

**WATERFRONT**Toronto

# **Waterfront Toronto Environmental Management Plan for Project-Related Activities**

**August 2013**

## EXECUTIVE SUMMARY

This **Environmental Management Plan** (EMP) describes processes and procedures designed to mitigate environmental effects that might result from project-related activities in the Waterfront Toronto (WT) Designated Waterfront Area (DWA). It supports WT's Sustainability Framework (2005) through the establishment of measures to prevent pollution and environmental impairment, preserve cultural and natural resources, protect wildlife habitat and ensure compliance with applicable legislation, regulations, policies and guidelines.

A key component of this EMP is the series of **Environmental Protection Plans** (EPPs) included within it. EPPs are included for:

- Air Quality and Dust Management
- Archaeological and Built Heritage Resources Management
- Contaminated Soils Management
- Erosion and Sediment Control
- Fuel and Lubricants Management
- Groundwater Management
- Methane Control
- Noise and Vibration Management
- Project-related Waste Management
- Stormwater / Surface Water Management
- Traffic Management
- Vegetation Management
- Wildlife Management

The EPPs should be tailored by the construction manager and / or contractor for each project where necessary, to meet site specific conditions, as required. The EPPs may include some general measures for works such as:

- Works In or Adjacent to Water
- Infrastructure Servicing and Utilities
- Development of Parks and Open Spaces, and
- Site Development Works.

The EMP contains information on each EPP, including:

- A description of the environmental concerns and regulatory framework
- An outline of the activities or conditions that would cause the EPP to be invoked
- Details of planning and design considerations, and
- Maintenance, monitoring, and documentation programs.

A description of **Contingency and Emergency Response Plans** (CERPs) required for projects is also included in this EMP. These plans are necessary to address and ameliorate any consequences of unintended occurrences such as operational upsets and malfunctions. These contingencies are critical and are to be put in place before proceeding with WT projects.

All WT projects must comply with applicable regulatory requirements set out in legislation, regulations, policies, guidelines, bylaws and codes that are administered through various agencies/public bodies at the federal, provincial and municipal levels. Applicable requirements for WT projects are identified and discussed in this EMP and the specific EPPs set out in Section 7. While an effort has been made to provide a comprehensive summary of current regulatory requirements that may apply to WT project-related activities, these rules may be deleted, amended or replaced at any point. It is the full responsibility of construction managers and / or contractors and their on-site personnel to be aware of applicable requirements or changes that may occur and to comply with these requirements. WT recommends that a review of current regulatory requirements be conducted prior to project initiation for compliance purposes and to ensure that sound management and practices are in place.

EPPs and CERPs are tracked by Waterfront Toronto. Applicable general and site-specific EPPs should be identified at the design and tender stages of contracts. Each EPP and CERP applicable to the project must be submitted by the construction manager and / or contractor to Waterfront Toronto prior to the commencement of any on-site work and must be put in place before proceeding with the project. On an ongoing basis, the construction manager and / or contractor must submit Quarterly Update Reports which summarize EPP activity and project performance.

The implementation of this EMP and the EPPs outlined within is the responsibility of all parties involved in WT project-related activities. Construction managers and / or contractors must implement EPPs as part of their responsibility for ensuring sound environmental practices and safeguards, good housekeeping on-site, training employees in their responsibilities and keeping good records. Note that documentation provided to Waterfront Toronto is not done for the purpose of regulatory compliance. For a summary of documentation requirements, see Table 2.

## LIST OF ACRONYMS

<b>ACMS</b>	Archaeological Conservation and Management Strategy
<b>AHT</b>	Aquatic Habitat Toronto
<b>C of A</b>	Certificate of Approval
<b>CEPA</b>	Canadian Environmental Protection Plan
<b>CERP</b>	Contingency and Emergency Response Plan
<b>DFO</b>	Department of Fisheries and Oceans
<b>DWA</b>	Designated Waterfront Area
<b>EC</b>	Environment Canada
<b>EMP</b>	Environmental Management Plan
<b>EPA</b>	<i>Environmental Protection Act</i>
<b>EPP</b>	Environmental Protection Plan
<b>HADD</b>	Harmful alteration, disruption or destruction
<b>LEED NC</b>	Leadership in Energy and Environmental Design for New Construction
<b>LEED ND</b>	Leadership in Energy and Environmental Design for Neighbourhood Development
<b>MOE</b>	Ontario Ministry of the Environment
<b>MNR</b>	Ontario Ministry of Natural Resources
<b>MSDS</b>	Material Safety Data Sheet
<b>OWRA</b>	<i>Ontario Water Resources Act</i>
<b>QP</b>	Qualified Person
<b>QUR</b>	Quarterly Update Reports
<b>TPH</b>	Toronto Public Health
<b>TRCA</b>	Toronto and Region Conservation Authority
<b>WHMIS</b>	Workplace Hazardous Material Information System
<b>WT</b>	Waterfront Toronto

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## 1.0 PURPOSE AND SCOPE OF THE EMP

This **Environmental Management Plan** (EMP) describes processes and procedures designed to mitigate environmental effects that might result from project-related activities in the Waterfront Toronto (WT) Designated Waterfront Area (DWA). It provides the framework for establishing environmental priorities, identifying potential risks, complying with industry and regulatory standards and it defines responsibilities of the various parties in WT project-related activities.

This EMP supports WT's Sustainability Framework (2005) through the establishment of measures to prevent pollution and environmental impairment, preserve cultural and natural resources, protect wildlife habitat and ensure compliance with applicable legislation, regulations, policies and guidelines.

A key component of this EMP is the series of **Environmental Protection Plans** (EPPs) included in Section 7. Each EPP should be tailored to be site-specific, if required, particularly in sensitive areas with specific or unique conditions. The EPPs may also contain some general information on the approach for managing the project.

A description of **Contingency and Emergency Response Plans** (CERPs) (Section 8) which must be in place for each project is also included in this EMP. These plans are necessary to address and ameliorate any consequences of unintended occurrences such as operational upsets and malfunctions. Such contingencies are crucial to effective environmental management and are to be put into place by the identified responsible parties before proceeding with WT projects.

## 2.0 PROJECTS AND ACTIVITIES SUBJECT TO THE EMP

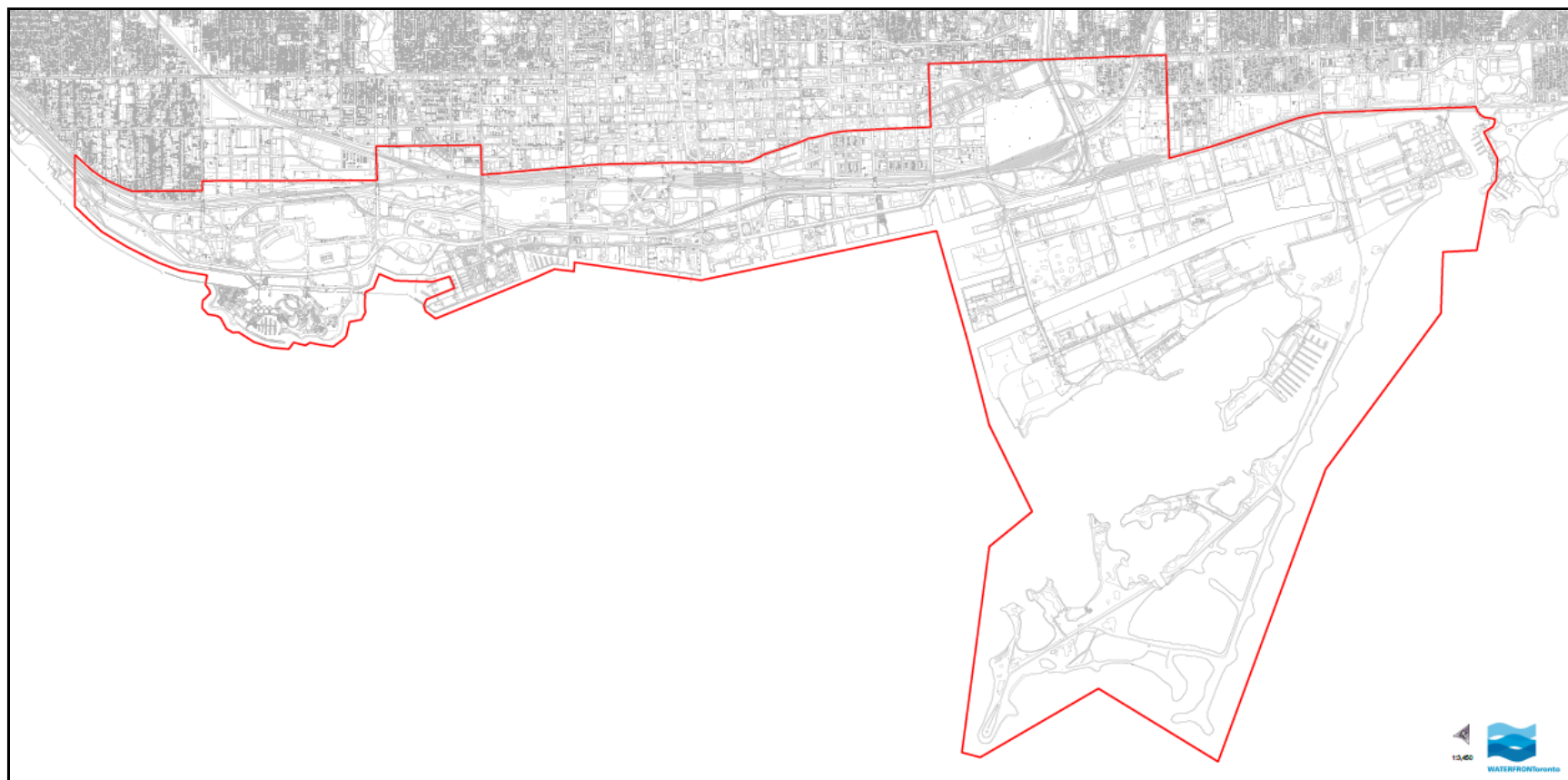
Projects and activities subject to this EMP are located in the **DWA** (Figure 1) which is comprised of the following lands or activities:

- **West Don Lands** – north of the rail corridor and south of King Street East, between Parliament Street (west side) and the Don Valley Parkway (east side)
- **East Bay Front Lands** – from Lake Ontario to the rail corridor, between Jarvis Street (west side) and Parliament Street (east side)
- **Central Waterfront Lands** – from Lake Ontario north to Queen's Quay Boulevard and from Bathurst Street (west side) to Jarvis Street (east side) and projects beyond these boundaries associated with the Martin Goodman trail
- **Lower Don Lands** – from the rail corridor (north side) to the ship channel (south side) and from Parliament slip / Inner Harbour (west side) to the Don Roadway (east side)
- **Lake Ontario Park** – from Unwin Avenue (north side) to the outer harbour (south side) and from the inner harbour (west side) to Leslie Street (east side), and
- **Beautification Projects or Activities** – throughout the DWA.

The project categories anticipated in the DWA include:

- **Works In or Adjacent to Water** that may include dock wall repair in the Central Waterfront Lands, trail construction through the East Bay Front Lands and earthworks at Lake Ontario Park
- **Infrastructure Servicing and Utilities** that may include installation of underground services, construction of stormwater management facilities, tunnelling for the district energy project and transit improvements, extension of the LRT and road construction
- **Development of Parks and Open Spaces** that may include trail construction, landscaping and stormwater management, and
- **Site Development Works** that may include buildings, public spaces, park structures and infrastructure.

**Figure 1.**



**Waterfront Toronto Designated Waterfront Area**

### 3.0 SUSTAINABLE WATERFRONT REVITALIZATION

WT's central mandate is to oversee, lead, and implement the revitalization of 800 hectares (2,000 acres) of Toronto's waterfront, transforming the area into mixed-use, sustainable communities. As a key public policy objective, sustainability has been core to WT since its inception.

In 2005, WT released the *Sustainability Framework*, which provides the overarching corporate policy on sustainability and presents a roadmap to guide the transformation of the waterfront into green, liveable and prosperous communities.

The *Sustainability Framework* (2005) describes 11 interrelated themes that focus sustainable actions for WT projects:

- |                          |                         |
|--------------------------|-------------------------|
| 1. Energy                | 7. Cultural Resources   |
| 2. Land Use              | 8. Natural Heritage     |
| 3. Transportation        | 9. Water                |
| 4. Sustainable Buildings | 10. Materials and Waste |
| 5. Air Quality           | 11. Innovation          |
| 6. Human Communities     |                         |

Each theme is accompanied by objectives, actions and targets to achieve WT's sustainability mandate. The objectives of each theme may be applicable at any stage of development however three themes are of particular relevance to the construction and implementation stages of WT projects: Air Quality, Water, and Materials and Waste. Each is profiled in the sub-sections that follow. In this respect, this EMP includes specific measures to reduce environmental impacts associated with these themes.

One of the ways that Waterfront Toronto is implementing its Sustainability Framework on the building-scale is through Minimum Green Building Requirements, which are mandatory performance standards for all waterfront building projects. First developed in 2005 and updated in 2011, the Minimum Green Building Requirements support advanced, high performing buildings and sustainable lifestyle choices. This involves, among other requirements, the achievement of LEED® for New Construction Gold certification.

In addition, Waterfront Toronto has achieved Stage 1 Gold certification through the U.S. Green Building Council's LEED® for Neighbourhood Development (ND) pilot program. The protocols outlined in this EMP consider applicable LEED® ND requirements in both the Pilot Rating System and the 2009 Rating System (with Canadian Alternative Compliance Paths) to assist WT partners in meeting all applicable LEED® requirements. Specific documentation requirements for construction-related LEED® ND credits are outlined in this EMP. LEED® NC documentation will be collected under a separate protocol outlined by individual developers for buildings.

### 3.1 Air Quality

According to a study completed by Toronto Public Health, air pollutants deriving from traffic contribute to an estimated 440 premature deaths and 1,700 hospitalizations per year in Toronto<sup>1</sup>. The EPP relating to Air Quality and Dust Management (Section 7.1) provides measures intended to control the generation of airborne particulates at project sites in the DWA. The Fuel and Lubricants Management EPP (Section 7.5) and Project-Related Waste Management EPP (Section 7.9) describe means to reduce the release of other potentially harmful pollutants into the atmosphere.

### 3.2 Water

The EPP for Erosion and Sediment Control (Section 7.4) provides protection against the transport of soil and particulates to water bodies that may occur during project-related activities. The Fuel and Lubricants Management EPP (Section 7.5) also provides means for control of spills and leaks which could result in impacts to groundwater and adjacent water bodies.

In some situations, past industrial activities on the waterfront lands have contributed to the degradation of groundwater quality. The EPPs for Contaminated Soils Management (Section 7.3) and for Groundwater Management (Section 7.6) are intended to reduce the potential for further degradation of the groundwater as well as to minimize potential migration of contaminated groundwater.

Further to this, the reduction and prevention of negative impacts on water in the EPPs for Erosion and Sediment Control, Contaminated Soils Management, and Stormwater/Surface Water Management (Section 7.10) must comply with the commitments set out in LEED® for Neighbourhood Development and LEED® for New Construction. Specifics regarding the requirements are discussed in each EPP.

### 3.3 Material and Waste

The EPP for Project-Related Waste Management (Section 7.9) requires that an integrated **Waste Management Plan** be prepared for demolition and construction projects. The measures incorporated into the Waste Management Plan are intended to minimize waste generation and to ensure the proper handling and disposal of waste from projects.

Further to this, construction waste management must comply with WT's LEED® for Neighbourhood Development commitments. Specifics regarding the requirements are discussed in the EPP for Project-Related Waste Management.

Waterfront Toronto tracks performance with respect to materials used in construction, including materials that are: salvaged, refurbished or reused; Forest Stewardship Council certified (applies to wood products); recycled and/or renewable; locally extracted, harvested, recovered, processed and manufactured; and low emitting (low VOCs). These objectives should be

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<sup>1</sup> Toronto Public Health, 2007. *Air Pollution Burden of Illness from Traffic in Toronto*.

considered in the development of tender and contract documents and where applicable on a project-by-project basis.

At a minimum, Waterfront Toronto requires that aggregate for asphalt pavement, aggregate bases and sub-bases shall contain 50% recycled content.

