted that these elements are required for soil beneficially reused at receiving sites not associated with the public infrastructure. Further, the beneficial reuse of excess soil within other infrastructure projects should be considered as a component of the project design and execution.

Due to the size and scale of most public and large infrastructure projects, considerations for minimizing GHG emissions should be paramount with proper project design and execution throughout the life of the project, including transportation between sites (refer to [Hauling Best Practices](#)), use of Class 1 or Class 2 Soil Management Facilities (refer to [Temporary Sites Best Practices](#)) and soil reuse or final placement.

### 3.5 Hauling Details

There are no Regulatory Requirements for the QP with respect to the Hauling Details. Section 17 and 18 of the Regulation outline the requirements around transporting excess soil.

#### **Best Practice (From the Hauling Best Practices Document)**

The Project Leader may request the QP to be involved with assurance of specific details for the Hauling Records. The QP shall ensure the information required to answer the questions regarding soil quality required on the Hauling Record, is available to the Project Leader and/or the assignee of the Project Leader. Additionally, the QP will provide support on rejected loads and contingency planning.

The QP may be identified as the “person who may be contacted to respond to inquiries regarding the soil quality” on the Hauling Record (O. Reg. 406/19 18 4). This should be identified and agreed to with the Project Leader or Project Area operator at the project onset.

The QP may be asked to assist the Project Leader in determining appropriate reuse/disposal sites. The QP is responsible for liaising with the reuse/disposal site QP to ensure that the material intended to be shipped is acceptable to the reuse site. If a load is rejected, the Project Area QP should be informed by the Project Leader or other designate.

**The Project Leader may request the QP to be involved with assurance of specific details for the Hauling Records. At the very least, the QP shall ensure that the details required to answer the questions regarding to soil quality required on the Hauling Record, is available to the Project Leader and/or the assignee of the Project Leader.**

### 3.6 Registry

At the time of the preparation of this draft Best Practices document, the final details of the Excess Soils registry had not yet been released. The Registry will be maintained by the [Resource Productivity and Recovery Authority](#). The filing of the project on the Registry is the responsibility of the Project Leader.

Sections 7 to 10 and Schedules 1 and 2 of the Regulations are outline the requirements around the Excess Soil Registry.

#### **Best Practices**

The QP should have a working knowledge of the registry, the information required, their specific role in supplying the documentation and any declarations required. Where applicable, QPs should make the Project Leaders aware of their responsibilities for filling in the registry.

The QP may be requested to fill in the registry by the Project Leader and should ensure that this authorization is provided for in the project contract before doing so.



## 4. Other Responsibilities and Considerations

### 4.1 QP Declarations

#### **Regulatory Requirements for QP Declarations (Soil Rules Section B)**

##### 6. Qualified Person Declaration

1) If a **qualified person** is required to prepare documents under the regulation including the assessment of past uses, sampling and analysis plan, soil characterization report and excess soil destination assessment report a declaration by the **qualified person** is required, stating the following:

1. The project leader, or operator of the project area has provided the **qualified person** with all necessary information and access to the project area, and authorized the qualified person to make any inquiries of the project leader's and operator's employees and agents, for the purposes of assisting the **qualified person** in preparing the documents.
2. The documents have been prepared in accordance with the Regulation and the Soil Rules Document by or under the supervision of a **qualified person**.
3. To the best of the **qualified persons'** knowledge the documents are complete and accurate and meet the requirements of the regulation and the Soil Rules.
4. The work required to complete the assessment of past uses, the sampling and analysis plan, the soil characterization report, and the excess soil destination assessment report, has been conducted in accordance with the regulation and by or under the supervision of a **qualified person**, as required by the regulation.

#### **Regulatory Requirements for the BRAT (O. Reg. 406/19 Section 20)**

20. If an owner or operator of a reuse site retains a **qualified person** to develop or to supervise the development of site-specific excess soil quality standards using the Beneficial Reuse Assessment Tool, whether or not the site is governed by an instrument mentioned in paragraph 4 of subsection 3 (2), the **qualified person** shall ensure that a copy of each of the following is given to the Ministry in accordance with the Soil Rules:

1. A declaration attesting to the accuracy of the information and the assumptions provided as input for the Beneficial Reuse Assessment Tool.

#### **Plain Language Summary**

Documents prepared by the QP must have a signed declaration that all necessary information has been provided by the Project Leader, the documentation has been prepared under the supervision of the QP, is complete and accurate, and conducted in accordance with the regulation and associated rules document.

For the BRAT documentation, the QP declaration attests to the accuracy of the information and assumptions made in the preparation of the BRAT.

#### **Best Practices**

As QPs are Professional Engineers and Geoscientists (or in some cases Risk Assessors), any and all documents prepared under the Excess Soil Management planning activities should be considered as equivalent to making a declaration of the authenticity of all

information, opinions and recommendations presented in the document, even if not presented as a declaration. All documentation prepared by a QP should be signed with the appropriate QPs professional qualifications clearly stated. Further, background on the rationale for preparation of the document should be clearly stated, or reference made to a previously prepared document which summarizes the background information and associated assumptions/limitations. the background and situations. All documents should clearly outline to the client whether or not they meet the standards.

All limitations that are applicable to the document shall be clearly stated. Limitations on reliance of the document should be applied with the understanding that documentation and any analytical results will be shared between the Project Leader and any reuse sites or waste storage/processing/disposal facilities. Although not yet developed, the Excess Soil Management Registry will contain declarations by the Project Leader and identification of the QP for the project or reuse site. As such, any stated limitation to the reliance on QP services and documentation generated, should acknowledge that there will be public access to the Registry and all information posted.

It should also be noted that the QP shall ensure that their insurance coverages do provide for excess soil management activities and declarations that will be made in supplying QP services.

## 4.2 Liquid Soils

### **Regulatory Requirements for Liquid Soils (O. Reg. 406/19 Section 6)**

6 (3) If excavated soil is processed by one of the following methods at the project area at which it was excavated, it is not designated as waste:

2. Passive dewatering.
3. Mechanical dewatering.
- ...
8. Subject to subsection (4)\*, mixing it with a substance or other material that is intended to dewater or solidify it.

\*See further information regarding subsection 4 in the next section on

**Additive and Polymer Usage.**

### **Plain Language Summary**

Liquid soils processed at the Project Area where it was excavated by passive or mechanical dewatering or with a substance to dewater or solidify it is not designated as waste.

It is noted that liquids soils can be:

- Processed at the Project Area through passive or mechanical dewatering processes, or
- Processed at a local waste transfer facility,
- Collected and hauled in a vehicle with locking valves (Regulation Section 17(3) item 4) for delivery to a waste management facility that has been issued an ECA

for liquid soils management or a reuse site with a site-specific instrument governing the deposit and management of the liquid soil.

### **Best Practices**

Decisions around the processing of liquid soils at the Project Area are to be made by the Project Leader. However, the QP may be asked to assist in determining whether the soil is liquid soil by performing a Standard Slump test. Further, the QP should be aware of the limited activities that can be performed on the liquid soil if not processed in the Project Area and transportation of the liquid soil for processing at a Local Waste Transfer Facility, a site with an instrument permitting liquid soils management or Class 1 Soil Management Facility appropriately approved for management of liquid soils.