## **4.0 APPLICABLE REGULATORY REQUIREMENTS**

In addition to the WT requirements for sustainability and LEED® compliance, all WT projects must comply with the applicable requirements of legislation, regulations, policies and guidelines administered through federal, provincial and municipal jurisdictions. Appendix A presents a compilation of applicable environmental regulatory requirements for WT projects and identifies the EPPs relevant to each. Although this represents a comprehensive summary of current environmental regulations, it may be that other regulations also apply to WT project-related activities and the cited requirements may change. It is the full responsibility of the construction manager and / or contractor to be aware of applicable requirements and any changes that may occur.

The Toronto Green Standard (TGS) is not mandatory through this EMP, but are applicable when city planning or other approvals trigger them. References in this document encourage best practice and coordination where the TGS is applicable. Accordingly, it is important that responsible parties, designers, consultants, construction managers and / or contractors review project-related requirements at the start of and during WT projects to ensure that the regulatory requirements, including any project-specific permits, are considered throughout the implementation of the project.

## 5.0 ROLES AND RESPONSIBILITIES

Waterfront Toronto, a development partner, or an eligible recipient organization, such as TTC or TRCA are responsible for communicating the requirements of the EMP to involved parties throughout the life of the project. This will involve monitoring implementation through the collection of EPPs and Quarterly Update Reports, and ensuring that EMP requirements are incorporated in tender and contract documents as well as project specifications. For those projects where WT is not the directly responsible party, implementation of the EMP will be monitored by those that are.

To ensure the EMP is implemented, EPPs are to be identified and developed at the design and tender stages of projects and incorporated into project specifications. The EPPs should be tailored for each project to meet site specific conditions, as required.

Project managers for the responsible party will retain necessary technical expertise and implement a compliance tracking system that includes key components such as:

- monitoring and documentation;
- where appropriate, third party oversight;
- regular inspections; and
- reporting compliance to WT.

Construction managers and / or contractors retained by Waterfront Toronto, a developer partner, or an eligible recipient are required to develop and implement EPPs as part of their responsibilities, while technical experts such as the designers and consultants must incorporate them into relevant tender packages, contracts documents, project specifications, and plans / designs.

Table 1 sets out the basic roles of WT, development partners, eligible recipients, designers, consultants, construction managers and contractors. Some of these roles may vary, depending on land ownership and/or who controls the project and its activities.

Table 2 provides a summary of all documentation that must be provided to WT as part of EMP obligations. All EPPs must be provided to WT prior to the commencement of work on site. WT monitors implementation of each EPP through Quarterly Update Reports (QURs). QURs are submitted to Waterfront Toronto throughout the year on a schedule as determined by the project team and Waterfront Toronto.

**Table 1. Basic Roles and Responsibilities**

Party	General Role and Responsibility	Stages of Development		
		Planning and Design	Implementation	Documentation
Waterfront Toronto	<p>Communicate the requirements of the EMP to involved parties and ensure that the EMP is considered at all stages of development for all projects in the DWA.</p> <p>Monitor implementation of EMP by reviewing Environmental Protection Plans and Quarterly Update Reports.</p>	<p>Assist the project team in identifying EPPs that may apply to each project.</p> <p>Assist the project team in identifying who is responsible for producing EPPs and providing relevant documentation.</p> <p>Include references to EPP requirements in direct tender and consulting contract documents, as well as project specifications.</p> <p>Assist the project team in identifying sensitive projects that require project-specific mitigation measures in the EPPs.</p>	<p>Ensure construction managers / contractors are complying with implementation and documentation requirements.</p> <p>Where appropriate, identify successes and deficiencies to improve implementation of the EMP and EPPs.</p>	<p>Prepare project closure documentation recording compliance with EPP maintenance and monitoring requirements as well as recommended improvements going forward</p>
Development Partners and Eligible Recipients	<p>Communicate the requirements of the EMP to involved parties and ensure that the EMP is considered at all stages of development for all projects in the DWA.</p> <p>Monitor implementation of EMP by reviewing Environmental Protection Plans and Quarterly Update Reports.</p> <p>Coordinate implementation of the EMP on joint projects.</p> <p>Ensure that all hired construction manager and contractors communicate EMP compliance to WT.</p>	<p>Assist the project team in identifying EPPs that may apply to each project.</p> <p>Assist the project team in identifying who is responsible for producing EPPs and providing relevant documentation.</p> <p>Include references to EPP requirements in tender and construction contract documents as well as project specifications.</p> <p>Assist the project team in identifying sensitive projects that require project-specific mitigation measures in the EPPs.</p>	<p>Maintain communication with WT for the tracking of compliance.</p> <p>Ensure construction managers / contractors are complying with implementation and documentation requirements.</p> <p>Where appropriate, identify successes and deficiencies to improve implementation of the EMP and EPPs.</p>	<p>Prepare project closure documentation recording compliance with EPP maintenance and monitoring requirements as well as recommended improvements going forward</p>
Designers, and Consultants	<p>Consider and incorporate the EMP / EPPs in the preparation of all relevant tender packages, contract documents, project specifications, and plans/designs.</p>	<p>Identify and incorporate all EPP requirements into scopes of work for investigations and in technical specifications.</p> <p>Assign qualified staff to prepare and implement project-specific EPPs and monitoring programs (where</p>	<p>Where appropriate, identify successes and deficiencies to improve implementation of the EMP and EPPs.</p>	<p>Prepare project closure documentation recording lessons learned and recommended improvements going forward.</p>

Party	General Role and Responsibility	Stages of Development		
		Planning and Design	Implementation	Documentation
	Consider the requirements of the EMP / EPPs in the design and implementation of project-related activities.	applicable). Consider the requirements of the EMP / EPPs in the project design.		
Construction Managers and/or Construction Contractor	Prepare all applicable EPPs and Quarterly Update Reports and submit to WT prior to the commencement of any work on site.  Implement, monitor, and modify each applicable EPP throughout the project.  Provide necessary training and education.	Prepare all applicable EPPs and submit to WT. Include EPP requirements in sub-trade contracts.	Assign qualified staff to implement all EPPs applicable to the project.	Submit all applicable EPPs and Quarterly Update Reports to WT for compliance monitoring purposes.

**Table 2. Environmental Management Plan Documentation Requirements**

<b>Environmental Management Plan Documentation Requirements</b>	
<b>Environmental Protection Plan</b>	<b>Documentation Requirements</b>
<b>Air Quality and Dust Management</b>	<ul style="list-style-type: none"> <li>• An Air Quality and Dust Control Plan for all project sites or associated areas where causative activities or conditions may occur</li> <li>• As part of each Quarterly Update Report, submit a summary of dust control monitoring logs, any issues encountered, and mitigation measures implemented</li> </ul>
<b>Archaeological and Building Heritage Resource Management</b>	<ul style="list-style-type: none"> <li>• An Archaeological Monitoring Protocol, if required.</li> <li>• As part of each Quarterly Update Report, provide details of any unexpected archaeological resource discovered including evaluation of significance</li> </ul>
<b>Contaminated Soils Management</b>	<ul style="list-style-type: none"> <li>• A Soil Management Plan including but not limited to protocols for ensuring contaminated soils are not tracked to uncontaminated areas of the site (applies to any development project involving the excavation or handling of soils)</li> <li>• As part of each Quarterly Update Report, summarize Soil Management Plan activities undertaken, issues encountered, and mitigation measures implemented</li> <li>• As part of each Quarterly Update Report, summarize quantity and percentage of excavated soil sent to the Waterfront Green Soils Treatment Facility and materials used from the Waterfront Green Soils Treatment Facility, as per section 7.3.6</li> </ul>
<b>Erosion and Sediment Control</b>	<ul style="list-style-type: none"> <li>• An Erosion and Sedimentation Control Plan for any project site or associated area where causative activities or conditions may occur</li> <li>• As part of each Quarterly Update Report, summarize Erosion and Sedimentation Control Plan activities undertaken, issues encountered, and mitigation measures implemented</li> <li>• Copies of photographs or drawings to document the ESC measures implemented on the site, or a representative sample thereof</li> </ul>
<b>Fuel and Lubricants Management</b>	<ul style="list-style-type: none"> <li>• A Fuel and Lubricants Management Plan including but not limited to a plan for training all on-site personnel on the handling of fuels and lubricants</li> <li>• As part of each Quarterly Update Report, summarize Fuel and Lubricants Management activities undertaken, issues encountered, and mitigation measures implemented</li> <li>• Any use of alternative vehicles (such as electric or biodiesel fuel) must be noted in the Quarterly Update Reports.</li> </ul>
<b>Groundwater Management</b>	<ul style="list-style-type: none"> <li>• A Groundwater Management Plan for any project site where there are possibilities for impacting groundwater</li> <li>• As part of each Quarterly Update Report, summarize Groundwater Management Plan activities undertaken, issues encountered, and mitigation measures implemented</li> </ul>
<b>Methane Control</b>	<ul style="list-style-type: none"> <li>• A Methane Monitoring and Control Plan for any project site or associated area where causative activities or conditions may occur</li> <li>• As part of each Quarterly Update Report, summarize Methane Control activities undertaken, issues encountered, and mitigation measures implemented</li> </ul>
<b>Noise and Vibration Management</b>	<ul style="list-style-type: none"> <li>• A Noise and Vibration Management Plan</li> <li>• As part of each Quarterly Update Report, summarize Noise and Vibration Management activities undertaken, issues encountered, and mitigation measures implemented</li> </ul>

Environmental Management Plan Documentation Requirements	
Environmental Protection Plan	Documentation Requirements
<b>Project-Related Waste Management</b>	<ul style="list-style-type: none"> <li>• A Waste Management Plan and a Waste Reduction Work Plan with the aim of reducing and recycling waste generated during the project</li> <li>• As part of each Quarterly Update Report, summarize daily maintenance and monitoring of project waste management including a record of the quantity, material type, and final destination of all waste generated or disposed of at the site</li> <li>• As part of each Quarterly Update Report, provide percentage of recycled content used for asphalt pavement, aggregate bases and sub-base</li> </ul>
<b>Stormwater / Surface Water Management</b>	<ul style="list-style-type: none"> <li>• A Stormwater and Surface Water Management Plan</li> <li>• As part of each Quarterly Update Report, summarize stormwater and surface water management measures implemented, issues encountered, and mitigation measures implemented.</li> <li>• As part of each Quarterly Update Report, submit any changes / modifications to the Stormwater and Surface Water Management Plan as they occur (as necessary throughout all phases of the project to address changing conditions).</li> </ul>
<b>Traffic Management</b>	<ul style="list-style-type: none"> <li>• A Traffic Management Plan including but not limited to procedures for complaint filing and management of traffic-related complaints</li> <li>• As part of each Quarterly Update Report, summarize traffic management measures used to minimize disruption to local residents and businesses, any traffic and parking complaints, and mitigation measures implemented</li> </ul>
<b>Vegetation Management</b>	<ul style="list-style-type: none"> <li>• A Vegetation Management Plan (if applicable)</li> <li>• As part of each Quarterly Update Report, summarize Vegetation Management activities undertaken, issues encountered, and mitigation measures implemented</li> </ul>
<b>Wildlife Management</b>	<ul style="list-style-type: none"> <li>• A Wildlife Management Plan (if applicable)</li> <li>• As part of each Quarterly Update Report, summarize Wildlife Management activities undertaken, issues encountered, and mitigation measures implemented</li> </ul>
<b>Contingency and Emergency Response Plans</b>	<ul style="list-style-type: none"> <li>• A Spill Prevention and Contingency Plan and an Emergency Response Plan</li> </ul>

*It is expected that management plans for each EPP be tailored to reflect site-specific conditions, as required, in addition to the considerations and measures outlined in the Environmental Management Plan.*

*Plans are to be provided to WT prior to the commencement of any work on site, while Quarterly Update Reports are to be submitted to Waterfront Toronto throughout the year on a schedule as determined by the project team and Waterfront Toronto.*

## 6.0 EMP COMPLIANCE ASSESSMENT

Compliance with the EMP and regulatory requirements is the full responsibility of the construction manager and / or contractor. The following information is provided to WT development partners and eligible recipients to assist in compliance monitoring and documentation.

Where appropriate, quantitative markers representing actual measurements or observations are defined in the EPPs. Where quantitative measurements are not feasible (e.g., real-time measurement of airborne particulate at a construction site), qualitative markers (e.g., visual evidence of dust) are used. It is preferred to record compliance with real-time measurements or observations rather than documenting non-compliance, after the fact.

The EPPs describe recommended maintenance and monitoring measures for the purpose of tracking compliance with the relevant legislation, regulations, standards, by-laws and policies. It is intended that the EMP be included in tender packages and contract specifications and be implemented by the construction manager and / or contractor for the duration of the contract. Compliance tracking will be undertaken by the responsible parties and their consultants to ensure that contract requirements are being met. Construction managers and / or contractors are responsible for retaining staff qualified in the appropriate form of monitoring at the site and for ensuring compliance with contract requirements.

For example, Ontario regulations prohibit the release of air pollutants that may affect or damage adjacent properties. This could include odorous emissions or excessive dust during demolition, excavation or construction. The Air Quality and Dust Management EPP requires construction managers and / or contractors to monitor air quality at the site on a regular basis and implement dust control measures to prevent unacceptable emissions. Depending on the sensitivity of the surrounding area and the types of contaminants that may be anticipated during the works, regular monitoring may consist of hourly or daily site inspections or perimeter sampling. In addition, the contract administrator would monitor air quality compliance through a review of reports prepared by the construction manager and / or contractor and periodic site observations.

For works at some sites, more aggressive monitoring may be needed (e.g. sensitive environmental conditions on adjacent lands). In these circumstances, EPPs focussed on the issues at hand are to be prepared to reflect site-specific conditions. The site-specific EPPs would typically be prepared by the construction manager and would form part of the technical specification package on which the contract is based. For very sensitive sites, a dedicated Environmental Monitor may be assigned to a project. Provisions for this added monitoring are included in the EPPs.

An effective tracking system for EPP compliance includes a requirement to demonstrate and document that a project is not contributing to adverse environmental effects. The tracking system will draw on the monitoring and maintenance requirements for each of the EPPs that apply to active projects. Components of a tracking system include:

- **Compliance monitoring and documentation** by construction managers and / or contractors to record waste diversion measurements, compliance with air quality, erosion control and noise emission requirements, and records of spills. Although these observations

are compiled in Quarterly Update Reports, observations and record keeping are typically conducted on a daily or weekly basis.

- **Oversight (third-party) compliance monitoring and reporting** for issues such as archaeological and heritage resource management, groundwater management, soil management and hazardous materials management. Typical reports consist of a single report for each project, at the start of the project, to document project closure, or both. On-going monitoring may be conducted throughout the project, to support the preparation of a project closure report.
- **Quarterly Update Reports** to document compliance with the EMP. Please refer to Table 2 for all documentation requirements.

## 7.0 ENVIRONMENTAL PROTECTION PLANS

EPPs are designed to eliminate or reduce the effects of project-related activities on the environment. The EPPs included in this section are tailored to the types of activities likely to be carried out in the DWA. They are described to an appropriate level of generalized application and form the basic conditions from which more project-specific EPPs can be developed as unique conditions may require.

EPPs in this section address:

- 7.1 Air Quality and Dust Management
- 7.2 Archaeological and Built Heritage Resources Management
- 7.3 Contaminated Soils Management
- 7.4 Erosion and Sediment Control
- 7.5 Fuel and Lubricants Management
- 7.6 Groundwater Management
- 7.7 Methane Control
- 7.8 Noise and Vibration Management
- 7.9 Project-related Waste Management
- 7.10 Stormwater / Surface Water Management
- 7.11 Traffic Management
- 7.12 Vegetation Management
- 7.13 Wildlife Management

Each EPP section includes:

- A description of the environmental concerns and regulatory framework associated with the subject;
- An outline of the activities or conditions that would cause the EPP to be invoked and how the EPP is to be applied;
- Details of design and implementation considerations; and
- Maintenance and monitoring programs.

The development of EPPs and subsequent implementation, monitoring, and mitigation is the responsibility of the construction manager and / or contractor. The party responsible for this work must be defined by WT and/or the Development Partner/Eligible Recipient early in the process at the design stage of the project. WT and/or the Development Partner/Eligible Recipient must also assist the project team in identifying EPPs that apply to each project and whether project-specific mitigation measures and implementation considerations are required.

**Appendix A** presents a summary of applicable regulatory requirements for WT projects and identifies the EPPs relevant to each while **Appendix B** presents a summary of applicable

regulatory agency contacts for WT projects along with associated EPPs where these contacts may be applicable. As regulations and contact information can change, all parties should review the appended information and ensure up-to-date information is included in project documentation.