See

**Additive and Polymer Usage** for more best practices regarding liquid soils.

#### **4.2.1 Additive and Polymer Usage**

### **Regulatory Requirements for Additive and Polymer Usage (O. Reg. 406/19 Section 6)**

- 6 (4) If the substance or other material mentioned in paragraph 8 of subsection (3) contains a natural or synthetic polymer, the excavated soil is designated as waste unless the project leader for the project or the operator of the project area retains a **qualified person** to do the following or to supervise a supervisee to do the following and the **qualified person** or supervisee does the following:
1. Develop written procedures to ensure the appropriate and safe use of the substance or other material within the project area during the dewatering or solidification process, having regard to:
    - i. any information supplied by the producer of the substance or other material,
    - ii. any other information that, in the opinion of the **qualified person**, is relevant to the use of the substance or other material.
  2. Give a copy of the written procedures to the project leader or to a person designated by the project leader.
  3. If, after the excess soil is dewatered or solidified, it will be finally placed at a reuse site, prepare a document that sets out the following:
    - i. Identification of the substance or other material, the mixing rates used to dewater or solidify the soil and the amount of liquid soil that was dewatered or solidified.
    - ii. Having regard to the information mentioned in subparagraphs 1 i and ii, instructions regarding storage and final placement at the reuse site of the dewatered or solidified excess soil to ensure that the storage and final placement do not cause an adverse effect at the reuse site.

- iii. Confirmation that if the instructions referred to in subparagraph ii are followed, the storage and final placement of the excess soil will not cause an adverse effect.
- (5) If the excavated soil is processed at the project area by a method set out in paragraph 8 of subsection (3) and will be finally placed at a reuse site after it is dewatered or solidified,
  - (a) the project leader or operator of the project area shall ensure that a copy of the document mentioned in paragraph 3 of subsection (4) is given to the owner or operator of the reuse site; and
  - (b) the owner or operator of the reuse site shall ensure that the instructions set out in the document are followed.
- (6) If the excavated soil is processed at the project area by a method set out in subsection (3), the project leader shall ensure that it is processed in accordance with any requirements governing the processing that are set out in the Soil Rules.
- (7) For greater certainty, nothing in this section relieves a person from complying with subsection 9 (1) of the [*Environmental Protection*] Act or subsection 53 (1) of the *Ontario Water Resources Act* when carrying out processing by a method set out in subsection (3).

### **Regulatory Requirements for Liquid Soils (Soil Rules Section C 3)**

#### C 3. Requirements for mixing for the purpose of dewatering or solidifying liquid soils

##### (5) For mixing with natural non-polymer additives:

1. The material being used for dewatering or solidifying is a natural substance such as untreated woodchips/sawdust (e.g., not a pressure-treated wood product) or mineral substances (e.g., bentonite).
2. If a sampling and analysis plan and soil characterization report are required by section 12 of the regulation, the required sampling and analysis may be completed after the mixing, if the qualified person is of the opinion that the effect of the material mixed with the soil will not change the outcome of the characterization with respect to the applicable excess soil quality standards.

##### (6) For mixing with natural polymer or synthetic polymer additives:

1. A qualified person has determined the appropriateness of the material and has developed procedures for the use of the material used for dewatering or solidifying liquid soil including but not limited to any direction and guidance set forth by the manufacturer or distributor of the material.
2. If a sampling and analysis plan and soil characterization report are required in accordance with section 12 of the regulation.
  - i. The sampling and analysis must be carried out before any mixing of polymer additives with liquid soil if the qualified person is of the opinion that mixing of natural polymer or synthetic polymer additives with liquid soil will change the outcome of the characterization with respect to the applicable excess soil quality standards of the dewatered or solidified soil.
  - ii. The sampling and analysis may be carried out after any mixing of polymer additives with liquid soil if the qualified person is of the opinion that mixing

of natural polymer or synthetic polymer additives with liquid soil will not change the outcome of the characterization with respect to the applicable excess soil quality standards of the dewatered or solidified excess soil.

3. Unless the soil mixture will be transported from the project area or local waste transfer facility directly to a waste disposal site that is permitted to accept the soil mixture, the qualified person is of the opinion that the polymer and any potential break down products will not result in an adverse impact to human health or the environment.

### **Plain Language Summary**

When natural or synthetic polymers are to be used for solidification or dewatering activities, the excess soil is classified as waste, unless:

- A QP is commissioned by the Project Leader to develop written procedures for the safe use of the polymer within the Project Area and includes the information provided by the manufacturer/distributor of the polymer;
- The QPs written procedures for the use of the approved polymer(s) are provided to the Project Leader or representative of the Project Leader; and
- If the dewatered soil will be transported to a reuse site, the QP shall prepare a document that identifies the substance added to the soil and the volume of liquid soil that was processed and statements confirming that the liquid soil processed with the polymers will not cause adverse effects if stored or finally placed.

The reuse site owner/operator shall be provided a copy of the documents prepared by the QP (mentioned above) and shall follow the instructions in the documents.

The use of the polymer in dewatering liquid soils must be completed in accordance with applicable rules in the Soil Rules. Following these steps does not relieve any person from ensuring compliance with the *Environmental Protection Act* and the *Ontario Water Resources Act*.

For the addition of polymers and drying agents to the liquid soils, the active ingredients and potential for environmental impacts should be fully assessed. The Project Leader should be notified of the QP's findings, and the information should be passed onto the reuse site, temporary site and/or treatment/disposal site ahead of the transport of the processed liquid soil with additives.

### **Best Practices**

For using natural or synthetic polymers in solidification or dewatering liquid excess soil, the QP must be part of the project team and fully assess the potential effects of the polymer and any breakdown products on human health and the environment. The reuse site should also be considered within the assessment of the potential effects. The QP is to develop written procedures for the safe use of the polymer. The written procedures should be prepared in consultation with the Project Leader and the construction/excavation contractors. Any activities in the use of the polymer should be completed in compliance with the *Environmental Protection Act* and the *Ontario Water*

*Resources Act.* If necessary, the QP should review the details of each act to ensure the compliance of the proposed activities and the written procedures.

The QP should complete detailed review of the polymer constituents and request case-studies and long-term monitoring data from the manufacturer/distributor. All review findings should be documented along with the QP opinion.

When the mixed soil is being arranged to be moved to a reuse site, the QP documentation should be provided to the reuse site owner/operator. Unless specifically requested by the Project Leader, the exchange of the information to the reuse site should be facilitated by the Project Leader.

### **Regulatory Requirements for Additive and Polymer Usage (Soil Rules Section C 3)**

3. Requirements for mixing for the purpose of dewatering or solidifying liquid soils  
For the purposes of subsection 6 (6) of the regulation, the following requirements apply to the mixing of a material with liquid soil for the purpose of dewatering or solidifying the liquid soil at a project area or a local waste transfer facility:

- 1) The mixing is not for the purpose of encapsulating or otherwise reducing exposure to or mobility of contaminants.
- 2) The soil that is being mixed for dewatering or solidification must originate from the project area.
- 3) The material that is being mixed for dewatering or solidification is not a waste for which this processing would otherwise not be permitted (e.g., Hazardous Waste).
- 4) The amount of material mixed with the soil is limited to that required to enable transportation to another site or to be reused within the project area site and does not exceed the amount recommended for this purpose by the product manufacturer or distributor.
- 5) For mixing with natural non-polymer additives:
  1. The material being used for dewatering or solidifying is a natural substance such as untreated woodchips/sawdust (e.g., not a pressure-treated wood product) or mineral substances (e.g., bentonite).
  2. If a sampling and analysis plan and soil characterization report are required by section 12 of the regulation, the required sampling and analysis may be completed after the mixing, if the **qualified person** is of the opinion that the effect of the material mixed with the soil will not change the outcome of the characterization with respect to the applicable excess soil quality standards.
- 6) For mixing with natural polymer or synthetic polymer additives:
  1. A **qualified person** has determined the appropriateness of the material and has developed procedures for the use of the material used for dewatering or solidifying liquid soil including but not limited to any direction and guidance set forth by the manufacturer or distributor of the material.
  2. If a sampling and analysis plan and soil characterization report are required in accordance with section 12 of the regulation.
    - i. The sampling and analysis must be carried out before any mixing of polymer additives with liquid soil if the **qualified person** is of the opinion that mixing of

- natural polymer or synthetic polymer additives with liquid soil will change the outcome of the characterization with respect to the applicable excess soil quality standards of the dewatered or solidified soil.
- ii. The sampling and analysis may be carried out after any mixing of polymer additives with liquid soil if the **qualified person** is of the opinion that mixing of natural polymer or synthetic polymer additives with liquid soil will not change the outcome of the characterization with respect to the applicable excess soil quality standards of the dewatered or solidified excess soil.
3. Unless the soil mixture will be transported from the project area or local waste transfer facility directly to a waste disposal site that is permitted to accept the soil mixture, the **qualified person** is of the opinion that the polymer and any potential break down products will not result in an adverse impact to human health or the environment.

### **Plain Language Summary**

When mixing materials with the liquid soil for the purposes of dewatering at either the Project Area or a local waste transfer facility:

- Mixing can occur provided the mixing is not for the purposes of contaminant mitigation or exposure reduction,
- The mixing material cannot be waste,
- If the mixing material is a manufactured product, the volume of mixing materials should not exceed the manufacturers recommended dose,
- For mixing with natural non-polymer products (such as non-pressure-treated woodchips/sawdust) or mineral based materials (such as bentonite), sampling and analyses per the requirements in the registry filing can occur after mixing provided that the QP is of the opinion that the mixing does not change the outcome of the excess soil characterization versus the applicable quality standards,
- For mixing with natural or synthetic polymer products, a QP must be retained. The QP shall assess the appropriateness of the material, and develop procedures for the use. Then, the sampling and analyses required in the registry filing can occur before or after mixing depending upon the opinion of the QP on whether the additive will change the outcome of the excess soil characterization versus the applicable quality standards, and
- Unless the mixed excess soil is being directly transported to a waste disposal site permitted to accept the excess soil mixture, the QP shall be of the opinion that the polymer and any breakdown products will not result in adverse impacts to human health or the environment.

### **Best Practices**

The QP should fully understand and document the methods and additives used in dewatering the liquid soils. Further, the documentation should be made fully available to the reuse site through the Project Leader.

When natural or synthetic polymers are used in the dewatering, case studies and longer-term monitoring data should be requested from the manufacturer/distributor. This

information should be supplied to the reuse site and where possible the reuse scenario should be considered by the Project Leader and QP.

If necessary, additional reuse scenarios may need to be considered by the QP and Project Leader for the dewatered liquid soils using natural or synthetic polymers.

In all situations, the future use of the excess soil and any limitations that may pose should be ascertained where possible. As an example, wood chips may not be suitable for excess soil that will be used at a tree nursery due to tree disease etc.

### 4.3 Local Background Concentrations

#### **Regulatory Requirements for Local Background Concentration (Soil Rules Section D 2)**

Section D: This section includes the specific requirements associated with excess soil reuse at specific types of reuse sites, and requirements governing the final placement of that soil pursuant to paragraph 6 of subsection 5 (1) of the regulation, including:

#### 2. Rules for Specific Types of Reuse Sites

##### 3) Local Background Concentrations

1. An excess soil quality standard is deemed to be met if the following criteria are met:
  - i. a **qualified person** has demonstrated that the excess soil contains a parameter that is naturally occurring at the reuse site and that does not exceed the naturally occurring range of concentrations typically found within the area of the reuse site; and
  - ii. documented evidence of the naturally occurring parameter concentrations is provided to the reuse site owner or operator and retained by the reuse site owner and **qualified person**.

#### **Plain Language Summary**

With respect to Local Background Concentrations, an excess soil quality standard is deemed to be met when the excess soil does not exceed the naturally occurring concentration range typically found in the area of the reuse sites, and documented evidence of the naturally occurring parameters is provided to and retained by the reuse site owner/operator. The QP shall also retain the documented evidence on file for a minimum period of seven years.

#### **Best Practices**

For the QP to provide the documented evidence of naturally occurring parameters the QP should:

- Refer to the publicly available Ontario Typical Ranges and published documents on area/geographic specific local background concentrations,
- Discussions with Local MECP or municipal offices about knowledge of local background concentrations, and



- Demonstrate that the background concentrations identified, exist outside the project area and are not associated with an area of potential environmental concern.

### 4.3 Materials with pH Outside of Acceptable Range

#### **Regulatory Requirements for Materials with pH Outside of Acceptable Range (Soil Rules Section D 1)**

Section D: This section includes the specific requirements associated with excess soil reuse at the reuse site, and requirements governing the final placement of that soil pursuant to paragraph 6 of subsection 5 (1) of the regulation, including:

1. Rules for Specific Types of Soil
  - 4) Acceptable pH Range
    1. If excess soil or soil at the reuse site has pH levels outside the acceptable pH range, from 5.0 to 9.0 for surface soil and from 5.0 to 11.0 for subsurface soil, the excess soil must meet Table 1 of the excess soil quality standards and the results of any required leachate analysis must meet Table 1 of the leachate screening levels, as outlined in PART II of this document.
    2. If excess soil or soil has pH levels outside of the acceptable range, as specified in the paragraph above, before any excess soil is deposited at a reuse site, the owner or operator of the reuse site must ensure that a **qualified person** completes an assessment of the potential impacts of the placement of this excess soil at the reuse site and confirms that it will not cause an adverse effect.

#### **Plain Language Summary**

For reuse sites, if the pH is outside the acceptable ranges of 5.0 to 9.0 for surface soils (<1.5 metres) or 5.0 to 11.0 for subsurface soils (>1.5 metres), the excess soil must meet Table 1 quality standards as well as meeting the Table 1 leachate screening levels [Note that a proposed MECP amendment may eliminate leachate screening levels for soil meeting Table 1 standards]. If the soil is to be deposited at a reuse site, the owner/operator must have a QP complete an assessment of the potential impacts of the placement of the soil and confirm that it will not cause an adverse effect.

#### **Best Practices**

The reuse site QP should understand the cause for the pH being outside the acceptable range and fully review the excess soil characterization documentation and results. The Project Area QP should provide documentation that identifies the cause of the out-of-range pH and have fully delineated, and mitigated the out-of-range pH, if possible. The Project Area QP should also have provided a summary of the soil results that demonstrates that all other parameters in the excess soil meet the Table 1 quality standards and the Table 1 leachate screening levels.

Where applicable, the QP for the reuse site should confirm that placement will not cause an adverse effect and make suggestions regarding how the out-of-range pH soil may be managed at the reuse site (i.e., depths, locations in relation to future development, and away from any sensitive receptors or property boundaries). The location of the placement

on the property should also be recorded and retained for future reference by both the QP and the reuse site owner/operator.

#### **4.5 Data Reliance**

There are no regulatory requirements around reliance of data generated by QPs in excess soil management activities.

##### **Best Practices**

Although there are no regulatory requirements on data reliance, the framework established in O. Reg. 406/19 is based upon the transparency of the system and sharing of information between Project Leaders, operators of temporary management sites and local transfer facilities, and ultimately the owners of Reuse Sites or disposal facilities. As such, it should be understood that information, data and documents generated by QPs will be used by others, whether or not such reliance has been provided for. However, an expectation for extending reliance should be expected and well documented in any and all communications surrounding the movement of excess soils.