## **7.1 Air Quality and Dust Management**

### **7.1.1 Environmental Concerns**

Environmental effects on air quality associated with airborne particulate typically correlate with periods of dry weather and windy atmospheric conditions. Dust emissions result from the handling of soils or aggregates, vehicle traffic on roadways and cutting, sanding and grinding associated with construction. Engine exhaust emissions may also contribute to atmospheric degradation in the vicinity of construction projects, especially in terms of very fine particulate associated with internal combustion.

Dust and other contaminants that degrade air quality can be irritants for occupants or users both on the site and on adjacent properties. Project-related dust can include contaminants such as metals and organic contaminants that bind to soil particles. These airborne emissions may contribute to adverse health effects, particularly for those individuals susceptible to breathing ailments. Dust and other airborne contaminants can be mitigated through good management practices and standard dust control measures such as misting, sweeping and tarping of materials and control of traffic routes and speeds. The effectiveness of dust control measures can be monitored visually or through air sampling.

### **7.1.2 Regulatory Framework**

Most project-related activities are governed by provincial and municipal regulations and by-laws. No federal legislation specifically addresses air quality and dust management on project sites but mitigation measures identified in project-related Environmental Assessments, both federal and provincial, may apply to air quality and dust management.

Construction projects are exempt from the provincial requirement under the *Environmental Protection Act (EPA)* to obtain a Certificate of Approval (C of A) for air and noise emissions. However, the requirements of Ontario Regulation 419/05 Air Pollution – Local Air Quality do apply. This regulation requires that emissions to the atmosphere be controlled to prevent discomfort to persons, loss of enjoyment of normal use of property, interference with normal business operations or damage to property. For construction projects, airborne contaminants including chemicals and particulate must not be dispersed beyond the limits of the property unless every step necessary to control the emission of the contaminant is implemented.

### **7.1.3 Causative Activities and Conditions**

Demolition, earthworks and construction activities (including blasting or mechanical demolition activities, excavation, transport and placement and grading of soil and similar materials, and cutting, sanding or grinding during construction) are the main activities that can contribute to poor air quality and dust generation.

In addition, during the warmer months of the year, the heat and sunlight can react with gases and fine particles in the air around the downtown waterfront area which may lead to a smog alert issued by the City of Toronto. Smog can worsen heart conditions, asthma, bronchitis and other lung problems. It reduces lung function in healthy people and can also be an irritation for eyes, nose and throat. During smog alerts, added controls may be necessary for the management of air quality and dust generation.

#### **7.1.4 Application**

Air quality and dust control measures are to be applied at all project sites and associated areas (e.g., transport route) where causative activities or conditions can occur. Adequate dust control measures are to be in place prior to the initiation of work in order to prevent the uncontrolled generation of dust, to lessen the project's effect on the creation of smog and to minimize impacts or disruptions to the surrounding population.

#### **7.1.5 Design and Implementation Considerations**

For most sites, dust controls put in place also address the potential for release of other air pollutants. Toronto Public Health may be consulted during the preparation of dust control plans to ensure methods adequately mitigate the potential for health effects from the generation of dust during demolition and construction activities. To prevent the emission of dust and other pollutants into the atmosphere, the following environmental control measures are to be implemented where applicable:

- On-site vehicle and equipment idling is to be discouraged and where practical, limited;
- Dust generation from construction and demolition activities, storage piles and exposed soils/surfaces is to be controlled through the use of water sprays or similar techniques;
- Tracking of earth or soil from the site on trucks is to be minimized through the use of mud mats (e.g., granular pads located at site entrance). Where a mud mat is not effective in controlling the tracking of earth or soil onto adjacent roads, the physical removal of earth from vehicles is to be implemented;
- Vehicles hauling soil, aggregates or fine or dusty material are to be covered to minimize the generation of dust;
- Construction activities are to be scheduled and planned to limit areas of soil exposed at any given time;
- Exposed soil areas and adjacent roads are to be monitored for dust generation potential, with attention paid to areas used for pedestrian walkways and vehicle traffic;
- On-site (including roadways) flushing, sweeping and cleaning are to be performed on a regular basis, with consideration for the containment and management of any wash water;
- Exposed fill/stock piles that may be a source of fugitive dust are to be covered with tarpaulins, soil binders or other appropriate means, where practical;
- Soil surfaces are to be restored and re-vegetated as soon as possible;
- Construction activities such as cutting and grinding are to be scheduled and planned to limit the release of dust and noise to adjacent properties;
- Transportation and delivery of construction materials are to be scheduled to minimize the amount of bulk construction materials stored on-site at a given time; and
- Speed limits within the site are to be 20 km/h to control dust generation.

The above noted design considerations are consistent with the requirements in the LEED® for New Construction Rating System (Sustainable Sites Prerequisite 1, Erosion and Sedimentation

Control), which provides objectives for preventing dust and particulate matter from polluting the air through the design of sediment and erosion control plans (see Section 7.4).

If workers experience symptoms such as coughing, wheezing, chest tightness and/or difficulty breathing, in particular on smog alert days, they should:

- Reduce their activity level and check the Air Quality Health Index ([http://www.weatheroffice.gc.ca/airquality/pages/onaq-001\\_e.html](http://www.weatheroffice.gc.ca/airquality/pages/onaq-001_e.html)) to find out how best to protect their health;
- Drink plenty of water and take breaks preferably in the shade or in an air-conditioned area; and
- Contact their physician or go to the nearest hospital if further concerns arise.

#### **7.1.6 Maintenance, Monitoring, and Documentation**

Dust control is to be monitored regularly by the construction manager and / or contractor who is responsible for compliance with project specifications. At a minimum, observations of compliance with air quality and dust control objectives are to be recorded in daily logs for the site.

Where there is a potential for impacts to air quality, a site-specific EPP may prescribe that an Environmental Monitor be assigned to evaluate, audit and monitor the control measures and report any measures that are being improperly implemented or that are ineffective. For example, project sites that involve the handling of severely contaminated soils may require additional monitoring, including the collection and analysis of air samples at the property boundary, to quantitatively demonstrate compliance. Measurement parameters such as the frequency of sampling or monitoring and the device used for measurements (e.g., Hi-Vol samplers) are to be determined on a project-specific basis and detailed in consultation with an air quality specialist.

Where air quality and dust management mitigation measures are ineffective or if the construction manager / contractor is not in compliance with prescribed control measures, work on the project is to be suspended until a review of mitigation measures is completed and issues are resolved.

The City of Toronto Air Quality Information Line provides daily information on the smog alert status for the City. Construction managers and / or contractors and susceptible individuals should call 416-338-SMOG (7664) for the most up-to-date information, especially during smog alert days. In addition, the Air Quality Health Index ([http://www.weatheroffice.gc.ca/airquality/pages/onaq-001\\_e.html](http://www.weatheroffice.gc.ca/airquality/pages/onaq-001_e.html)) provides current and forecasted measures of air quality in terms of health and should be checked regularly by the individual susceptible to smog.

The construction manager and / or contractor must submit an Air Quality and Dust Control Plan to WT prior to the commencement of any work on site. In addition (as part of each Quarterly Update Report), a summary of dust control monitoring logs must be provided, along with any issues encountered, and mitigation measures implemented.

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### **7.1.7     References**

City of Toronto Public Health: Air Quality, Smog. 2012.

<http://www.toronto.ca/health/airquality/smog/index.htm>

City of Toronto. 2010. *The Toronto Green Standard*.

Canada Green Building Council. 2010. *LEED® Canada for New Construction 2009*

Health Canada. 2004. *Canadian Handbook on Health Impact Assessment – Volume 4: Health Impacts By Industry Sector, Section 3.1.3 Pollution Caused by Vehicle Traffic*

Ontario Regulation 419/05 Air Pollution – Local Air Quality of the *EPA*

## **7.2 Archaeological and Built Heritage Resource Management**

### **7.2.1 Environmental Concerns**

The history of Toronto's waterfront is rich and varied and presents a unique opportunity for the presence of archaeological and built heritage resources. Although the majority of the lands that constitute the DWA have been comprised from decades of infilling, industrial or marine resources (i.e., wharf features and structures) may be found as deeply buried deposits when carrying out project-related activities. Any evidence of pre-contact (aboriginal) occupation along the original shoreline has likely been destroyed or submerged through the shifting water levels of Lake Ontario, combined with the intensity of nineteenth and twentieth-century land use. However, these deposits may still exist in a deeply buried context. Above-ground cultural heritage resources may also be present in the form of historically significant buildings and cultural landscapes.

### **7.2.2 Regulatory Framework**

#### ***Archaeological Resources***

Under the *Ontario Heritage Act*, the Ministry of Culture regulates the protection and conservation of cultural heritage including archaeological resources, while the *Ontario Planning Act* requires municipalities to address archaeological resource concerns through planning processes and land-use control. The *Environmental Assessment Act* applies to public sector projects and requires the preparation of an environmental assessment document containing inventories, alternatives, evaluations and mitigation strategies to address archaeological concerns. The provincial government, through the Ministry of Culture has a regulatory and licensing responsibility for archaeology under the *Ontario Heritage Act*, however, municipal governments assume the day-to-day responsibility for ensuring that archaeological assessments are completed on lands which hold archaeological potential prior to any soil disturbance activity. The City of Toronto requires an archaeological assessment as a condition of development approval where warranted.

The archaeological review procedure developed as part of the larger "City of Toronto Archaeological Master Plan" is the means through which the City is addressing its responsibility. Working with the City of Toronto, WT has developed an Archaeological Conservation and Management Strategy (ACMS) which contains an inventory of all known archaeological features within the DWA. The ACMS has evaluated the archaeological significance of potential resources, assigned a significance rating, and provides recommendations for mitigating any impacts to potential archaeological resources. The plan includes a funding provision for contingency planning in the event that an unexpected archaeological resource is encountered during the construction process.

#### ***Built Heritage Resources***

Under the *Ontario Heritage Act*, a site can either be designated under Part IV (single building) or Part V (Conservation District) or be listed by a municipality as a heritage building.

Listed properties are those that City Council has recommended for inclusion in the City of Toronto's Inventory of Heritage Buildings. The recommendations are based on criteria that

relate to architecture, history, and neighbourhood context. Inclusion on the inventory signifies that the City would like to see the heritage attributes of the property preserved.

Listing a property on the Inventory of Heritage Properties allows Heritage Preservation Services to review development and building applications affecting those properties. It also requires the owner of a listed property to give the City 60 day notice of their intention to demolish the property.

Designated properties are those that have been designated under Part IV or Part V of the Ontario Heritage Act by the passing of a by-law. Designation gives Council the legal authority to refuse an application that will adversely affect the property's heritage attributes.

### **7.2.3 Causative Activities and Conditions**

The Heritage Preservation Services section of the City of Toronto Planning Division must be consulted for any project-related activities such as alterations and demolitions that could directly or indirectly impact built heritage resources. Heritage Preservation Services is responsible for advising and assisting City Council, the Toronto Preservation Board, the community, and property owners on the conservation of the City's heritage resources. This involves advising on matters stipulated in the *Ontario Heritage Act*, reviewing and advising on development proposals, and the monitoring and the maintenance of heritage sites.

All development plans within the DWA are to be reviewed against the ACMS inventory to determine if the proposed undertakings have the potential to impact an identified archaeological resource. This is to be done prior to submitting a development application. Upon submission of a development application, City Planning – Heritage Preservation Services will provide formal comment on the archaeological monitoring requirement as a condition of development approval.

The ACMS assigns a significance rating to individual features and the associated recommendation falls in to one of four basic categories:

**Grade 1:** Historically significant feature for which field work (e.g., archaeological test excavations, possible mitigation) is recommended.

**Grade 2:** Historically important feature for which limited archaeological fieldwork, typically monitoring, is recommended. This grade also applies to sites that would otherwise be ranked as Grade 1, but cannot be mitigated as such for technical reasons or because of economic constraints.

**Grade 3:** Feature of little historical significance, or for which the significance is not apparent; no form of mitigation or monitoring is necessary.

**Grade 4:** Lake fill within Toronto Harbour – no further action required.

On January 1, 2011, the Ministry of Tourism, Cultural and Sport released [\*Standards and Guidelines for Consultant Archaeologists\*](#). Compliance with the 2011 Standards and Guidelines is mandatory for all consultant archaeologists licensed by the ministry, who carry out archaeology in Ontario.

The Standards set out the basic technical, process and reporting requirements for conducting archaeological fieldwork, while the guidelines give advice on good practice beyond the requirements of the standards.

#### **7.2.4 Maintenance, Monitoring, and Documentation**

While every effort has been made to ensure that the inventory is comprehensive, it is recognized that unexpected heritage resources of interest or value may be encountered when carrying out project-related activities.

When an unexpected resource is found, work must stop in the immediate vicinity of the discovery. The resource is to be evaluated by a licensed archaeologist. Its significance is to be evaluated using the ACMS and reviewed with the City of Toronto Heritage Preservation Services, and will form the basis of a final recommendation.

No potential archaeological resources within the DWA have been ranked as a Grade 1 resource, that is, a feature of such high significance that archaeological assessment in the form of test excavations and possible mitigation efforts (salvage excavation or preservation in situ) needs to be undertaken in advance of development.

Twenty-one inventoried features or combinations of features within the DWA have been ranked as Grade 2 resources. These are regarded as exhibiting moderate archaeological significance. Limited archaeological fieldwork, in the form of monitoring during construction excavations, is recommended for 18 of these sites. Please refer to Waterfront Toronto's ACMS for further details.

An **Archaeological Monitoring Protocol** is to be undertaken once large scale excavations commence on a site. The site is visited on a daily basis, or as is deemed necessary based on consultation with the archaeological consultants, the City of Toronto Heritage Preservation Services, WT or other responsible parties, and on-site supervisory staff. The archaeological monitoring ceases once it has been determined that there is to be no further construction or excavation within areas of archaeological potential. The monitoring protocol will be developed on a site-specific basis and ensures that all parties including the consulting archaeologist and City Planning – Heritage Preservation Services are aware of the parameters and conditions of the monitoring process.

The purpose of monitoring is to document, through photography and the preparation of measured drawings, any significant exposed features that exhibit notable design or construction attributes. Artefact recovery is at the discretion of the monitoring archaeologist. The **Archaeological Monitoring Protocol** ensures that heavy equipment operators are to be instructed in on-site protocols, in advance of excavation activities. Equipment protocols may include:

- Notifying site supervisors when equipment operators encounter any intact structural features such as wharf cribs, structure foundations, etc.;
- Assisting archaeological staff in exposing archaeological features for documentation purposes; and

- Ensuring that significant archaeological features are preserved for a period of 24 to 48 hours to allow the archaeologist to visit the site, record its salient attributes and carry out any other activities that may be necessary.

In the event that suspected human remains are discovered or unearthed, the construction manager and / or contractor is to take appropriate measures including:

- Halting all work in the vicinity and ensuring the area surrounding the human remains is protected from further disturbance;
- Contacting the Toronto Police Service (416-808-2222); and
- Advising the archaeological consultant and WT (or developer partner or eligible recipient) immediately.

The construction manager and / or contractor must provide documentation to WT to demonstrate compliance with this EPP, including an Archaeological Monitoring Protocol (if required) and Quarterly Update Reports. The Quarterly Update Reports must document details, including photographs and narratives of any unexpected archaeological resource(s) discovered, an evaluation of its significance, and mitigation measures implemented.

### **7.2.5 References**

Archaeological Services Incorporated. 2008. *Waterfront Toronto Archaeological Conservation and Management Strategy (ACMS)*

Archaeological Services Incorporated. 2003. *The Archaeological Master Plan of the Central Waterfront, Toronto, Ontario*

Ministry of Culture, September 2006. The Discovery of Human Remains – Best Practices, Unit 5 in Standards and Guidelines for Consultant Archaeologists – Final Draft.

Ministry of Tourism, Culture, and Sport, January 2011. Standards and Guidelines for Consultant Archaeologists.

## 7.3 Contaminated Soils Management

### 7.3.1 Environmental Concerns

Much of the land in the DWA was formed through the infilling of Lake Ontario using soil and other fill materials from a variety of sources, some of which included contaminated materials. Industrial uses in the area also introduced contaminants such as polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), petroleum hydrocarbons, polychlorinated biphenyls (PCBs) and inorganic substances (e.g., metals).