When a QP is assuming data prepared by others, considerations into the accuracy and representativeness of the data and information shall be assessed prior to relying on the data. The age of the data and any changes to the site conditions or the excess soil quality should be assessed and documented. If necessary, an allowance for some confirmatory sampling and analyses should be provided to the QP. Further the documentation should be compared to the requirements of the Regulation and Soil Rules and whether the documentation is compliant. Where deficiencies are identified, further work to satisfy the requirements of the Regulation and Soil Rules should be completed. It should be noted that the QP provides declaration on the quality of the excess soil and the evaluation process completed to determine the quality. As such, the QP should be comfortable in using previously generated information by others.

#### **4.6 Tracking Systems**

There are no regulatory requirements for QPs in the tracking systems requirements in excess soils management.

The tracking system for excess soil transfer is the responsibility of the Project Leader when the project parameters require filing of a notice on the Excess Soil Management Registry.

##### **Best Practices**

Although the Tracking System is the responsibility of the Project Leader, the QP should be aware of various tracking systems, the input required into the tracking system and the benefits of the system output. Further, the Project Leader may request the QP to assist with the tracking system. This assistance provided to the Project Leader shall be documented and the terms of the assistance to be provided by the QP should be agreed to at the prior to initiation of the project.

The QP shall be objective when recommending a Tracking System to be used by the Project Leader and shall not have any interest in the Tracking System or the firm that produces the system.

There are commercially available Tracking Systems and many proprietary systems in development. As such, the QP shall maintain any proprietary protections. This should be established at the project on-set.

#### 4.7 Record Retention

##### **Regulatory Requirements for Record Retention (O. Reg. 406/19 Section 28)**

28 (3) A **qualified person** shall,

- a) retain any document or record prepared by the **qualified person** or prepared under the oversight of the **qualified person** under this Regulation for a period of at least seven years after the date that the document or record is prepared; or
- b) make reasonable efforts to ensure that a copy of any document or record mentioned in clause (a) is stored for the period referred to in clause (a) in the offices of the firm, corporation or partnership where the **qualified person** was employed at the time when the document or record was prepared.

(4) A **qualified person** or the offices of the firm, corporation or partnership at which the **qualified person** was employed at the time when the documents or records were prepared, shall, upon request, make any documents or records prepared by the **qualified person** or prepared under the oversight of the **qualified person** available to any public body responsible for the management of excess soil.

##### **Plain Language Summary**

All QP generated documentation and records should be retained by the firm that employed the QP for a minimum of seven years. The documentation shall be made available to any public body responsible for the management of excess soil upon request.

##### **Best Practices**

Although the QP has been identified as required to maintain all documents and records for a period of seven years, the best practice would be to ensure that documents and records can be available by the QP firm for longer than seven years. Electronic versions of all documents and records shall be organized and uniquely named for future search and location by other assignees of the QP's firm that generated the documents and records. The firm employing the QP should be able to easily source, identify and supply the information generated for a minimum of seven years.

## 5. Communicating with Project Stakeholders

There are no regulatory requirements for QPs in communicating with Project Stakeholders with respect to excess soils management.

### **Best Practices**

As Professional Engineers, Professional Geoscientists and Risk Assessors, QPs are held to high standard of communication to be professional, objective and non-biased. The QP should always consider the situation and objectively present information in a clear and concise manner and be as helpful as possible. However, exchange of information should always be completed in consultation with the Project Leader or the owner of the reuse site who has retained the QP's services. The QP should only convey information on behalf of their client when instructed to do so.

#### **a. Communicating with Project Leaders:**

- Make sure they are aware when QP sign-off and approval is required and when they need to contact the QP,
- QPs should ensure that Project Leaders are aware of their role and responsibilities under the Regulations and Soil Rules,
- outline the expected responsiveness and timelines at the beginning of the project – ensure the QP and Project Leader have an agreed to plan,
- educating Project Leaders on their regulatory responsibilities and that contracting out or downloading the responsibilities cannot occur for excess soil management under the Regulation,
- educating on the timing and requirements of receiving site testing before hauling soil from source sites, and
- where possible, communicate the benefits of finding the balance between reducing GHG emissions and project economics.

#### **b. Communicating with Contractors:**

- Ensure that contractors are aware of their role and responsibilities in the excess soil management life cycle and what are the roles and responsibilities of the QP and the Project Leader,
- timely and accurate communications are to be provided as project decisions are made, and
- Project Leader should be made aware of requests and discussions held between the QP and contractors and other QPs on the project (contractor QPs and Reuse Site QPs).

#### **c. Communicating with other QPs:**

- When approval has been received from the Project Leader or reuse site owner, communications between QPs should be courteous and helpful,
- any project limitations and issues encountered that are outside the standard expectations should be clearly communicated between QPs, and

- each QP should understand that the Regulations and Rules for excess soil management are based on information exchanges and transparency throughout the process.

**d. Communicating with Reuse Sites without a QP:**

- If instruction to communicate directly with the reuse site is provided by the Project Leader, the QP should communicate in a helpful manner; however, should not act as the QP for the reuse site,
- the owner/operator of the reuse site should be recommended to engage their own QP to prevent perceived conflicts of interest, and where necessary, suggestions of other QPs and QP-firms can be made, and
- any specific requests from the reuse site owner/operator should be communicated back to the Project Leader for approval/instruction to satisfy the request.

**e. Communicating with First Nations Communities:**

- First Nations communities may have their own land codes and interests that may be impacted by the project and should be considered. The QP is not ultimately responsible for communicating with First Nations communities but should advise the Project Leader or other concerned parties for consideration. There may be additional requirements applicable to your project under the *Heritage Act*, see [Additional Information](#) for links.

## 6. Additional Information

### Useful links

- [Professional Engineers Act](#)
- [Professional Geoscientists Act](#)
- [Ontario Regulation 406/19 On-site and Excess Soil Management](#)
- [Protocol for Analytical Methods Used in the Assessment of Properties and Excess Soil Quality under Part XV.1 of the Environmental Protection Act](#)
- [Rules for Soil Management and Excess Soil Quality Standards](#)
- [Ontario Regulation 153/04 Records of Site Condition](#)
- *MECP Fact Sheets on O. Reg. 406/19 (not yet available)*
- [Ontario Regulation 347 – General Waste Management](#)
- [Best Practices for Haulers](#)
- [Best Practices for Temporary Sites](#)
- *Best Practice document drafted by OSPE (not yet available)*
- [Management of Excess Soil – A Guide for Best Management Practices](#)
- [Environmental Protection Act](#)
- [Ontario Water Resources Act](#)
- [Ontario Heritage Act](#)
- [Municipal-Aboriginal Relationships: Case Studies](#)  
*This document though designed for municipalities provides case studies of engaging with Aboriginal communities when archeological or other Indigenous sacred sites have been unearthed through development projects.*

## 7. Acknowledgements

The Ontario Environment Industry Association has prepared this Best Practices Document with invaluable input from the following individuals:

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## Appendix I - Case Study on Temporary Sites & GHG Reduction

### **CASE STUDY – Eglinton Crosstown LRT – Use of a Temporary Soil Storage Site**

*August 18, 2020*

Crosslinx Transit Solutions – Constructors implemented and operated the use of a temporary soil storage site to support schedule acceleration demands while meeting project economic requirements. This initiative not only allowed accelerated excavation schedules during wet weather conditions and after-hours, but also allowed for the temporary storage of clean excess soil for reuse as backfill on the Project.

**Start Date – End Date of study:** October 2019 – July 2020

**Volume of Material Received:** 96,150 m<sup>3</sup>

**Volume of Backfill saved on the Project:** 20,300 m<sup>3</sup>

**Number of rain days mitigated (potential delay days):** 26 Days

**Number of after-hour operation days (schedule acceleration):** 161 Days

**Estimated reduced truck travel distance:**

Average haul distance saved per load of reused backfill = 90Km

Total travel distance saved by reusing native soil = 182,700Km

The use of a temporary storage site allowed Crosslinx to mitigate potential schedule delays, allow for schedule acceleration during bulk excavation, while saving on backfill costs.

“The implementation of a temporary soil storage site has allowed the Eglinton Crosstown Project to not only de-risk excavation schedules but also store native soil onsite, managing disposal fees - all the while ensuring the natural environmental is not compromised by our activities. I would recommend the implementation of a temporary soil storage site for any project moving a significant volume of excess soil as long as the required real estate can be secured.”

– Deputy Director of Alignment



## Appendix II - Annotated Soil Rules QP Documents

### SECTION B

#### EXCESS SOIL REUSE PLANNING

Sections 8 to 16 of *the regulation* require a *project leader* for a *project* to comply with specific requirements before removing *excess soil* from a *project area*. These obligations apply to the *projects* and in the circumstances set out in *the regulation*. Generally, the requirements include the following:

1. Preparation of an assessment of past uses;
2. Preparation and implementation of a sampling and analysis plan;
3. Preparation of a soil characterization report; and
4. Preparation of an excess soil destination assessment report.

*The regulation* provides that each of these steps be undertaken in accordance with the Soil Rules. These Steps must be conducted or supervised by the source site *qualified person*. This section sets out the requirements for each of these steps.

#### 1. Assessment of Past Uses

(1) This section contains the requirement for the preparation of an assessment of past uses for the purposes of subsection 11 (1) of *the regulation*.

1. Sections 27 and 29 of *O. Reg. 153/04* apply with necessary modifications to the preparation of an assessment of past uses.
2. An existing phase one environmental site assessment report in respect of the *project area* may be relied upon, in the preparation of an assessment of past uses, if the report is updated to ensure it complies, with necessary modifications, with section 28 of *O. Reg. 153/04*.

(2) The assessment of past uses must achieve the following general objectives:

1. To develop a preliminary determination of the likelihood that one or more contaminants have affected *soil* in a location where *soil* is to be excavated within the *project area*.
2. To identify any *areas of potential environmental concern (APECs)* within the *project area* and to determine if any location where *soil* is to be excavated could have been affected by a *potentially contaminating activity (PCA)*.

3. To identify the *contaminants of potential concern (COPCs)* to determine the focus of the sampling and analysis plan, if any *areas of potential environmental concern (APECs)* are identified.

(3) The assessment of past uses must contain the following components:

1. A records review;
2. Interviews, unless the *qualified person* determines that carrying out the interview component is not necessary, having regard to the general objectives of the assessment of past uses;
3. Site reconnaissance;
4. A review and evaluation of the information gathered from the records review, interviews and site reconnaissance including the preparation of a conceptual site model; and
5. The preparation of an assessment of past uses report.

(4) Each of the components of the assessment of past uses must achieve the specific objectives and each must comply with the requirements specified in subsections (5) - (9).

#### **(5) Records review**

1. The specific objective of the records review is to obtain and review records that relate to the *assessment of past uses study area*, including both the current and past uses of the *project area* and the *potentially contaminating activities (PCAs)* at or affecting the *project area*, in order to determine if an *area of potential environmental concern (APEC)* exists within the *project area* where *soil* will be excavated.
2. The records review component must comply, with necessary modifications, with all of the requirements in section 3 of Schedule D to *O. Reg. 153/04*, unless the *qualified person*, having regard to the specific objective of this component and the general objectives of the assessment of past uses, is of the opinion that it is not necessary to comply with one or more of these requirements.

#### **(6) Interviews**

1. The specific objectives of the interview component of the assessment of past uses are to:
  - i. obtain information to assist in determining if an *area of potential environmental concern (APEC)* exists within the *project area* where *soil* will be excavated; and
  - ii. identify details of *potentially contaminating activities (PCAs)* or potential contaminant pathways that could result in the presence of contaminants in *soil* that is to be excavated within the *project area*.
2. Except in circumstances where the *qualified person* is of the opinion, having regard to the general objectives of the assessment of past uses, that it is not necessary to complete the interviews component, the interviews component must comply, with necessary modifications, with all the requirements in sections 5 to 8 of Schedule D of *O. Reg. 153/04*.

#### **(7) Site reconnaissance**

1. The specific objectives of the site reconnaissance component of the assessment of past uses are to:
  - i. determine if any *areas of potential environmental concern (APECs)* exist within the *project area* where *soil* will be excavated, through observations about current and past uses and *potentially contaminating activities (PCAs)* in the *assessment of past uses study area*.
  - ii. identify details of:
    - a) Potential contaminant pathways that could result in the presence of contaminants in *soil* to be excavated within the *project area*; and
    - b) Every *area of potential environmental concern (APEC)* and the *contaminant of potential concern (COPC)* within the *project area* where *soil* will be excavated.
2. The site reconnaissance component must comply, with necessary modifications, with all of the requirements in sections 10 to 15 of Schedule D of *O. Reg. 153/04*, unless the *qualified person* is of the opinion, having regard to the specific objectives of this component and the general objectives of the assessment of past uses, that it is not necessary to comply with one or more of these requirements.

#### **(8) Review and evaluation of the information gathered from the records review, interviews and site reconnaissance:**

1. The review and evaluation component must comply, with necessary modifications, with subsections (1) to (6) of section 16 of Schedule D to *O. Reg. 153/04*. The component must also include the preparation of a conceptual site model.
2. The conceptual site model shall consist of figures and narrative descriptions and assessments as set out below:
  - i. Provide one or more figures of the *assessment of past uses study area* that:
    - a) show any existing *buildings* and structures in the *project area*;
    - b) show roads, including names, within the *assessment of past uses study area*;
    - c) show uses of properties adjacent to the *project area* (where the examination of the *assessment of past uses study area* is necessary);
    - d) identify and locate areas where any *potentially contaminating activity (PCA)* is occurring or has occurred within the *assessment of past uses study area*, and show tanks within such areas; and
    - e) identify and locate any *areas of potential environmental concern (APECs)* within the *project area* that could result in the presence of contaminants in *soil* that is to be excavated within the *project area*.
  - ii. Provide a description and assessment of:
    - a) any areas where any *potentially contaminating activity (PCA)* on or potentially affecting the *project area* has occurred;
    - b) any contaminants of potential concern;
    - c) available regional or site-specific geological and hydrogeological information; and
    - d) how any uncertainty or absence of information obtained in each of the components of the assessment of past uses could affect the validity of the model.