### 7.3.2 Regulatory Framework

Federal legislation requires that management of contaminated soils comply with the applicable Regulations made under the *Fisheries Act* and the *Canadian Environmental Protection Act* (CEPA) to ensure the protection of fish, aquatic habitat, the environment and human health.

The identification and management of contaminated soils or suspect materials is more directly governed by Ontario Regulation 153/04 - Record of Site Condition under the Ontario *EPA*. This Regulation outlines acceptable standards for soil, groundwater and sediment quality, depending on the actual or proposed use(s) of land. To ensure the protection of groundwater supplies on adjacent lands, investigation and management of contaminated soils are to be in compliance with Ontario Regulation 169/03 under the *Safe Drinking Water Act*. In addition, if site personnel are at risk of being exposed to airborne contaminants originating from contaminated soils, respiratory protection is to be provided in compliance with the Ontario *Occupational Health and Safety Act* and Canadian Standards Association Standard Z94.4-02.

When soil is removed from a project site, it is to be managed according to Ontario Regulation 347; General – Waste Management under the *EPA*. This requires that contaminated materials be hauled by licensed contractors and that receiving sites are approved for the types of materials that are being disposed. Any treatment of contaminated soils is governed by a C of A process set out in section 27 of the *EPA*.

The Ministry of the Environment has a draft document “Soil Management – A Guide for Best Management Practices”, which encourages the beneficial reuse of excess soils in a manner promoting sustainability and protection of the environment. This document provides guidance on how to handle excess soil from a source site where it is generated, through to the transportation of the excess soil to a site where the soil can be reused for purposes such as site alterations, re-grading, or filling in excavations. It also provides guidance on temporary soil banks, procurement practices and provides examples where beneficial reuse of excel soil is encouraged. Construction managers and / or contractors must follow this guideline, where applicable.

### 7.3.3 Causative Activities and Conditions

Carrying out project-related activities in the DWA includes the inherent risk that contaminated soils may be encountered. These soils may be exposed during general grading or excavation for foundations, sewers or utilities in areas of known or suspected contamination.

### **7.3.4 Application**

Waterfront Toronto has developed a Soil Management Program. This program requires that each development project involving the excavation or handling of soils be governed by a site-specific **Soil Management Plan** developed by an environmental consultant retained by the construction manager and / or contractor. These plans are prepared at the design stage of a project before the implementation of any site activities and provides details concerning the characterization of soil quality and the management and treatment of contaminated soils.

### **7.3.5 Design and Implementation Considerations**

The potential for contaminated soil to be present at a project site is to be assessed through soil testing by WT's environmental consultant prior to the initiation of construction works. The Soil Management Plan developed at the design stage will characterize existing subsurface conditions including potential contaminants, proposed activities that are likely to disturb the soil, and provide direction on the management of excess soils (whether contaminated or not). For contaminated sites, site-specific monitoring programs for air quality and containment of contaminants within the site boundaries may be incorporated into the Soil Management Plan. Toronto Public Health may be consulted to ensure soil management protocols mitigate the potential for health effects from contaminated soil.

Construction managers and / or contractors must adhere to the site-specific Soil Management Plan for each project and incorporate it along with provisions for Spill Response (Section 8.2.2), Air Quality and Dust Management (Section 7.1), Groundwater Management (Section 7.6), Stormwater/Surface Water Management (Section 7.10) and worker health and safety, into an overall site specific program.

### **Soil Treatment Facility and Soil Management**

WT established a pilot soil treatment facility in the Port Lands in 2010 to assess the economic and technological viability of recycling contaminated soil in order to avoid shipping contaminants to landfill. The pilot confirmed the effectiveness and economic feasibility of treating and recycling soil. Based on the outcome of the pilot, Waterfront Toronto was able to seek a private sector operator to finance and operate a long-term soil treatment facility in the Port Lands. Waterfront Toronto chose Green Soils Inc., an industry leader with over 20 years of experience managing contaminated soil. Now operational, Green Soils offers preferential pricing to Waterfront Toronto projects. For more information on Green Soils, visit <http://greensoils.ca/>

In June 2011, the MOE made a precedent-setting decision to no longer classify granular material deriving from soil remediation as a waste under Part V of the Environmental Protection Act, so long as "it can be demonstrated as being able to be reused for a beneficial purpose to meet a realistic market demand." In addition, if material derived from the soil treatment facility meets the definition of soil (and no longer meets the definition of waste); there is nothing that precludes its use as long as it's consistent with legislative and regulatory requirements.

Waterfront Toronto requires contractors to direct excavated soil to the Waterfront Green Soils treatment facility instead of to landfill if the same price or cheaper. In addition, contractors must use suitable backfill material deriving from the Waterfront Green Soils treatment facility instead of unshrinkable fill or aggregate, if the same price or cheaper.

### **7.3.6 Maintenance, Monitoring, and Documentation**

Any work at a contaminated site must include the input and direction of WT's environmental consultant. Site supervision by WT or its environmental consultant will be undertaken when excavations into or around suspected contaminated soils take place. Where soil excavation is required, advance soil sampling is to be conducted within the proposed project area to determine the presence and concentrations of potential contaminants.

The environmental consultant will maintain records on the identification and management of contaminated soils. Site supervision will include direction on the segregation of contaminated soil and non-contaminated materials, field monitoring, procedural controls to prevent the spread of contamination from the excavation areas, screening and verification sampling to establish the limits of contamination, and the maintenance of appropriate records relevant to the treatment or disposal of contaminated soil.

The Soil Management Plan must be in place prior to initiating any earthworks to ensure effective management of contamination and to minimize risk to human health and safety through exposure to contaminants. Effective management of suspect contamination will also reduce the risk of delays to project schedules.

While project sites are to be adequately characterized in advance of construction activities, contaminated soil may be encountered unexpectedly during excavation. Suspect soil may be identified through visual or olfactory clues such as colouration or staining, unusual odours, or as a result of field screening using combustible gas detectors or photo-ionization detectors. If suspect soil is unexpectedly encountered, the construction manager and / or contractor is required to notify WT and its environmental consultant immediately. All works in the affected area must be suspended and the zone of contamination must be controlled until the soil has been thoroughly evaluated.

Excavated soil is to be managed to prevent sediment accumulation in stormwater runoff (Section 7.10). Excavated soil that is suspected of or known to be contaminated is to be placed in covered bins or other sealed containers, or stockpiled and covered with plastic sheeting anchored in place (Sections 7.1 Air Quality and Dust Management and 7.4 Erosion and Sediment Control). Site protocols are to be established to ensure contaminated soils are not tracked to uncontaminated areas of the site. These will include mud mats, truck washing and equipment scheduling that minimizes equipment movement between contaminant zones.

The construction manager and / or contractor must submit a Soil Management Plan to WT prior to the commencement of any work on site, as well as Quarterly Update Reports, which summarize Soil Management Plan activities undertaken, issues encountered, and the mitigation measures implemented. The construction manager and / or contractor must also provide the following data to Waterfront Toronto as part of the Quarterly Update Reports:

- Quantity of excavated soil sent to landfill (m3)
- Quantity of excavated soil sent to the Waterfront Green Soils Treatment Facility (m3)
- Percentage of excavated soil sent to the Waterfront Green Soils Treatment Facility
- Quantity of soil left on-site through RA / RM (m3)

- Quantity of virgin aggregate / unshrinkable backfill used on site (m2)
- Quantity of suitable backfill material from the Waterfront Green Soils Treatment Facility used on site (m3)
- Percentage of backfill material used from the Waterfront Green Soils Treatment Facility

### **7.3.7      *References***

Center for Environmental Excellence by AASHTO. 2008. *Chapter 4: Construction Practices for Environmental Stewardship - Section 4.11: Soil Management in Construction*

Canada Green Building Council. 2010. *LEED® Canada for New Construction 2009*

Ontario Ministry of the Environment. 2004. *Records of Site Condition: A Guide on Site Assessment, the Cleanup of Brownfield Sites and the Filing of Records of Site Condition*

## **7.4 Erosion and Sediment Control**

### **7.4.1 Environmental Concerns**

Erosion is generally defined as the destabilization of the ground surface and the transfer of surface soils from one location to another. It commonly occurs when precipitation (rain or snowmelt) flows over the ground surface. The extent and severity of erosion depends on the type of soil, the type and condition of soil cover (e.g., vegetation), local climate and site topography. Site disturbance increases the risk of erosion unless controls are in place to manage erosion and sediment runoff. Erosion concerns are typically relevant during construction or related project activities.

If soil enters a watercourse (either directly or through a storm sewer) the sediment can impair water quality and have an adverse effect on aquatic habitat. Suspended sediment can directly affect aquatic biota as it may impair respiration. Indirectly, sedimentation can inhibit plant productivity and damage spawning areas. Deposited sediments can also reduce the capacity of a watercourse and potentially increase flood risk.

### **7.4.2 Regulatory Framework**

Legislation, regulations, codes and standards under the jurisdiction of the three levels of government (federal, provincial and municipal) may influence project-related requirements in the DWA. Each is described in the following sections.

#### **7.4.2.1 Federal Regulations**

The federal *Fisheries Act* applies to all waters that provide fish habitat and prohibits the damage to fish habitat and the release of deleterious substances to aquatic environments. Harmful alteration, disruption or destruction of fish habitat requires authorization and determination of appropriate mitigation and/or compensation. To avoid disruptions or damage to fish habitat, activities undertaken near a watercourse must implement erosion and sediment controls. Part 8 of the *CEPA* outlines the requirements for environmental emergency plans for unplanned or accidental releases of a substance into the environment.

#### **7.4.2.2 Provincial Regulations**

The Ontario *EPA* and the *Ontario Water Resources Act (OWRA)* both aim to protect and manage the quality and quantity of surface water and groundwater. Discharging or depositing material in any water or on any bank that may degrade the quality of surface water such as rivers, streams or lakes is prohibited. Sediment released from a site could also result in a discharge to a water body and subsequent quality degradation. Provincial approvals through a C of A, with demonstrated erosion and sediment control for stormwater management, are required for projects that may contribute to erosion in the DWA.

#### **7.4.2.3 Municipal Requirements**

Municipalities must ensure that discharges from storm sewer systems meet provincial requirements. Projects that may release suspended solids to a storm sewer must have an erosion and sediment control plan and comply with City of Toronto Municipal Code Part II,

Chapter 681 (By-law 457-2000) to regulate the discharge of sewage and land drainage. The City of Toronto reviews this requirement as part of its site plan review and approval process (*Planning Act*).

In addition, the Toronto Green Standard provides an integrated set of targets, principles, and practices to support sustainable development and site design. The standards are designed to work with the regular development approvals and inspections process. A completed Toronto Green Standard checklist is required as part of the planning approval process. With respect to this EPP, it ensures the protection of water quality during construction and demolition through adherence to the Erosion and Sediment Control Guidelines for Urban Construction (Greater Golden Horseshoe Conservation Authorities, December 2006). It also promotes the prevention of erosion through the retention and reuse of all uncontaminated on-site soil in areas not covered by buildings or hard surfaces. Where this cannot be achieved, the soil should be replaced with soil of equal or better quality to encourage revegetation and minimize future erosion potential.

### **7.4.3 Causative Activities and Conditions**

Many project-related activities (e.g., demolition and construction) can cause or contribute to erosion or sediment migration. The physical or environmental conditions likely to contribute or cause situations requiring intervention to manage erosion and sediment transport include:

- Erosion caused by rain and runoff, and
- Erosion through project-related works (e.g., excavation, transport and placement of materials, site development and infrastructure-related works) disrupting existing water bodies.

### **7.4.4 Application**

Erosion and sediment control measures must be applied at any project site or associated area (e.g., transport routes) where causative activities or conditions may occur. These measures must be in place prior to the initiation of work in order to prevent soil erosion, rather than manage erosion that has already begun to take place.

### **7.4.5 Design and Implementation Considerations**

The hierarchy for erosion and sediment control is first to control erosion at its source and then to provide controls against potential off-site migration of sediment. To reduce the need for controls for off-site sediment migration, the following procedures are to be implemented:

- Design site layouts to minimize vehicle movement that can cause soil compaction and subsequent erosion;
- Limit both the gradient and the length of exposed slopes (faster moving water associated with steeper slopes accelerates erosion);
- Minimize the area and duration of exposed soil; and
- Maintain and regenerate vegetative cover as a natural erosion control feature.

The Leadership in Energy and Environmental Design New Construction (LEED® NC) program includes requirements for Erosion and Sedimentation Control which must be considered within

this EPP. Construction Activity Pollution Prevention (Sustainable Sites Prerequisite 1) is a prerequisite for obtaining LEED® NC certification and it is therefore imperative that the requirements of this prerequisite are met. This involves the creation and implementation of an Erosion and Sedimentation Control (ESC) plan for all construction activities associated with the project which conforms to the 2003 U.S. EPA Construction General Permit or local standards and codes, whichever is more stringent. The ESC plan must describe the measures implemented to accomplish the following objectives:

- Prevent loss of soil during construction by stormwater runoff and/or wind erosion, including protecting topsoil by stockpiling for reuse;
- Prevent sediment release to storm sewers or receiving streams; and
- Prevent dust and particulate matter from polluting the air.

The LEED® for Neighbourhood Development (ND) Program also includes requirements for Erosion and Sedimentation Control. These are outlined in Green Construction and Technology Prerequisite 1 – Construction Activity Pollution Prevention (LEED® ND Pilot Rating System) and Green Infrastructure and Buildings Prerequisite 4 – Construction Activity Pollution Prevention (LEED® ND 2009 Rating System). As these are prerequisites, it is imperative that the requirements outlined in both documents are met.

To meet the requirements for the LEED® ND 2009 Rating System, the ESC Plan must incorporate practices such as phasing, seeding, grading, mulching, filter socks, stabilized site entrances, preservation of existing vegetation, and other best management practices (BMPs) to control erosion and sedimentation in runoff from the entire project site during construction. The plan must list the BMPs employed and describe how they accomplish the following objectives:

- Prevent loss of soil during construction by stormwater runoff and/or wind erosion, including but not limited to stockpiling of topsoil for reuse.
- Prevent sedimentation of any affected stormwater conveyance systems or receiving streams.
- Prevent polluting the air with dust and particulate matter.

The ESC Plan must also describe how the project team will do the following:

- Preserve vegetation and mark clearing limits.
- Establish and delineate construction access.
- Control flow rates.
- Install sediment controls.
- Stabilize soils.
- Protect slopes.
- Protect drain inlets.
- Stabilize channels and outlets.
- Control pollutants.
- Control dewatering.

- Maintain the BMPs.
- Manage the erosion and sedimentation control plan.

The BMPs must be selected from the Washington State Department of Ecology's *Stormwater Management Manual for Western Washington, Volume II, Construction Stormwater Pollution Prevention* (2005 edition), or a locally approved equivalent, whichever is more stringent, and must comply with all federal, provincial, and local erosion and sedimentation control regulations.

#### **7.4.5.1 Erosion Control Measures**

To minimize erosion and the need for sediment control, procedures are to be implemented for all projects across the DWA that may be susceptible to erosion. Appropriate controls are to be established in areas where surface water may flow during a storm event and in areas of disturbed surfaces that have not yet been restored. Erosion control procedures may include:

- Diversion ditches within the work areas to direct flows and minimize potential for surface erosion. Completed ditches should be appropriately surfaced (e.g., with sod, stone riprap or manufactured fibre matting);
- Ditch checks consisting of straw bales or rock check dams constructed across swales, draws or ditches and/or around inlets to reduce the velocity of stormwater runoff and to intercept silt; and
- Restoration of soil surfaces immediately following final grading, with surface restoration to include features that minimize erosion (e.g., placing sod, seed and mulch, manufactured fibre matting, cross slope grading).

#### **7.4.5.2 Sediment Control Measures**

To further address erosion and related consequences in off-site areas, the following additional procedures are to be implemented at projects where there is potential for transport of sediment beyond the property:

- Erection of silt fences at or near the down-gradient extent of the site to intercept sediment-laden overland flows, and maintain them in place until surface restoration is sufficiently advanced that the erosion potential is minimized;
- Protection of catch basins, manholes and other storm sewer features (e.g., ditch inlets) from sediment-laden inflows through the installation of sealing covers or geotextile filter media at their inlets; and
- Construction of a stormwater management pond to collect and contain runoff for a sufficient period of time to allow for settlement of sediment in suspension, where warranted based on project characteristics (e.g., duration, physical extent).

#### **7.4.6 Maintenance, Monitoring, and Documentation**

Erosion and sediment control features require maintenance and monitoring to ensure proper function. Maintenance and monitoring is to be performed on a regular schedule (e.g., weekly), and also before predicted storm events and immediately thereafter. Monitoring requirements will be outlined in project specifications and the construction manager and / or contractor must

implement these monitoring requirements. A maintenance and monitoring program should include:

- Inspection of control features, and repair and/or replacement on a regular basis, as required;
- Removal of collected sediment on the up-gradient surface of silt fencing when silt has accumulated to approximately half the fence height or when the silt retention capacity has been reduced to approximately 50% due to sagging or staple loss;
- Removal of collected sediment from settlement ponds when the storage capacity has reached 50%; and
- Reinforcement of erosion control structures when significant rainfall events are forecast.

The construction manager and / or contractor must submit an Erosion and Sedimentation Control Plan to WT prior to the commencement of any work on site. In addition, Quarterly Update Reports must be submitted, summarizing ESC activities undertaken, issues encountered, and mitigation measures implemented. Copies of photographs or drawings to document the ESC measures implemented on the site, or a representative sample thereof must also be provided.

#### **7.4.7      References**

City of Toronto. 2010. *The Toronto Green Standard*.

Greater Golden Horseshoe Conservation Authorities. 2006. *Erosion and Sediment Control Guideline for Urban Construction*

Transportation Association of Canada (TAC). 2005. *National Guide to Erosion and Sediment Control on Roadway Projects*, Ottawa, Ontario

Canada Green Building Council. 2010. *LEED® Canada for New Construction and Major Renovations 2009*

Department of Fisheries and Oceans (DFO). *Effects of Sediment on Fish and their Habitat*, DFO Pacific Region Habitat Status Report 2000/01

## 7.5 Fuel and Lubricants Management

### 7.5.1 Environmental Concerns

Fuels and lubricants are used in mechanical equipment and machinery. Improper management of these fluids may cause environmental impacts through:

- Spills and leaks into the soil, surface water, and/or groundwater; and
- Fires at the site.

Inadvertent release of these fluids may adversely impact the environment and may also affect the project through the diversion of resources to remediate the release.

Risks from spills and leakage of harmful fluids is reduced through the development and implementation of sound management plans for vehicles, machinery (including fuelling and operation), imported materials (including hazardous materials) and materials generated from project-related activities.

Contingency and Emergency Response Plans (Section 8.0) prepared and implemented by construction managers and / or contractors will minimize the impacts from inadvertent spills.

### 7.5.2 Regulatory Framework

#### 7.5.2.1 Federal Regulations

Projects are to be carried out in compliance with Parts 5 and 8 of the *CEPA* which relate to the regulation and release of toxic substances, and include requirements for environmental emergency plans, regulations, and remedial actions for an uncontrolled, unplanned or accidental release of a substance into the environment.

In addition, project activities involving fuels and lubricants must ensure the protection of fish habitat and prevention of pollution through the federal *Fisheries Act*.

#### 7.5.2.2 Provincial Regulations

Part V of the Ontario *EPA* prohibits the disposal of wastes to any sewage or other works which are governed by the *OWRA*. In the event that a spill does occur, Part X of the *EPA* provides direction on the management and reporting of spills.

To ensure the protection of groundwater, the management of fuels and lubricants are to be in compliance with Ontario Regulation 169/03 under the *Safe Drinking Water Act*.

Vehicle handling, fuelling and fuel storage are to be conducted in accordance with the *Technical Standards and Safety Act* (Ontario Regulation 217/01) which is administered by the Ontario Technical Standard and Safety Authority (TSSA).

All project activities that involve the storage and use of lubricants and fuels on-site shall follow the *Occupational Health and Safety Act*, Workplace Hazardous Material Information System (WHMIS) regulation (Ontario Regulation 860). This ensures cautionary labelling of containers of

WHMIS "controlled products", the provision of material safety data sheets (MSDSs) and the implementation of worker education programs.

Part 4 of the *Fire Protection and Prevention Act* (O.Reg. 388/97) and *Ontario Fire Code*, which provides guidelines for storing and handling of flammable and combustible liquids, should also be adhered to for all projects.

### **7.5.2.3 Municipal Requirements**

The City of Toronto regulates the discharge of fluids to stormwater, sanitary and combined sewer systems under Part II, Chapter 681 of the Toronto Municipal Code. Management of fuels and lubricants will ensure that release of materials to the sewer system does not violate the requirements laid out in the code.

### **7.5.3 Causative Activities and Conditions**

Activities associated with fuelling of on-site machinery and use of lubricants in the operation and maintenance of machinery can lead to spills or leaks resulting in contamination and migration of contaminants into the soils, groundwater and watercourses.

### **7.5.4 Application**

A **Fuel and Lubricants Management Plan** is to be prepared and implemented by construction managers and / or contractors involved in the fuelling or maintenance of construction equipment. The Plan is to be completed prior to the start of any on-site work. Construction managers and / or contractors are responsible for ensuring that all on-site personnel are aware of and trained in the handling of fuels and lubricants.

### **7.5.5 Design and Implementation Considerations**

Good housekeeping practices during project-related activities reduce the potential for spills or leakages of fuels and lubricants into the environment. In addition to project guidelines on workplace fuels and lubricant, the following measures are to be implemented:

- Equipment refuelling is to be performed only at a designated refuelling station;
- Equipment maintenance and refuelling are to be controlled to prevent any inadvertent discharge of petroleum products;
- Fuels and lubricants are to be properly labelled and stored in a designated storage area;
- Vehicle maintenance and refuelling is to be conducted at least 30 metres away from any sensitive watercourse (i.e., Don River, Lake Ontario, etc.) and special care is to be taken near municipal storm sewers (i.e., cover sewers during fuelling);
- Fuel storage and pumps, if installed, are to be placed where access to fuel trucks and construction equipment is easiest and in accordance with provincial fuel tank storage and dispensing regulations;
- All personnel working with fuels and lubricants are to be trained in the proper handling of such materials;

- Access to fuels/lubricant storage area is to be restricted to personnel qualified and designated to handle such materials;
- First aid kits and emergency response equipment (spill kits) are to be available near storage areas and on re-fuelling vehicles;
- All vehicles on-site are to be equipped with spill kits;
- Fire protection equipment is to be maintained on-site and all personnel are to be trained to respond to emergencies in accordance with the site plan provided by the construction manager and / or contractor;
- MSDS for all hazardous substances are to be accessible on-site; and
- A Spill Prevention and Contingency Plan (Section 8.1) and an Emergency Response Plan (Section 8.2) are to be developed and implemented as required.

It is expected that alternative vehicles such as electric vehicles or those run on biodiesel fuel be used whenever possible for project-related activities, to satisfy objectives set out in Waterfront Toronto's Sustainability Framework.

### **7.5.6 Maintenance, Monitoring, and Documentation**

Mechanical equipment is to be in good working repair and free of oil, hydraulic fluid, grease and fuel leaks. A daily inspection of all machines is to be conducted by the construction manager and / or contractor before start-up to ensure that no potential exists for contamination of soils and watercourses. Operators are responsible for ensuring that no potential exists for oil, grease or other deleterious substances to enter into the environment.

Buffer zones are to be established around all sensitive environmental features to avoid environmental impacts that may be caused by equipment. Equipment is to be stored in a stable location away from sensitive areas and outside the established buffer zones. Contract administrators and site supervisors are responsible for ensuring that these measures are effectively implemented by the construction manager and / or contractor.

Fuel and lubricant storage control measures are to be in place to protect the project site. Where the size of the project or types of materials present warrant additional oversight, an Environmental Monitor may be retained to evaluate, audit and monitor the control measures and report any measures that are ineffective or not being implemented properly. The Environmental Monitor or contract administrator is to complete daily field reports.

Pollutants spilled or discharged into the environment are to be reported to the **Spill Action Centre** of the Ontario Ministry of the Environment (MOE) (1-800-268-6060), as well as to the City of Toronto (416-338-8888). Further information on procedures and contacts in the event of a spill or discharge can be found in Section 8.1 and Appendix B respectively and are to be followed immediately upon discovery of an incident.

The construction manager and / or contractor must submit a Fuel and Lubricants Management Plan (including but not limited to a plan for training all on-site personnel on the handling of fuels and lubricants) to WT prior to the commencement of any work on site. In addition (as part of each Quarterly Update Report), a summary of Fuel and Lubricants Management activities undertaken must be provided, along with a description of any issues that were encountered and

the mitigation measures implemented. In addition, any use of alternative vehicles must be noted in the Quarterly Update Reports.

### **7.5.7      *References***

Center for Environmental Excellence by AASHTO. 2008. *Chapter 4: Construction Practices for Environmental Stewardship - Section 4.6: Vehicle Fluid, Fuel and Washwater Control*

U.S. Environmental Protection Agency. Construction Site Chemical Control. Last updated on January 13, 2010. <http://www.epa.gov/owow/NPS/MMGI/Chapter4/ch4-3b.html>

Ontario Provincial Standard Specification. 2010. *OPSS 182: General Specification for Environmental Protection for Construction in Waterbodies and on Waterbody Banks.*

## 7.6 Groundwater Management

### 7.6.1 Environmental Concern

The majority of the lands across the DWA can be classified as Brownfields (i.e., underutilized lands that are or are perceived to be contaminated). As such, these lands generally pose a higher risk of contamination because of past land uses (e.g., industrial). Adverse impacts to groundwater quality through contamination from on-site activities or from past uses can impair the future use of the site and adjacent sites. Impacts to the groundwater are to be avoided or minimized.

Excavation works and construction of foundations may impact groundwater flows if large quantities of groundwater are removed during dewatering or if recharge areas or flow patterns are disrupted. Proper management of groundwater ensures that minimal impacts occur to the environment as well as wildlife and their habitat.

### 7.6.2 Regulatory Requirements

Contaminated groundwater represents a potential for adverse effects on nearby water courses and discharge areas. All project activities are to be carried out in a manner that will not adversely affect fish habitat (unless an appropriate approval under the *Fisheries Act* is obtained) and will preserve the environment and human health as required under the *CEPA*.

The extraction and management of groundwater is governed provincially by the *EPA* (Part X) and the *OWRA*. These Acts aim to protect and manage the quality and quantity of surface water and groundwater. Ontario Regulation 153/04 outlines acceptable standards for groundwater quality for a site and is to be followed.

For any works where more than 50,000 L of groundwater will be extracted per day during dewatering, a Permit to Take Water issued under the *OWRA* (section 34) is required.

Should an abandoned well be discovered or should existing wells no longer be required, the decommissioning of the wells is governed by the *Safe Drinking Water Act* and Ontario Regulation 903 - Wells.

The City of Toronto provides requirements for discharge of fluids to stormwater, sanitary and combined sewer systems under Part II, Chapter 681 of the Toronto Municipal Code. Should dewatering works be required for a project, discharge of groundwater to the sewer system are to comply with the requirements laid out in the code and are subject to a sewer discharge agreement.

### 7.6.3 Causative Activities and Conditions

Activities that could lead to impacts to the groundwater include groundwater pumping, flow attenuation, groundwater recharge, spills and leaks from refuelling of machinery, improper storage and handling of lubricants and fuels, poor stormwater and surface water management and ineffective sediment and erosion controls. Seepage of contaminants into soil may eventually reach the underlying groundwater and migrate off-site. Contamination of the

groundwater may eventually impact nearby sensitive watercourses or intrude into buildings through the vapour phase.

#### **7.6.4 Application**

Groundwater management is to be undertaken for any project requiring dewatering, whether or not a Permit to Take Water is required, and is to be done in concert with Contaminated Soils Management (Section 7.3), Erosion and Sediment Controls (Section 7.4), Fuels and Lubricant Management (Section 7.5) and Stormwater/Surface Water Management (Section 7.10). A Groundwater Management Plan is to be applied at any project site or associated area (e.g., transport route) where there are possibilities for impacting groundwater. These measures are to be in place prior to the initiation of work.

#### **7.6.5 Design and Implementation Considerations**

In addition to the planning and implementation considerations outlined in the Contaminated Soils Management (Section 7.3), Erosion and Sediment Control Management (Section 7.4), the Fuels and Lubricant Management (Section 7.5), and the Stormwater/Surface Water Management (Section 7.10) Plans, the following groundwater management guidelines are to be implemented:

- Site plans are to be reviewed by a qualified groundwater professional retained by the construction manager and / or contractor for the subject project activity regardless of vulnerability. The groundwater professional should prepare a **Groundwater Management Plan** that considers the quality and quantity of groundwater to be managed; and
- Where an abandoned well is discovered, site personnel must inform the project's environmental consultant and WT to obtain direction on whether the well has contributed to soil and/or groundwater contamination and measures that are to be taken to decommission the well.

For sites with contaminated groundwater, site-specific monitoring and sampling programs to control off-site migration may be incorporated into the Groundwater Management Plan. Toronto Public Health may be consulted to ensure groundwater management protocols mitigate the potential for health effects from contamination.

#### **7.6.6 Maintenance, Monitoring, and Documentation**

If project-related activities can impact groundwater, if there is known groundwater contamination, or if an activity is in the vicinity of a sensitive watercourse or wildlife habitat, monitoring wells must be installed on-site and on adjacent properties to monitor migration of contaminants in groundwater. The groundwater professional retained by the construction manager and / or contractor will evaluate the need for construction monitoring wells and will include requirements for these in the project specifications. Where monitoring wells are installed, regular monitoring of groundwater quality and elevation is to be conducted by the groundwater professional or as directed by them before, during, and after the activity.

Should seepage or pooling of groundwater occur during excavation works, sufficient pumps or sumps with the capacity to remove the water that accumulates must be provided and used by the construction manager and / or contractor. In addition, proper mitigation measures such as

retention ponds and drainage ditches are to be constructed in order to prevent the discharge of groundwater onto the surface. An inspection of retention ponds, drainage ditches, and/or catch basins must be performed by the construction manager and / or contractor and the groundwater professional prior to dewatering to ensure that capacity to handle dewatered groundwater is adequate. If the groundwater is considered to be non-turbid and/or uncontaminated (i.e. meets the specific site condition standards for groundwater under O.Reg 153/04), it can be either recycled/reused or discharged to the storm sewer (as long as it complies with the requirements laid out in Part II, Chapter 681 of the Toronto Municipal Code). Erosion and sediment control measures (Section 7.4) must be implemented by the construction manager and / or contractor at, in and around all retention ponds, drainage ditches, and/or catch basins.

The construction manager and / or contractor must submit a Groundwater Management Plan to WT prior to the commencement of any work on site. In addition (as part of each Quarterly Update Report), a summary of Groundwater Management Plan activities undertaken must be provided, along with any issues encountered throughout the project and the mitigation measures implemented.

#### **7.6.7      References**

Ontario Ministry of the Environment. 2004. *Groundwater Studies in Ontario: Mapping a Hidden Treasure*

Ontario Ministry of the Environment. 2001. *Stormwater Pollution Prevention Handbook, Part III: Ontario Case Studies - Watershed Infrastructure Ecology Program (WIEP)-Toronto*

## 7.7 Methane Control

### 7.7.1 Safety and Environmental Concerns

Given that the DWA has a history of infilling lands over existing peat layers using waste and sewage material, there is a higher potential and risk for encountering methane on-site through activities that require excavation and subsurface investigations. As such, more care must be taken to ensure that human health and safety is addressed where there exists the potential for encountering methane.

At room temperature and standard pressure, methane is a colourless, odourless gas. In ambient conditions methane gas is lighter than air and dissipates with time. Methane is not toxic but it is highly flammable and may form explosive mixtures. It is violently reactive with oxidizers, halogens, and some halogen-containing compounds.

Methane is also an asphyxiant and may displace oxygen in an enclosed space. Asphyxia may result if the oxygen concentration is reduced to below 19.5% by displacement with methane or other gas. The concentrations at which flammable or explosive mixtures form are much lower than the concentration at which asphyxiation risk is significant. When structures are built on or near methane-generating materials (e.g., landfills, peat or high organic soils), methane off-gas may be required to inhibit penetration into building interiors and to prevent occupants from being exposed to accumulating methane.

Methane is a greenhouse gas that may be present at low aggregate volumes at any project. As such, capture and re-use of methane is not likely feasible at most sites.