**(9) The assessment of past uses report shall include:**

1. Persons involved in the *project*:
  - i. *project leader(s)*: The name, mailing address, e-mail address, and telephone number of all *project leader(s)* for the *project*, and
  - ii. *qualified person(s)*: The name, mailing address, e-mail address, telephone number, and type of licence(s) held for any *qualified person(s)* who conducted or supervised the assessment of past uses.
2. Description of the *project* and *project area*:

- i. a general description of the *project* and project type; and
  - ii. if the *project* involves a change of property use in the *project area*, describe the change.
3. A general description of the *project area* including:
- i. any municipal address(es) and property identification number(s) applicable to the property or properties comprising the *project area*;
  - ii. a list of the owner(s) of the property or properties comprising the *project area*;
  - iii. a map of the *project area* showing the boundaries of the *project area* and of the property or properties comprising the *project area*; structural features including *buildings*, paved surfaces, natural features, and areas of planned excavation, stockpiling, and processing of *soil* that may be removed from the *project area*; geographic coordinates of the approximate centre of the *project area* projected on the UTM grid coordinate system identifying easting, northing and zone based on NAD 83 datum;
  - iv. a list of any legal instruments that apply to *soil* management within the *project area* (e.g., Environmental Compliance Approval, by-law or permit issued under a by-law passed under section 142 of the *Municipal Act, 2001*, or section 105 of the *City of Toronto Act, 2006*); and
  - v. a statement as to whether a record of site condition has been filed to the Environmental Site Registry, or is intended to be submitted for filing under Part XV.1 of the *EPA* for all or part of the *project area*, and whether a risk assessment has been or will be submitted to the Director under Part XV.1 of the *EPA*.
4. If the *qualified person* is of the opinion that it was not necessary, in preparing the assessment of past uses, to comply with the applicable requirements of Schedule D to *O. Reg. 153/04*, the *qualified person* must in the report:
- i. identify every applicable requirement of Schedule D to *O. Reg. 153/04* that was not complied with;
  - ii. describe the rationale for the opinion;
  - iii. identify and describe any information gaps in that component as a result of the non-compliance; and
  - iv. describe how the information gaps shall be addressed in the preparation of the sampling and analysis plan to ensure that the general objectives of the excess soil characterization can be satisfied.
5. A table, prepared by the *qualified person*, that sets out:
- i. every *area of potential environmental concern (APEC)* within the *project area* that could result in the presence of contaminants in the *soil* to be

- excavated (i.e., the table of *areas of potential environmental concern (APECs)* specified in section 16 (2) (a) of Schedule D of *O. Reg. 153/04*); and
- ii. current and past uses of the *project area*, to the extent past uses have been investigated as part of the assessment of past uses (i.e. the table of current and past uses specified in section 16 (2) (b) of Schedule D of *O. Reg. 153/04*).
6. The conceptual site model that was prepared as part of the review of information gathered from the records review, interviews and site reconnaissance component.
  7. The *qualified person's* conclusions, based on a review of the information collected during the assessment of past uses and on the exercise of professional judgment, about the following:
    - i. the existence and location of any *areas of potential environmental concern (APECs)* within the *project area* that could result in the presence of contaminants in *soil* that is to be excavated within the *project area*;
    - ii. the current and past uses of the *project area*;
    - iii. the likelihood that one or more contaminants have affected the *soil* that is to be excavated within the *project area*; and
    - iv. the *contaminants of potential concern (COPCs)* that shall be the focus of the sampling and analysis plan.
  8. Provide original signatures of the *qualified person* who conducted or supervised the assessment of past uses.
  9. Provide a statement by the *qualified person* confirming the carrying out of the assessment of past uses and the findings and conclusions of the report.

**NOTE:** For the purposes of the sub-section governing the preparation of the assessment report, where a provision of this sub-section requires compliance with a provision of *O. Reg. 153/04* with necessary modifications,

- a reference in *O. Reg. 153/04* to a “phase one environmental site assessment” is deemed to be a reference to an “assessment of past uses”;
- a reference in *O. Reg. 153/04* to a “phase one property” is deemed to be a reference to a “*project area*”;
- a reference in *O. Reg. 153/04* to a “phase one study area” is deemed to be a reference to an “*assessment of past uses study area*”; and

- a reference in *O. Reg. 153/04* to an “enhanced investigation property” is deemed to be a reference to an “enhanced investigation project area”.

## 2. SAMPLING AND ANALYSIS PLAN

For the purposes of subsection 12 (1) of *the regulation*, where a sampling and analysis plan is required, it shall meet the requirements outlined in this section.

### (1) The sampling and analysis plan shall be prepared to achieve the following general objectives:

1. Identify each location where *soil* is to be excavated as defined by the *area of potential environmental concern (APEC)* that will be subject to sampling and analysis, based on the assessment of past uses.
2. Ensure an appropriate level of sampling and analysis is carried out to determine the concentration of contaminants in the excavated *soil* to identify:
  - i. which *soil* may be reused within the *project area*, with or without processing at the *project area*, and which *soil* may be deposited at a *Class 1 soil management site* or at a landfill or dump; and
  - ii. the potential *reuse sites* at which *excess soil* from the *project area* may be deposited for final placement, having regard to the excess soil quality standards set out in this document.

### (2) Preparing a Sampling and Analysis Plan

Based on the findings of the assessment of past uses, including the assessment of past uses conceptual site model, an understanding of the areas where excavations are planned within the *project area* and other information known to the *qualified person*, a sampling and analysis plan shall achieve the following specific objectives:

1. Identify those areas of the *project area* that must be investigated using sampling;
2. Identify all other areas of the *project area* where excavations are planned and that will not be subject to sampling and provide a rationale explaining why such areas of the *project area* are not required to be subject to sampling to make determinations on how the excavated *soil* from those areas shall be managed and disposed of;
3. Determine the location, concentration and distribution of contaminants in the *soil* to be excavated within the *project area* by sampling undisturbed *soil* (i.e., in situ sampling). If an in situ sampling approach is not practical or feasible, soil samples shall be collected from stockpiles where the *soil* is temporarily stored; and



4. Characterize the distribution of contaminants in stockpiles of *soil* or stockpiles of stormwater management pond sediment.

**(3) In preparing and implementing the sampling and analysis plan, the qualified person shall ensure that the following requirements are satisfied:**

1. Soil samples shall be collected using professionally acceptable *soil* collection methods and shall be taken by or under the supervision of the *qualified person*.
2. Precautions shall be taken to minimize the potential for cross-contamination.
3. The number of soil samples collected and analyzed is sufficient to determine the subsurface stratigraphy at or under the *project area*, as well as the location of contaminants in *soil*, on, in or under the *project area*.
4. In cases where the assessment of past uses identified a *contaminant of potential concern (COPC)* for which there is no standard (i.e., the contaminant is not listed, or a cell in a table of the excess soil quality standards contains “NV”), if the *qualified person* is of the opinion that a site-specific standard needs to be developed, the *qualified person* shall ensure the samples are analyzed for the *contaminant of potential concern (COPC)* by an accredited laboratory (see also subsection 1 (6) in Section A of PART II of this document for additional rules that apply where the excess soil quality standards are “NV” or not listed).
5. The soil samples for analyses are representative of the maximum concentration of a contaminant in each *project area* to be investigated based on the following considerations:
  - i. Any evidence of the presence of a contaminant; and
  - ii. The maximum concentrations of a contaminant:
    - a) measured using field screening equipment; and
    - b) any other field screening means which may be necessary to ensure the analysis includes such maximum concentrations.
6. Where there is information regarding the location of potential sources of contaminants within an *area of potential environmental concern (APEC)* that is within the *project area*, sample locations must be identified with the objective of locating the maximum concentration.
7. A rationale for the sampling design used is provided.
8. A sufficient number of soil samples shall be collected from representative depths and locations to allow the concentrations of any contaminants in the *soil* that is to be excavated to be known in order to meet the objectives of the sampling and analysis plan.

9. If two or more samples of *soil* are taken from sampling points at the same *sampling location* that are at the same depth, the sample meets an applicable excess soil quality standard if the average of the sampling results meets that standard.
10. The averaging provision set out immediately above does not allow for compositing of samples of *soil* that will be analyzed for volatile contaminants, including volatile organic compounds.
11. Field logs are recorded and finalized for all *sampling locations* to document the *soil* conditions within the *project area*.
12. The volume of any free-flowing product encountered at the *project area* and/or removed from the *project area* is monitored, recorded and disposed of appropriately.
13. A sufficient number of soil samples shall be collected and analyzed to determine the representative pH of soil in the *project area*.
14. At a minimum, soil samples must be analyzed for the following parameters:
  - i. petroleum hydrocarbons (F1 through F4) including benzene, toluene, ethylbenzene, xylenes;
  - ii. metals and hydride-forming metals (antimony, arsenic, barium, beryllium, boron, cadmium, chromium, cobalt, copper, lead, molybdenum, nickel, selenium, silver, thallium, uranium, vanadium and zinc);
  - iii. sodium adsorption ratio (SAR) and electrical conductivity (EC) if the *soil* is excavated from an area where a substance has been used for the purpose of keeping the area safe for use under conditions of snow or ice, unless the *soil* is to be finally placed at a location referenced in subsection 1 (3) of Section D of PART I of this document;
  - iv. any *contaminant of potential concern (COPC)* identified during the assessment of past uses; and
  - v. leachate analysis for certain contaminants as outlined in subsection 2 (5) in Section B of PART I of this document.