### 7.7.2 Regulatory Framework

Methane control is not directly regulated. However, because of its inherent health and safety hazards, the following regulations may apply:

- Regulation 213 made under the Ontario *Health and Safety Act*: Construction Projects, and
- CSA Z94.4-02: Selection, Use and Care of Respirators, Canadian Standards Association (October 2002).

Certificates of Approval (Air) may be required for gas interception and venting systems that are typically installed to control methane gas migration at a site.

### 7.7.3 Causative Activities and Conditions

The following WT project-related activities and physical or environmental conditions may contribute or cause situations that require intervention to manage methane hazards:

- Project-related activities involving excavation of methane-generating materials (e.g., organic matter, waste materials) that may form a conduit for methane release; and
- Construction of facilities that may create areas where methane accumulates or redirects methane to enclosed areas (e.g., underground vaults, granular bedding for underground services or impermeable surface coverings).

#### **7.7.4 Application**

Methane monitoring and control measures are to be applied at any project site or associated area (e.g., transport route) where causative activities or conditions may occur. These measures are to be in place prior to the initiation of work to prevent methane exposure and migration.

#### **7.7.5 Methane Mitigation Design and Implementation Considerations**

To reduce the need for methane monitoring and control measures, the following procedures are to be followed when possible:

- Maximize excavation surface areas to the extent practicable to allow methane gas to dissipate and minimize low surface area to depth ratio excavations (e.g., test pits). Erosion control measures (Section 7.4) are to be balanced with methane control if exposed surfaces will be maximized;
- Monitor methane and oxygen levels in any area suspected of containing methane (e.g., confined spaces, basements, caissons, monitoring wells) using a portable combustible gas vapour detector (e.g., RKI Eagle, RKI GX-2003) prior to entry and during occupation;
- Design constructed features to prevent methane migration and build up; and
- Include passive or active venting systems in areas where gas pressure differences can build up in the ground, resulting in uncontrolled methane migration.

##### **7.7.5.1 Methane Monitoring Measures**

In order to minimize the need for methane control measures, the following procedures are to be implemented for all projects across the DWA where methane may be present:

- Use personal protective equipment including flame-resistant protective clothing (coveralls, gloves, footwear, headgear) in areas of possible methane accumulation;
- Extinguish sources of ignition, such as smoking and open flames;
- Prohibit eating, smoking or drinking as methane can be swallowed;
- Wash hands carefully before eating, drinking, applying cosmetics, smoking or using the toilet;
- Use only non-sparking tools and equipment and ground and bond all metal containers and piping;
- Calibrate combustible vapour detectors to detect methane and use them before entering areas where methane may be present (e.g., confined spaces, basements, caissons, monitoring wells) to ensure that explosive concentrations do not exist; and
- **Use only NIOSH approved self-contained breathing apparatus with a full face piece (operated in the positive pressure mode) in oxygen-deficient environments.** Any work conducted with respirators must include a written respirator use and care program in accordance with Canadian Standards Association standard Z94.4-02. The program must be administered by the employer of the worker wearing the respirator.

### 7.7.5.2 Methane Control Measures

To reduce overall risks where methane is assumed or confirmed to be present, the following measures are to be implemented for all projects in the DWA:

- Enclose operations and use local exhaust ventilation at the site of chemical release, where possible. If local exhaust ventilation or enclosure is not used, NIOSH approved self-contained breathing apparatus with a full face piece operated in the positive pressure mode must be used;
- Install permanent vapour detection units calibrated to detect and monitor methane concentrations and connect an audible and visual alarm system to the vapour detection units to alert occupants of possible safety hazards;
- Post hazard and warning information at all entry points and accesses in work areas and as part of an ongoing training effort, communicate all information on the health and safety hazards of methane to personnel; and
- Install a passive or active soil venting system for in-situ methane gas generating substances to prevent methane build-up and to control methane migration.

### 7.7.6 Maintenance, Monitoring, and Documentation

Areas where methane may be present are to be monitored on a regular basis at a frequency commensurate with the potential for exposure.

Soil gas measurements can be made using several techniques. However, active whole-air sampling methods and active or passive sorbent sampling methods are usually employed. Typically, a whole-air sampling method is used in which a non-reactive sampling probe is inserted into the soil to a prescribed depth. This can be accomplished manually using a "slam bar", a percussion power drill or inserted into the ground with a drill rig. Soil gas samples can be withdrawn directly from the probe or through flexible tubing connected to the probe. The collection and concentration of soil gas contaminants can be greatly affected by the components of the sampling system. It is imperative to use materials that are inert to the contaminants of concern.

Whole-air sampling is typically accomplished using an evacuated Summa or equivalent canister, or by evacuation to a Tedlar bag. Normal operation includes the use of an in-line flow controller and a sintered stainless steel filter to minimize particles becoming entrained in the sample atmosphere. The sampling rate must not be so high as to allow for ambient air leakage between the annulus of the probe and the surrounding soils.

Passive sorbent sampling involves burial of solid sorbent sampling devices called cartridges or cassettes to a depth of normally 5 feet or less and are typically left in-ground for 72 to 120 hours or longer. During this time, the vapour-phase soil gas contaminants pass through the cassette and are adsorbed as the soil gas moves toward the soil surface by diffusion and/or convection.

The construction manager and / or contractor must submit a Methane Monitoring and Control Plan to WT prior to the commencement of any work on site. In addition (as part of each Quarterly Update Report), a summary of Methane Monitoring and Control activities undertaken

must be provided, along with a description of any issues that were encountered and mitigation measures implemented.

### **7.7.7      *References***

Canadian Standards Association. 2011. *CSA Z94.4-11: Selection, Use and Care of Respirators*

Ontario Regulation 213/91 made under the *Ontario Health and Safety Act*: Construction Projects

## **7.8 Noise and Vibration Management**

### **7.8.1 Environmental Concerns**

Project-generated noise can disturb the community and impact wildlife. Project-generated vibrations can damage nearby roads, buildings and municipal infrastructure and can cause erosion of stream banks, or lead to instability of soil piles and excavated faces.

A **Noise and Vibration Management Plan** establishes a set of protocols to control noise emissions, monitor vibration generation, minimize community and wildlife impacts and promote community acceptance of unavoidable noise.

### **7.8.2 Regulatory Framework**

No federal legislation specifically governs noise and vibration management on construction sites.

Provincially, noise is governed by Section 14 of the *EPA* which prohibits the discharge of noise that may cause an adverse effect.

Noise is also enforced through the City of Toronto Municipal Code on Noise (Chapter 591), specifically 591-2.1 B and 591-3 which outlines restrictions on noise as a result of construction-related activities. The construction manager and / or contractor must adhere to, at all times during construction, the provisions set forth in the code and that relate to the associated and applicable activities that have the potential for generating noise.

Should blasting be required for a project, it is to be carried out in accordance with the MOE *Guideline NPC-119* regulating the noise and vibration produced during blasting.

Work associated with construction vibration, such as pile driving, is governed by the City of Toronto Municipal Code on Building, Construction and Demolition (Chapter 363), specifically 363-3.6 which outlines vibration restrictions and vibration monitoring protocols. Building permit applicants must provide details relating to the potential for construction vibrations.

### **7.8.3 Causative Activities and Conditions**

Activities such as movement of heavy equipment, pile driving for foundations, blasting, soil excavation and construction of buildings can lead to noise and vibration levels in excess of the provincial and municipal guidelines.

### **7.8.4 Application**

Noise and vibration monitoring and control measures are to be applied on the project site by the construction manager and / or contractor, in order to minimize nuisance effects on residents, businesses and nearby neighbourhoods.

### **7.8.5      *Design and Implementation Considerations***

Where the noise impact exceeds the applicable criteria, mitigation will be necessary. Mitigation measures may be implemented on the site of the noise-sensitive land use or at the source. The preferred and normally the most economical option is to implement noise control measures at the source. These measures include:

- Ensuring that all equipment is well maintained and in good condition;
- Using mufflers on vehicles and equipment in accordance with manufacturer's guidelines; and
- Scheduling material delivery and transportation at appropriate times.

Project-related works must not emit sound from any operation of construction equipment (such as jackhammers, concrete saws and/or pneumatic drills), if it is clearly audible at a point of reception in:

- A quiet zone or residential area within the prohibited period of 7:00 p.m. one day to 7:00 a.m. the next day, 9:00 a.m. on Saturdays, and all day Sunday and statutory holidays, or
- In any other area within the prohibited period of all day Sunday and statutory holidays.

This does not apply to the continuous pouring of concrete, large crane work and necessary municipal and emergency work that cannot be performed during regular business hours (City of Toronto Municipal Code on Noise). The City of Toronto (416-392-7539) must be notified and approval must be obtained for these exceptional circumstances.

Required control measures for transportation and stationary sources are to be evaluated separately for day time (between 07:00 and 23:00 hours) and night time (between 23:00 and 07:00 hours) periods. The final selection of control measures should ensure the compliance with the applicable sound level criteria of the provincial *Noise Assessment Criteria in Land Use Planning*.

Where vibrations are anticipated, the construction manager and / or contractor will:

- Retain an engineer specializing in vibration monitoring who must determine the zone surrounding the project site at which vibrations could reach 1.5 to 2.0 mm/sec and undertake a survey documenting the existing condition of structures within the zone of influence;
- Establish a vibration monitoring program before activity begins, including number of seismographs, location, frequency of monitoring and transmittal of results protocol;
- Conduct test measurements to develop site specific vibration attenuation curves to identify the significant vibration causing project activities; and
- Install sensors to monitor ground vibration during piling.

In these conditions, the construction manager and / or contractor must monitor areas identified by the engineer that are considered to be susceptible to vibration damage in order to avoid impacts (City of Toronto, 2007).

If generation of noise and vibration is anticipated and likely to affect the neighbourhood, efforts must be made to notify the potential residences and businesses that may be impacted at least one week in advance and to provide measures to minimize the effects.

### **7.8.6 Maintenance, Monitoring, and Documentation**

The construction manager and / or contractor must ensure that all construction noise and vibration control measures as specified are maintained throughout the project. As appropriate, the construction manager and / or contractor is required to monitor vibration and noise to ensure that levels comply with the MOE sound level criteria for construction equipment and that disruption to residents and the community are kept at a minimum. Any noise complaint received from the public is to be investigated and, where required, mitigated by the construction manager and / or contractor. Construction managers and / or contractors must also keep a record of complaints and document actions taken to mitigate against future disturbances. WT must be notified of the complaints and may take further action, should noise complaints persist. If project-related activities result in damage to adjacent properties, the construction manager and / or contractor must notify WT and take the necessary steps to address the issue.

Persistent noise complaints may require the construction manager and / or contractor to modify the existing mitigation measures and employ alternative solutions. These measures are to be designed in consultation with a noise expert retained by the construction manager and / or contractor. The MOE Regional Office duty officer may be contacted (416-326-6700) to request input when persistent noise complaints occur even with noise controls in place. If noise levels for a project cannot be mitigated, a permit for an exemption from a noise prohibition or noise limitation provision with the City of Toronto (416-392-7539) may have to be obtained.

The construction manager and / or contractor must submit a Noise and Vibration Management Plan to WT prior to the commencement of any work on site. In addition (as part of each Quarterly Update Report), a summary of Noise and Vibration Management activities undertaken must be provided, along with any issues encountered and a description of mitigation measures implemented.

### **7.8.7 References**

City of Toronto. 2007. *Vibrations Caused by Construction Activity Report*

City of Toronto. 2010. *Toronto Municipal Code: Noise, Chapter 591*

Ontario Ministry of the Environment, *Noise Assessment Criteria in Land Use Planning: Requirements, Procedures and Implementation, 1997*

Ontario Ministry of the Environment. Environmental Noise Guideline, Noise Assessment Criteria for Stationary Sources and for Land Use Planning. Publication NPC-300. Draft for Consultation purposes only. November 2010.

## **7.9 Project-Related Waste Management**

### **7.9.1 Environmental Concerns**

During project-related activities, both hazardous and non-hazardous wastes may be generated. Improper handling and management of waste such as contaminated soils or lubricant wastes could lead to the contamination of soils, groundwater and watercourses as well as the attraction of nuisance vectors which could lead to health and safety risks.

### **7.9.2 Regulatory Framework**

The management of wastes generated at construction and development projects is regulated in some form by the three levels of government (federal, provincial and municipal).

#### **7.9.2.1 Federal Regulations**

Projects are to be implemented in a manner such that the management of waste is in compliance with Part 5 and 8 of the *CEPA* which provides for the regulation and release of toxic substances. This section of the *CEPA* also includes requirements for environmental emergency plans, regulations, and remedial actions for an uncontrolled, unplanned or accidental release of a substance into the environment (Section 8).

#### **7.9.2.2 Provincial Regulations**

Part V, section 26 of the Ontario *EPA* prohibits the storage or disposal of wastes likely to create a nuisance. Section 86 of the Act prohibits the abandonment of any material in a place, manner, receptacle or wrapping such that it is reasonably likely that the material will become litter. Project activities are to ensure compliance with these sections of the Act. Part X of the Ontario *EPA* provides direction on the disposal of pollutants, which are also to be considered in waste management activities.

Regulations outlined in the MOE *Waste Diversion Act* and Ontario Regulations 102/94 and 103/94 pertain to the development and implementation of waste diversion and reduction plans. All projects of a size and type governed by the Act are to incorporate waste management protocols to reduce, reuse, and recycle waste.

Registration as a waste generator, as stipulated in the *EPA* (Ontario Regulation 347), may be required for a project should hazardous waste be generated during construction. A waste audit will be conducted for each project to determine whether a waste generator number is required as stipulated by MOE Waste Audits and Waste Reduction Work Plans, and Source Separation Programs (Ontario Regulation 102/94 and Ontario Regulation 103/94).

Should portable toilets be required on-site, the construction manager and / or contractor is to employ a MOE C of A licensed waste hauler to dispose of the waste. Disposal of waste will also be in accordance with the *OWRA* which regulates the discharge of polluting material and sewage.

Part 5 of the Fire Protection and Prevention Act (O.Reg. 213/07) and Ontario Fire Code, which provides guidelines for storing, handling, and use of hazardous materials, should also be adhered to for all projects.

### **7.9.2.3 Municipal Requirements**

Each project is to be conducted in accordance with the City of Toronto Solid Waste Management Services (416-338-2010) for the transfer and disposal of generated waste and the promotion of reducing, reusing and recycling non-hazardous material. This would be in accordance with the Toronto Municipal Code Part II, Chapter 548 which pertains to the littering and dumping of refuse and includes a list of recyclable materials and prohibited waste.

In addition, the Toronto Green Standard provides an integrated set of targets, principles, and practices to support sustainable development and site design. The standards are designed to work with the regular development approvals and inspections process. A completed Toronto Green Standard checklist is required as part of the planning approval process. With respect to this EPP, it ensures the reduction of waste going to landfill and reduces the demand for new materials. This standard has been integrated into this EPP.

### **7.9.3 Causative Activities and Conditions**

Projects generate waste products through excavation of soil, maintenance of machinery and vehicles and routine construction and demolition activities. These wastes are composed of a variety of materials such as glass, wood and metal waste products. Waste generated from on-site personnel can include food and septic wastes which can attract nuisance vectors if not managed properly. Portable toilet waste is classified as “septage”, an untreated waste that can cause impacts to groundwater and aquatic life if released into the environment.

### **7.9.4 Application**

Project-related **Waste Management Plans** must be developed by the construction manager and / or contractor, and include the management of general waste, hazardous waste, and non-hazardous waste. The Waste Management Plan must be in place prior to the initiation of any on-site works. Project waste management is to be maintained by the construction manager and / or contractor and monitored daily to ensure that waste for the project is handled and disposed of properly.

### **7.9.5 General Waste Design and Implementation**

Waste management is to be carried out in a manner that maximizes the opportunity for the reduction, re-use and recycling of solid waste and, as appropriate, to ensure proper management and disposal of waste that cannot be diverted. Waste generated at project sites are to be managed through containment and regular removal in order to minimize impacts from litter and the attraction of vectors.

Portable toilet facilities are to be provided on sites where required by the City of Toronto and situated a minimum of 30 metres away from sensitive environmental features. These facilities are to be maintained and emptied by a commercial MOE-licensed waste contractor for the duration of project activities.

All on-site personnel are to have valid WHMIS training appropriate to their job description in order to raise awareness and knowledge for the proper safety and handling of waste materials.

Project-Related Waste Management initiatives must also adhere to commitments set out in WT's LEED® ND Program. These requirements are outlined in the LEED® ND Pilot Rating System (Green Construction and Technology Credit 18) and the LEED® ND 2009 Rating System (Green Infrastructure and Buildings Credit 16). Specifically, construction managers, and / or contractors are to ensure that all WT projects recycle and/or salvage at least 50% of non-hazardous construction and demolition debris. WT's preference is that 75% or more of construction and demolition waste is diverted from landfill through recycling and/or salvaging of non-hazardous materials and debris.

WT projects should also achieve LEED® NC credits for construction waste management (Materials and Resources Credit 2) to divert waste from landfills. Adherence to a 75% diversion rate would also satisfy the Toronto Green Standard Tier 2 requirement for Construction and Demolition Waste Management.

#### **7.9.5.1 Hazardous Waste Design and Implementation**

If hazardous waste is generated, construction managers and / or contractors must ensure that the waste is handled in a manner that protects workers and the environment.

Where required by the MOE, a Waste Generator Number must be obtained by WT, the development partner, or eligible recipient for hazardous wastes removed from the project site. The wastes must be disposed of through a MOE-approved hazardous waste hauler and sent to a MOE-approved waste disposal site. While on-site, waste is to be stored in a secure container in an area that minimizes risks to the environment. The choice of containment location depends on the activity and materials involved. Proper waste storage and recognition that some wastes are incompatible with others is critical to avoiding violent, explosive reactions and/or the creation of toxic fumes. Personnel responsible for dealing with hazardous waste generated on-site must be properly trained in these duties.

Potential environmental impacts resulting from waste generation include soil and groundwater contamination from spills or environmental accidents. In these cases, refer to the Spill Prevention and Contingency Plan (Section 8.1) when waste is being moved from or throughout the site.

#### **7.9.5.2 Non-hazardous Waste Design and Implementation**

On-site personnel should be encouraged to minimize the generation of non-hazardous waste through reduction, reuse, and recycling. Non-hazardous waste generated on-site is to be managed according to the following procedures:

- Provide appropriate waste storage containers;
- Provide separate containers for each category of waste (e.g., concrete, cardboard, drywall, steel and wood) for sorting purposes or based on their end-use (e.g., recyclable or green) in accordance with Ontario Regulation 103/94;
- Label containers and keep them in good condition, sealed, closed/covered at all times to prevent wildlife attraction, ensure safety and to comply with proper handling requirements;

- Transfer waste regularly from points of waste generation to central consolidation or transfer points;
- Store waste until quantities are adequate to be transported for recycling, treatment and disposal as per municipal regulations;
- Transport waste according to provincial and municipal requirements;
- Dispose of excess construction material and debris in accordance with the project site requirements;
- Place waste to be transported from the site into containers with proper labelling to ensure safety and prevent loss of materials in surrounding environments;
- Equip waste transport vehicles with spill response kits and train drivers in proper procedures in the event of a spill; and
- Reuse/recycle materials from structures slated for decommissioning or demolition, where possible.

### **7.9.6 Maintenance, Monitoring, and Documentation**

The construction manager and / or contractor is to conduct an audit of construction waste generated and address the extent to which materials or products used consist of recycled or reused materials (Ontario Regulation 102/94). Based on the results of the audit, the construction manager and / or contractor is to develop and implement a Waste Reduction Work Plan to reduce, reuse and recycle waste generated during a project and will include measures for communicating the plan to on-site workers.

The construction manager and / or contractor must submit a Project-Related Waste Management Plan and a Waste Reduction Work Plan (with the aim of reducing and recycling as much of the waste generated during the project as possible) to WT prior to the commencement of any on-site work. The Plan must also record quantities, material type and final destination of all waste, recyclable and reusable materials managed off site.

In addition (as part of each Quarterly Update Report), the construction manager and / or contractor must submit documentation on the daily maintenance and monitoring of project waste management including the following:

- Identification of materials that will be diverted and/or stored on-site or commingled.
- A table of the construction and demolition debris, including a general description of each category of waste generated, the quantity in tons or cubic yards, and the location of receiving agent (recycler / landfill) for waste.
- A calculation showing the total percentage of material diverted from landfill disposal.
- Relevant backup documentation.

Documentation must also be provided on the volume and percentage of recycled content used in asphalt pavement, granular bases, and granular sub-bases.

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### **7.9.7      References**

City of Toronto. 2010. *The Toronto Green Standard*.

Canada Green Building Council. 2010. *LEED® Canada for New Construction and Major Renovations 2009*

Ontario Ministry of the Environment. 2003. *Fact Sheet: Banning the Spread of Untreated Portable Toilet Waste*.

Government of Canada. 1992. *Hazardous Waste Management: Canadian Directions*.  
[http://dsp-psd.tpsgc.gc.ca/Collection-R/LoPBdP/BP/bp323-e.htm#C.%20Storage\(txt\)](http://dsp-psd.tpsgc.gc.ca/Collection-R/LoPBdP/BP/bp323-e.htm#C.%20Storage(txt))

Habitat Associates with the Ontario Home Builders' Association. 1997. *Sustainability in Practice: Reducing Construction Waste in the Ontario Residential Construction Industry*

## **7.10 Stormwater / Surface Water Management**

### **7.10.1 Environmental Concerns**

Stormwater and surface water affected by construction activities can cause environmental impacts during project-related activities. These include general runoff with erosion and the formation of ruts or puddles on-site that can contain sediment-laden water. This can also create excessive mud to build up on tires, which can then be transported onto local roads and dispersed into the environment with stormwater or as dust. Improper management of stormwater and surface water is a pathway for potentially contaminated soil and/or groundwater to move off site and into the environment.

Vehicle and equipment cleaning procedures and practices are typically used to minimize or eliminate the discharge of pollutants from vehicle and equipment cleaning operations to storm drain systems or watercourses. On-site vehicle and equipment washing is discouraged to minimize water usage and runoff effects; however, when necessary to control the migration of contaminants from the site, capture and management of wash water will be required. Where necessary, these activities must be conducted at dedicated vehicle washing sites where wash water can be collected and controlled.

Impacts to surface water could also be a primary concern if activities associated with a project required in-water works. All works within water must mitigate impacts to the surface water and lakebed and prevent spills/the spread of spills in the surface water.

### **7.10.2 Regulatory Framework**

Project-related stormwater and surface water is to be managed in a manner that does not adversely affect fish habitat and considers associated requirements of the federal *Fisheries Act*.

All works are to comply with the *EPA* (Part V) and the *OWRA* (section 29), which are intended to protect and manage the quality and quantity of surface water and groundwater.

A MOE C of A for Industrial Sewage Wastewater Discharge may be required as stipulated by the *OWRA* (sections 33 and 53) to regulate effluent discharge directly to surface water bodies during construction and other project-related works.

The requirements laid out in the City of Toronto Municipal Code on Sewers (Chapter 681-4) are to be followed with respect to the discharge or deposit of matter of any type into a storm sewer, watercourse, and municipal or private sewer connection to any storm sewer.

In addition, the Toronto Green Standard provides an integrated set of targets, principles, and practices to support sustainable development and site design. The standards are designed to work with the regular development approvals and inspections process. A completed Toronto Green Standard checklist is required as part of the planning approval process. With respect to this EPP, it ensures the protection of water quality during construction and demolition through adherence to the Greater Golden Horseshoe Authorities' onsite erosion and sediment control guidelines and the implementation of an erosion and sediment control plan. An Erosion and Sediment Control EPP for Waterfront Toronto projects can be found in Section 7.4.

### **7.10.2.1 Aquatic Habitat Toronto**

Waterfront Toronto is a founding member of Aquatic Habitat Toronto (AHT). AHT is a consensus-based partnership between agencies with a vested interest in the improvement of aquatic habitat on Toronto's waterfront. AHT uses an integrated resource planning approach to achieve a cumulative net gain in aquatic habitat.

Waterfront Toronto projects should meet with AHT early in the concept through design stages on all activities that may affect aquatic habitat, including any project involving in-water works. AHT coordinates all approvals such as federal fisheries and navigable water authorizations. AHT also helps projects direct and design suitable aquatic habitat in appropriate locations where there are potential project-related impacts.

### **7.10.3 Causative Activities and Conditions**

Surface water and stormwater that can be of concern during construction projects include melting of snow and pooling/seepage of water either from storm events or from excavated pits that are below the water table. If the volume of collected water exceeds the capacity of the on-site management features, overflows and runoff leaving the site could result in environmental impacts to adjacent properties.

Activities resulting from in-water works have the potential for altering surface water conditions, impacting the lakebed and introducing contaminants as a result of spills and generation of debris.

### **7.10.4 Application**

Where potential impacts may occur to areas adjacent to a project site, stormwater and surface water management measures must be applied on-site prior to the start of any works. These measures must be maintained and modified as necessary throughout all phases of the project to address changing conditions.

### **7.10.5 Design and Implementation Considerations**

In addition to the mitigation measures discussed in the Erosion and Sediment Control EPP (Section 7.4), temporary stormwater works described in a project-specific C of A must also be implemented, where applicable. To control the quality and quantity of runoff while project-related activities are taking place, the following measures are to be implemented:

- Install silt fences, blankets, and berms around construction areas, including the laydown area, and across sloping terrain/areas to prevent surface runoff from carrying sediment off-site and into any sewer;
- Install sub-drains/catch basins in areas of excavations/trenches or areas sensitive to erosion in order to trap runoff;
- Trap sediment using silt traps once sub-drains/catch basins have been installed;
- Design and size ditches and stormwater management ponds appropriately to remove sediment before the water is discharged from the site; and

- Discourage the on-site washing of equipment and vehicles. Where necessary to control the migration of contaminated soil, an area for the washing of vehicles, including containment and treatment of wash water, is to be designated and located away from sensitive receivers.

These design considerations also address the requirements outlined in LEED® NC Sustainable Sites Prerequisite 1 Erosion and Sedimentation Control. The prerequisite provides objectives for preventing sediment release to storm sewers and receiving streams through the design of sediment and erosion control plans.

For in-water works, the following measures are to be implemented, based on EC's guidance document<sup>2</sup> for work in and around water:

- All work involving the use of concrete, cement, mortars and other Portland cement or lime-containing construction materials shall be conducted so as to ensure that sediments, debris, concrete, and concrete fines are not deposited, either directly or indirectly into the aquatic environment. Any water contacting uncured or partly cured concrete or Portland cement or lime-containing construction materials, such as the water that may be used for exposed aggregate wash-off, wet curing, equipment and truck washing, etc. shall be prevented from entering, directly or indirectly, to the aquatic environment unless this water has been tested and found to have a pH of between 6.5 and 9.0 and a turbidity of less than 25 NTU. Containment facilities shall be provided at the site for wash-down water from concrete delivery trucks, concrete pumping equipment, and other tools and equipment as required;
- Sediment or sediment laden waters or other deleterious substances shall not be allowed to enter the aquatic environment during the proposed work. Work should be conducted in accordance with best management practices, for example the sediment and erosion provisions of the *Land Development Guidelines for the Protection of Aquatic Habitat* (Fisheries and Oceans Canada, 1993);
- An appropriate spill prevention, containment, and clean up contingency plan for hydrocarbon products (e.g. fuel, oil, hydraulic fluid, etc.), and other deleterious substances shall be put in place prior to work commencing, and appropriate spill containment and cleanup supplies shall be kept available on-site whenever the works are occurring. Further, all personnel working on the project should be familiar with implementing the spill clean-up plan and the deployment of spill response materials, as indicated in Section 8;
- If land-based equipment or machinery is used to conduct the proposed works, the equipment/machinery should operate upland of the proposed works. Impacts outside the footprint of the proposed works must be prevented;
- All machinery used on-site should be in good repair and free of excess oil and grease. Any fuelling or maintenance of such equipment should occur on the upland well away from the foreshore;
- If steel piles are to be used, they must be capped to prevent the entry of wildlife;
- All demolition materials are to be disposed of upland in an authorized manner. Whenever possible, recycling of materials is encouraged; and

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<sup>2</sup> Environment Canada – Pacific and Yukon. 2008. *Interim Guidance for Addressing Water Quality for Work In and Around Water*

- Only clean, uncontaminated material, as approved by TRCA may be used as fill.

#### **7.10.6 Maintenance, Monitoring, and Documentation**

A thorough check of the measures to manage stormwater and surface water must be conducted by the construction manager and / or contractor on a daily basis, especially before and after a forecast storm/rain event. The construction manager and / or contractor must be aware of upcoming weather conditions and modify/implement appropriate measures in order to prevent off-site migration of sediment or contaminated water. Any deficiencies in the mitigation measures must be addressed and/or repaired immediately. It is best to inspect the stormwater and surface water mitigation measures within 24 hours of a rain event. Inspection should include information relating to:

- The hydraulic operation of the facility (detention time, evidence or occurrence of overflows);
- Obstructions at the inlet and outlet and removal of objects;
- Verification that dumpsters, paints and chemicals are covered;
- Evidence of spills and oil/grease contamination; and
- Trash build-up.

Should any evidence of spills, contamination or trash build-up be identified, the construction manager and / or contractor must address the source of the issue and remediate or remove the contamination or trash.

The construction manager and / or contractor must submit a Stormwater and Surface Water Management Plan to WT prior to the commencement of any work on site. In addition (as part of each Quarterly Update Report), a summary of stormwater and surface water management measures implemented must be provided, along with any issues that are encountered and mitigation measures implemented. In addition, the construction manager and / or contractor must submit changes/modifications to the Stormwater and Surface Water Management Plan as they occur (as necessary throughout all phases of the project to address changing conditions).

#### **7.10.7 References**

- Environment Canada – Pacific and Yukon. 2008. *Interim Guidance for Addressing Water Quality for Work in and around Water*
- Center for Environmental Excellence by AASHTO. 2008. *Chapter 4: Construction Practices for Environmental Stewardship - Section 4.6: Vehicle Fluid, Fuel and Washwater Control*
- City of Toronto. 2010. *The Toronto Green Standard*.
- Canada Green Building Council. 2010. *LEED® Canada for New Construction 2009*
- U.S. Environmental Protection Agency. 2006. *Construction Site Operator BMP Inspection and Maintenance*
- Ontario Ministry of the Environment. 2003. *Stormwater Management Planning and Design Manual*

## **7.11 Traffic Management**

### **7.11.1 Environmental Concerns**

Traffic to and from project sites include a variety of vehicles and equipment that have the potential for causing environmental impacts including traffic delays/congestion, detours, damage to roads from heavy/tracked equipment, and an increase in dust, exhaust emissions and noise.

### **7.11.2 Regulatory Framework**

All motor vehicles used for project activities are to be in compliance with the Ontario *EPA*, Part III, section 23 which regulates motor and motor vehicle operations.

Project-related works represent significant changes to the local environment. As such, site plan control review and approval (*Planning Act*) may require that a Traffic Operations Assessment be submitted to the City of Toronto and that an approved **Traffic Protection Plan** be obtained from the City.

Zoning amendments, occupancy permits, heavy haul traffic arrangements, and other parking by-laws and ordinances are to be considered, in accordance with the *Toronto Municipal Code, Part II and III Traffic and Parking By-laws*. Available resources from the Ontario Provincial Police, Toronto Police Service and/or the Ontario Ministry of Transportation may be used for project-related activities. The need for these resources are to be identified in the Traffic Protection Plan.

### **7.11.3 Causative Activities and Conditions**

Project-related traffic volumes can vary and may cause disruptions to nearby residences and businesses. This can include disruptions from heavy trucks, construction equipment, employee parking and traffic delays as well as from congestion, detours, damage to roads, or an increase in dust, exhaust emissions and noise.

### **7.11.4 Application**

Traffic management measures will be evaluated before a project begins and implemented throughout a project. All personnel associated with the project must be aware of the traffic management issues and are to conduct project-related activities in accordance with the approved Traffic Protection Plan, where applicable. Continual updates and modifications in traffic management are to be performed based on the effectiveness in minimizing traffic-related disruptions. Air Quality and Dust Management (Section 7.1) and Noise and Vibration Management (Section 7.8) EPPs are to be consulted in the preparation of project specifications to ensure implementation of appropriate mitigation measures.

### **7.11.5 Design and Implementation Considerations**

Construction activities are to be staged to minimize and avoid (where possible) traffic delays and related effects to local residents, business owners and facility owners/users, as well as motorists, cyclists and pedestrians traveling through the area. The prevailing site conditions, including an overview of existing traffic conditions adjacent to the site with respect to traffic

volumes, lane markings, on-street parking and pedestrian/cycle routes, are to be documented in order to develop a traffic management strategy.