## 15. In Situ Sampling

In addition to the rules set out in clauses i-v in paragraph 14 in subsection 2 (3) in Section B of PART I of this document (above), the following additional rules apply to samples collected using an in situ sampling approach (in relation to the area identified where sampling is required):

- i. a minimum of three soil samples shall be analyzed if less than 600 cubic metres of *soil* will be excavated;
- ii. if more than 600 cubic metres of *soil* will be excavated, at least one soil sample shall be analyzed for each 200 cubic metres of *soil* for the first 10,000 cubic metres of *soil* to be excavated;
- iii. at least one soil sample shall be analyzed for each additional 450 cubic metres after the first 10,000 cubic metres of *soil* to be excavated; and
- iv. at least one soil sample shall be analyzed for each additional 2,000 cubic metres after the first 40,000 cubic metres of *soil* to be excavated.

## 16. Stockpile Sampling

In addition to the rules set out in clauses i-v in paragraph 14 in subsection 2 (3) in Section B of PART I of this document (above), the following additional rules apply to samples collected using a stockpile sampling approach:

- i. A sufficient number of samples shall be collected at different depths within a stockpile to characterize the depth profile and the spatial variation, laterally and vertically, of the *contaminant of potential concern (COPC)* within the stockpile;
- ii. Soil samples shall not be collected from the surface of the stockpile; rather, techniques and equipment need to allow for collection of samples from the entire stockpile, including the core; and
- iii. Unless section 17 applies (stormwater management pond sediment), the sampling frequencies specified in Table 2 of Schedule E, to *O. Reg. 153/04*, Minimum Stockpile Sampling Frequency shall be followed.

## 17. Stormwater Management Pond Sediment

The following rules apply to sampling of stormwater management pond sediment:

- i. Once stormwater management pond sediment which is removed from a stormwater management pond is segregated and physically dewatered, sampling of the stockpiled stormwater management pond sediment shall be undertaken. If wet stormwater management pond sediment is to be solidified through the addition of stabilizing agents such as polymers, see

- section 3 in Section C of PART I of this document for additional requirements;
- ii. At a minimum, stormwater management pond sediment samples must be analyzed for the following parameters:
    - a) petroleum hydrocarbons (F1 through F4) including benzene, toluene, ethylbenzene, xylenes;
    - b) metals and hydride-forming metals (antimony, arsenic, barium, beryllium, boron, cadmium, chromium, cobalt, copper, lead, molybdenum, nickel, selenium, silver, thallium, uranium, vanadium and zinc);
    - c) polycyclic aromatic hydrocarbons (PAHs);
    - d) electrical conductivity (EC), sodium adsorption ration (SAR) and cyanide; and
    - e) leachate analysis for certain contaminants as outlined in subsection 2 (5) in Section B of PART I of this document.
  - iii. Where stormwater management pond sediment from a stormwater management pond will be removed, segregated into stockpiles by zone (from within the stormwater management pond, i.e., stormwater management pond sediment from zone 1 – inlet, stormwater management pond sediment from zone 2 – centre, and stormwater management pond sediment from zone 3 – outlet), and dewatered or solidified, the sampling frequencies are as follows:
    - a) a minimum of three soil samples must be analyzed if less than 600 cubic metres of *soil* will be excavated;
    - b) if more than 600 cubic metres of *soil* will be excavated, at least one soil sample shall be analyzed for each 200 cubic metres of *soil* for the first 10,000 cubic metres of *soil* to be excavated;
    - c) at least one sample for each additional 450 cubic metres after the first 10,000 cubic metres of *soil* to be excavated, shall be analyzed; and
    - d) at least one soil sample shall be analyzed for each additional 2,000 cubic metres after the first 40,000 cubic metres of *soil* to be excavated.
  - iv. If the stormwater management pond sediment from the stormwater management pond is removed without regard for the different zones within the pond (i.e., all stormwater management pond sediment is mixed together and not segregated), the sampling frequencies set out in Table 2 of Schedule E, to *O. Reg. 153/04*, Minimum Stockpile Sampling Frequency apply.

#### (4) Requirements for Handling, Storage and Analysis of Samples:

1. Where a sample of *soil* is taken, the *qualified person* shall ensure that the requirements of section 47 (Analytical procedures) of *O. Reg. 153/04* are complied with, including but not limited to, the requirements in relation to the handling and storage of the samples, the requirement that the analyses of the samples be carried out by an accredited lab and the requirements to comply with the “Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act” published by the *ministry* and as it may be amended from time to time.

#### (5) Mandatory Leachate Analyses Requirements

1. If subsection 1 (7) in Section A of Part II requires leachate analysis, then the following soil sampling frequencies for in-situ characterization must be satisfied to determine if the *soil* meets the applicable excess soil quality standards:
  - i. A minimum of three soil samples must be submitted for leachate analysis if less than 600 cubic metres of *soil* will be excavated.
  - ii. The soil samples submitted for leachate analysis shall be collected from the *sampling locations* where the highest contaminant concentrations were found.
  - iii. Leachate analysis should be completed on at least 10% of the soil samples as described in paragraph 15 of subsection 2 (3) in Section B of PART I of this document, in addition to the three minimum samples, unless the *qualified person* can provide a rationale regarding why leachate analysis is not necessary in order to meet the general and specific objectives of the excess soil characterization.
2. For *soil* excavated from an *area of potential environmental concern (APEC)* that is stored in stockpiles, the minimum leachate sample frequency is three samples, plus 10% of the required number of soil samples detailed in Table 2 of Schedule E, to *O. Reg. 153/04*, Minimum Stockpile Sampling Frequency.
3. For sediment excavated from a stormwater management pond the minimum leachate sample frequency is three samples, plus 10% of the required number of soil samples detailed in clauses iii or iv of paragraph 17 of subsection 2 (3).
4. Where a sample of *soil* is submitted for leachate analysis, the leachate extraction shall be completed using the Synthetic Precipitation Leaching Procedure (US EPA SW-846 Method 1312), the Toxicity Characterization Leaching Procedure (US EPA SW-846 Method 1311) or another method approved by the Director. The subsequent analysis of the leachate must be completed in accordance with the requirements of section 47 of *O. Reg. 153/04* (Analytical procedures), including the requirements in relation to the

handling and storage of the samples, the requirement that the analyses of the samples be carried out by an accredited lab and the requirements to comply with the “Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act” published by the *ministry* and as it may be amended from time to time.

**(6) Heavily Impacted Soil That Cannot Be Reused at a Reuse Site**

1. Where a *qualified person* determines based on limited sampling and analysis that *soil* within an *area of potential environmental concern (APEC)* contains concentrations of contaminants exceeding the Table 3 *small volume excess soil quality standards* for Residential/Parkland/Institutional property uses, the *qualified person* may depart from the sampling and analysis requirements set out in this section of this document if the *qualified person* has determined that the only practical disposal option for the impacted *soil* is to transport it to a *Class 1 soil management site* or to a landfill or dump.

### 3. SOIL CHARACTERIZATION REPORT

#### (1) Soil Characterization Report Including a Review and Evaluation of Information

For the purposes of clause 12 (4) (c) of *the regulation* a soil characterization report shall include, cross-sections, figures, tables and narrative descriptions that illustrate the following, with respect to each area where excavations are planned within the *project area*:

1. Each *area of potential environmental concern (APEC)* within the *project area*, and its dimensions;
2. Each part of the *project area* that was subject to sampling, and the dimensions of each part;
3. Each *area of potential environmental concern (APEC)* within the *project area* where *soil* is to be excavated and the dimensions of each *area of potential environmental concern (APEC)*, and for each such *area of potential environmental concern (APEC)*, the related *potentially contaminating activity*;
4. The information required in Report Section 5 in Table 1 to Schedule E to O. *Reg. 153/04* (investigation methods including drilling and excavating test pits, *soil* sampling, sediment sampling, field screening measurements, analytical testing), with necessary modifications, and excluding any requirements related to ground water;
5. Stratigraphy from ground surface to the depth of the deepest planned excavation within the *project area*;
6. Approximate depth to water table, including whether the depths of excavation for each area where *soil* excavation is planned are below the water table;
7. The following information in relation to each area where samples were taken:
  - i. minimum number of samples required, and total number of samples collected;
  - ii. the locations and depths of samples, and a rationale for the selection of *sampling locations*;
  - iii. the parameter groups for analysis, including a rationale for the choice of parameter groups, where additional parameter groups were added;
  - iv. the date of sample collection;
  - v. the date of analysis;
  - vi. contaminants with measurable concentrations;

- vii. the distribution of each contaminant present;
  - viii. a discussion of any soil field screening results along with a discussion and analysis of the laboratory analytical results; and
  - ix. if applicable in relation to leachate analysis, a rationale regarding why a sampling frequency of at least 10% of the number of soil samples was not necessary, the leachate extraction method, rationale for the selection of the method and proof of Director approval for use of an alternate leachate extraction method.
8. One or more tables that,
- i. show soil quality data contained in laboratory certificates of analysis of samples taken at the *project area*;
  - ii. include borehole, test hole or test pit identification number, sample depths, sample identification number, date of sample collection, date of analysis and laboratory certificate of analysis or analytical report reference number; and
  - iii. include a comparison of the data to applicable excess soil quality standards.
9. Laboratory certificates of analysis or analytical reports for all samples analyzed;
10. The information required in the Report Section 6, sub-heading (ix) in Table 1 to Schedule E of *O. Reg. 153/04* (quality assurance and quality control results), with necessary modifications;
11. If, during the sampling and analysis of *soil* within an *area of potential environmental concern (APEC)*, the *qualified person* determined that *soil* contains high concentrations of contaminants as described in subsection 2 (6) (page 26) item vi. of paragraph 7 of subsection 3 (1) in Section B of PART I of this document and the only practical disposal option is to dispose of the *excess soil* at a landfill or dump or at a *Class 1 soil management site*, the *qualified person* shall ensure the report includes:
- i. A description of the steps taken to delineate the impacted *soil* that is to be excavated, from other *soil* within the *area of potential environmental concern (APEC)* that is to be excavated and that may be reusable; and
  - ii. A description and rationale the extent of sampling and analysis undertaken in substitution to the sampling and analysis requirements set out in this document.



12. Original signatures of the *qualified person* who conducted or supervised the preparation and implementation of the Sampling and Analysis Plan and the preparation of the soil characterization report, and, a statement by the *qualified person* confirming the findings and conclusions of the soil characterization report.

#### **4. Excess Soil Destination Assessment Report**

For the purposes of section 13 of *the regulation*, an excess soil destination assessment report shall include the following information:

- (1) The estimated volume and quality of *soil* to be removed from the *project area* as *excess soil*.
- (2) The types of processing of *soil*, if any, that have been conducted at the *project area* or a *Class 2 soil management site* in respect of the *soil* that will be *excess soil*.
- (3) The approximate date that *excess soil* will commence leaving the *project area* and the approximate date when all *excess soil* will have been removed from the *project area*.
- (4) For each *reuse site*, *Class 1 soil management site*, local waste transfer facility, landfill or dump at which *excess soil* will be deposited, include the following information:
  1. Municipal address (if applicable) or a description of the location;
  2. The estimated quantity of *excess soil* to be deposited at the site;
  3. If the site is a *reuse site*, based on the assessment of past uses (if applicable), sampling and analysis plan (if applicable) and the soil characterization report, the quality of the *excess soil* to be deposited at the site;
  4. If the site is a *reuse site*, based on information collected from and confirmed with the *reuse site* owner or operator, or the *reuse site qualified person* (if applicable):
    - i. the property use of the *reuse site* and the undertaking for which the *excess soil* is required;
    - ii. any characteristics associated with the *reuse site* or nearby properties that may affect the excess soil quality standards applicable to the *reuse site*; and

- iii. the *generic excess soil quality standards* or site-specific excess soil quality standards (if applicable) that apply to that site and confirmation that they align with the quality of *excess soil* to be sent to that site;
5. If the site is or will be governed by a *site-specific instrument*, identify the instrument, the *public body* responsible for issuing the instrument and any other information relevant to the receipt of *excess soil* at that site;
  6. If the site is a landfill or dump, an indication of whether any *excess soil* to be taken to that site would meet Table 2.1 for residential uses (i.e. the *excess soil* could be used at a sensitive site); and
  7. Whether a fill management plan was developed for that site.
- (5) For each *Class 2 soil management site* at which *excess soil* will be stored, provide the following information:
1. Municipal address (if applicable) or a description of the location;
  2. Confirmation that the *Class 2 soil management site* is located on a property owned by a *public body* or by the *project leader* for the *project* in relation to which the *soil* will be excavated;
  3. The estimated quantity and quality of *excess soil* to be stored at the *Class 2 soil management site*;
  4. The approximate date that *excess soil* will be deposited at a *Class 2 soil management site* and the approximate date when all the *excess soil* from the *project area* will have been removed from the *Class 2 soil management site*;
  5. A list of the *reuse site(s)* at which the *excess soil* is, ultimately, intended to be deposited and the date(s) when these *reuse site(s)* will accept the *excess soil*; and
  6. If the site is or will be governed by a *site-specific instrument*, identify the instrument, the *public body* responsible for issuing the instrument and any other information relevant to the receipt of *excess soil* at that site.
- (6) Contingency measures to be implemented in the event that the *excess soil* cannot be deposited at an intended *reuse site*, including instructions to be provided to the operator of a vehicle to ensure that *excess soil* is not deposited at

an unplanned site and the location of an alternate site at which *excess soil* may be deposited if not returned to the *project area* or *Class 2 soil management site*.

## **5. QUALIFIED PERSON DECLARATION**

- (1) If a *qualified person* was required to prepare or oversee the preparation of documents under *the regulation* including documentation related to the assessment of past uses, sampling and analysis plan and/or soil characterization report a declaration by the *qualified person* is required for each report, stating the following:
1. That the *project leader* or operator of the *project area* have provided the *qualified person* or an individual supervised by the *qualified person* with all necessary information and access to the *project area* and authorized the *qualified person* or an individual supervised by the *qualified person* to make any inquiries of the *project leader* and operator's employees and agents, for the purpose of assisting the *qualified person* in preparing or overseeing the preparation of the documents.
  2. That the *qualified person* has prepared or overseen the preparation of the documents
  3. That the documents are complete and accurate and meet the requirements of *the regulation* and these Soil Rules to the best of the *qualified person's* knowledge.