Traffic management planning is to consider the following:

- Maximum number and tonnage of construction vehicles arriving and departing the site at any one time (hourly or daily rate in peak);
- Vehicle entry and exit points considering the evolving stages of construction;
- Routes between the site and major arterial roads for construction vehicles that minimize use of residential streets;
- Queuing locations for arriving vehicles if not solely on-site (engines are to be switched off when using these queuing locations);
- Work zones for any area of public land to be occupied including plans of the affected area and the duration of occupation;
- Information concerning oversized vehicles including their location and duration of stay, is to be provided to the proper authorities (municipal authorities, Toronto Police Service, local OPP office, fire and emergency services) (all oversize vehicles must obtain permits from the City of Toronto, Ontario Provincial Police, Toronto Police 72 hours prior to arrival at the site);
- Arrival times for construction vehicles (arrival of construction vehicles other than oversize vehicles must not take place prior to 6:30 in the morning in residential areas);
- Method of loading and unloading of construction vehicles; and
- Routes to be used by construction personnel including suitable and sufficient parking facilities on or near the construction site.

#### **7.11.6 Maintenance, Monitoring, and Documentation**

Construction managers and / or contractors must ensure the effectiveness of traffic management for the project and take the necessary steps to implement or improve measures that minimize disruption to local residents and businesses. These may include:

- Providing authorities with any updates or changes to planned traffic events and obtain permits as required (including closures, duration, detours and alternative routes);
- Providing prior notice to residents of potential traffic impacts through the use of an appropriate medium (newspaper, mail drop, local media announcement, etc.), where necessary;
- Providing on-site traffic signage and traffic conductors (automated or flag-person) for heavy haul traffic with the use of traffic lights, where practical;
- Maintaining access for emergency vehicles and school buses at all times on designated routes;
- Providing temporary access for residents at all times during the length of construction, where necessary; and
- Installing adequate night-time accident-prevention measures (lights, flashers, road markings etc.) throughout the construction period.

Construction managers and / or contractors must ensure that all roads used by construction-related traffic are free of debris and that dirt and dust is kept to an acceptable level. Regular road sweeping and cleaning are to be implemented at a frequency that effectively maintains the off-site roads in a condition that would not result in dust generation, sediment transport or nuisance effects in the community.

The Air Quality and Dust Management (Section 7.1) and Noise and Vibration Management (Section 7.8) EPPs provide guidelines for ensuring effective transportation management for the project.

Any traffic/parking complaints received from the public are to be addressed in accordance with **complaint filing and management procedures** developed by the construction manager and / or contractor.

The construction manager and / or contractor must submit a Traffic Management Plan including but not limited to complaint filing and management procedures to WT prior to the commencement of any work on site. In addition (as part of each Quarterly Update Report), a summary of all traffic management measures used to minimize disruption to local residents and businesses must be provided, along with a summary of all traffic/parking complaints including mitigation measures undertaken.

#### **7.11.7 References**

City of Toronto Transportation Services. 2012. <http://www.toronto.ca/transportation/>

City of Toronto. 2003. *Traffic Control Policy*.  
[http://wx.toronto.ca/intra/hr/policies.nsf/9fff29b7237299b385256729004b844b/0062fd60774a35fa85256d08006e0634/\\$FILE/TrafficControlPolicy\\_Standards\\_approved.pdf](http://wx.toronto.ca/intra/hr/policies.nsf/9fff29b7237299b385256729004b844b/0062fd60774a35fa85256d08006e0634/$FILE/TrafficControlPolicy_Standards_approved.pdf)

## 7.12 Vegetation Management

### 7.12.1 Environmental Concerns

General construction activities give rise to a number of environmental concerns that can be addressed through management of vegetation at the site, including:

- Protection of existing vegetation;
- General weed prevention and invasive species control;
- Control of vegetative debris; and
- Minimizing erosion and disturbance of soils.

Vegetation management is to be considered at the planning and design stage of a project to ensure that intermittent stream channels, shore lines and drainage swales are kept in a free-to-grow, low-maintenance condition and that the potential for invasive plants to become established from construction activities is minimized as much as possible. LEED® NC, Sustainable Sites Credit 5.1 (Site Development: Protect or Restore Habitat) provides direction on achieving conservation of existing natural areas and restoration of damaged areas.

### 7.12.2 Regulatory Requirements

Management of vegetation is to be carried out in a manner that does not adversely affect fish habitat and considers associated requirements of the federal *Fisheries Act*.

The requirements outlined in the *Migratory Birds Conservation Act* stipulates that any removal of vegetation should be carried out at the appropriate time of year to protect migratory birds. All projects must adhere to this Act.

With respect to vegetative debris, Part V, section 26 of the *EPA* prohibits the storage or disposal of wastes that are likely to create a nuisance. Section 86 of the Act prohibits the abandonment of any material that may become litter. Part X of the *EPA* provides direction on the disposal of pollutants and is to be followed. Project activities which generate vegetative debris are to ensure compliance with these sections of the *EPA*.

Should a project require weed control with compliance stipulated under the *Weed Control Act* and require the use of pesticides, the Ontario *Pesticide Act* (O. Reg. 63/09) as well as the Toronto Municipal Code Chapter 612 are to be considered. In all other circumstances, the application of pesticides is not permitted.

A Natural Heritage Impact Study may be required as part of the planning approvals process for projects in or near natural heritage systems as identified on Map 9 of the Official Plan or areas defined as municipal Environmentally Significant Areas. A Natural Heritage Impact Study is required for any undertaking within a designated Environmentally Sensitive Area under Official Plan Policy 3.4.13.

A permit may be required under the Ravine and Natural Feature Protection by-law (Toronto Municipal Code Chapter 658), which regulates activities that may injure or destroy a tree, or alter the grade of the land.

The Toronto Municipal Code Chapter 813, Article III is commonly referred to as the City's "Private Tree By-law". This by-law regulates injury or removal of privately owned trees which measure 30 cm in diameter or more as measured at 1.4 m above ground level. All construction activities are to adhere to the regulations outlined in this by-law to ensure protected trees are not damaged or harmed.

In addition, the Toronto Green Standard provides an integrated set of targets, principles, and practices to support sustainable development and site design. The standards are designed to work with the regular development approvals and inspections process. A completed Toronto Green Standard checklist is required as part of the planning approval process. With respect to this EPP, the Toronto Green Standard provides policies and guidance for ensuring the protection of urban trees and should be referred to if a Tree Protection Plan is required.

All trees situated on City streets are protected under Article II, Chapter 813 of the City of Toronto Municipal Code and trees located on private property that have a diameter of 30 cm or more are protected under Article III, Chapter 813 of the City of Toronto Municipal Code. Should there be any trees on site that are protected under the City of Toronto Municipal Code, a tree care professional should be consulted prior to the commencement of any construction activity to determine the type and condition of the trees on the property and surrounding properties. Anyone failing to adhere to the tree protection policies and specifications will be financially responsible for any resulting damage to trees and may be charged under the provisions of the applicable City of Toronto tree by-law.

### **7.12.3 Causative Activities and Conditions**

Project-related activities such as excavation, grading and movement of heavy equipment and vehicles can damage trees, wetlands and riparian areas.

If clearing and grubbing activities are required for a project, vegetative debris including brush, trees, and stumps will be generated.

Significant environmental damage can also result through the invasion of fugitive and exotic plants that could potentially compete with, or otherwise disrupt, native/adapted plant habitats when these habitats are disturbed through project-related activities.

### **7.12.4 Application**

The need for vegetation management is to be evaluated by the construction manager and / or contractor in consultation with WT and technical experts prior to the start of a project. Where project conditions warrant it, a **Vegetation Management Plan** that may include such components as a **Tree Protection Plan** or an **Integrated Pesticide Management Plan**, will be developed by an ecological specialist retained by the construction manager and / or contractor. The construction manager and / or contractor must implement identified measures during the project to manage vegetation appropriately. The Vegetation Management Plan can be modified as necessary to mitigate against adverse impacts from project-related activities.

### **7.12.5 Design and Implementation Considerations**

The level of vegetation management planning required is based on the site location and surrounding area. The evaluation, which must be conducted at the design stage and may require the involvement of an ecological specialist, should include:

- An inventory (to “vegetation type” level) of the vegetation on the project site, described in accordance with the Ecological Land Classification System, including a species list;
- Identification of existing tree and other vegetation protection measures;
- Preparation of a Tree Protection Plan by a qualified arborist or approved tree professional retained by the construction manager and / or contractor working in consultation with City of Toronto Urban Forestry Services where required by City of Toronto by-laws. Each construction project will have its own unique requirements for tree protection depending on the type and size of trees located at or near the site;
- The Toronto Green Standard requires that trees 30 cm or more DBH (diameter at breast height) are retained in accordance with the City of Toronto Private Tree Protection Bylaw. Where applicable, trees of all diameters adjacent to City of Toronto streets and roadways and City-owned Parkland must be retained and protected in accordance with the Trees on City Streets and Parkland Bylaws;
- Identification of areas of the site that are to be maintained or returned to a natural self-sustaining vegetated state as well as those that are to be converted to a non-vegetated surface, i.e., buildings, roads, parking areas, lined ponds. The Toronto Green Standard requires the retention and reuse of all uncontaminated on-site soil in areas not covered by the building, parking footprint or hard surfaces. Where this cannot be achieved, the soil should be replaced with soil of equal or better quality to encourage revegetation and minimize future erosion potential;
- Proposed treatment and buffers from development for areas where site alteration is prohibited and for intermittent stream channels and treatment of drainage swales that results in free-to-grow, low-maintenance management;
- Temporary designated storage locations for vegetative debris and mitigation of impacts to watercourses and soil erosion; and
- Preparation of an Integrated Pesticide Management Plan (IPM) in accordance with Landscape Ontario IPM practice requirements, as warranted by site conditions. The IPM may include watering regimens, biocide and fertilizer applications and controls/restrictions, including targets for reducing water, biocide and fertilizer use.

For general weed prevention practices and invasive species control, the construction manager and / or contractor is to ensure that:

- Seeds and straw material are certified as weed-free; and
- Areas of noxious weeds are identified and treated, as determined by an ecological specialist prior to the start of project-related activities.

If projects are located near extremely sensitive or protected areas, added prevention practices, such as equipment inspections and cleaning may be required. To comply with LEED® NC,

Sustainable Sites Credit 5.1 (Site Development: Protect or Restore Habitat), the following specific requirements must be incorporated into the project specifications:

- For greenfield sites, limit site disturbance including earthwork and clearing of vegetation to:
  - 12 metres beyond the building perimeter;
  - 3 metres beyond surface walkways, patios, surface parking and utilities less than 300 mm in diameter;
  - 4.5 metres beyond primary roadway curbs and main utility branch trenches; and
  - 7.5 metres beyond constructed areas with permeable surfaces (such as pervious paving areas, stormwater detention facilities and playing fields) that require additional staging areas in order to limit compaction in the constructed area
- For previously developed sites, restore or protect a minimum 50% of the site area (excluding the building footprint) or 20% of the total site area (including building footprint), whichever is greater, with native or adapted vegetation. The project team may work together to meet this requirement through a combination of site restoration and vegetated roof surface area.

#### **7.12.6 Maintenance, Monitoring, and Documentation**

Tree protection barriers and zones are to remain until all site activities, including landscaping, are complete. Construction managers and / or contractors are to inspect all tree protection barriers and zones daily and ensure that they are properly maintained (i.e., upright, no rips or holes, etc.). The arborist retained by the construction manager and / or contractor will provide written notice to the City of Toronto Urban Forestry Services prior to the removal of the tree protection barriers.

Any roots or branches extending beyond the tree protection zones are to be pruned by a qualified arborist or other tree professional as approved by the City of Toronto Urban Forestry Services. Pruning of tree roots and branches will be in accordance with good arboricultural standards. The arborist or tree professional will contact Urban Forestry Services no less than 48 hours prior to conducting any work.

Construction managers and / or contractors are to ensure that vegetation debris is properly managed. This includes storing all vegetative debris in designated areas, ensuring that vegetative debris is covered, and transporting vegetative debris off site in trucks with covers or caps to contain the debris. Transport of vegetative debris to an appropriate disposal location is determined by the construction manager and / or contractor.

Due to the rapid spread of invasive plants in areas of disturbed soil, soil disturbance and vegetative removal should be minimized. Vehicles that have entered weed-infested areas are to be cleaned and inspected before entering into non-infested areas.

As soon as possible following construction, the construction manager and / or contractor will re-vegetate or otherwise prevent the establishment of weeds in applicable areas of the project site. Re-vegetation must use plant types that have a high likelihood of survival and are native to the area.

The construction manager and / or contractor must submit a Vegetation Management Plan (if applicable) to Waterfront Toronto prior to the commencement of any work on site. In addition (as part of each Quarterly Update Report), a summary of Vegetation Management activities undertaken must be provided, along with any issues encountered and mitigation measures implemented.

#### **7.12.7 References**

Center for Environmental Excellence by AASHTO. 2008. *Chapter 4: Construction Practices for Environmental Stewardship - Section 4.10: Vegetation Management in Construction*

City of Toronto. 2010. *The Toronto Green Standard*.

Canada Green Building Council. 2010. *LEED® Canada for New Construction and Major Renovations 2009*.

City of Toronto Urban Forestry Services. 2010. *Tree Protection Policy and Specifications for Construction Near Trees*.

## **7.13 Wildlife Management**

### **7.13.1 Environmental Concerns**

The DWA includes areas that have both aquatic and terrestrial wildlife habitats. Project-related activities that are conducted near these habitats may impact both the habitats and associated wildlife species. The incorporation of wildlife management protocols in project-related activities can protect wildlife species and their habitat.

### **7.13.2 Regulatory Requirements**

#### **7.13.2.1 Federal Regulations**

The *Canada Wildlife Act* provides for the protection of marine areas and wildlife in danger of extinction and also prescribes measures for the conservation of wildlife. The *Species at Risk Act* is a key federal government commitment to prevent wildlife species from becoming extinct and secure the necessary actions for their recovery. It provides for the legal protection of wildlife species and the conservation of their biological diversity. Activities associated with WT projects are to be in compliance with these Acts.

To ensure that WT projects do not result in harmful alteration, disruption or destruction (HADD) of nearby sensitive watercourses, compliance with sections 35 to 43 of the *Fisheries Act* is required. This requirement will apply to proposed projects or work near water and fish habitat.

The *Migratory Birds Convention Act* provides conventions for protecting and conserving migratory birds and their nests. It is enforced by Environment Canada (Canadian Wildlife Service) and must be followed if project-related activities can potentially impact or disrupt migratory birds and their nests.

#### **7.13.2.2 Provincial Regulations**

Ontario Regulation 166/06 of the *Conservation Authorities Act* requires a permit from the Toronto and Region Conservation Authority (TRCA) for development and interference with wetlands and alterations to shorelines and watercourses.

As well, all project activities must adhere to the *Ontario Endangered Species Act*, which provides for the protection of species at risk and their habitat.

### **7.13.3 Causative Activities and Conditions**

Construction activities such as tree and vegetation removal, excavation, and movement of heavy equipment and vehicles have the potential to impact, disrupt, and potentially harm aquatic and terrestrial wildlife and their habitats. Some terrestrial wildlife can also pose a threat to human safety. Generally, however, wildlife will not bother humans unless they are surprised or threatened.

#### **7.13.4 Application**

At the project planning stages, WT, the developer partner, or eligible recipient must consider the need for a **Wildlife Management Plan** depending on the proximity to wildlife habitats or the potential for encountering and/or impacting wildlife species. Wildlife experts and biologists may need to be consulted in areas where a project will encroach upon sensitive and/or protected wetlands, vegetated valleys, and water bodies. Where project conditions warrant the preparation of such a plan, a wildlife consultant retained by the construction manager and / or contractor is to prepare the plan in consultation with the TRCA. This consultation will also identify any permitting required by the project, particularly in relation to alterations to aquatic and terrestrial habitats. The plan is to be included in the project specifications, which will be implemented by the construction manager and / or contractor.

Measures for the management and protection of wildlife including reduction of mortalities associated with vehicle collisions, wildlife habitat fragmentation, impacts to amphibians/aquatic habitats, and exclusion periods during construction are to be addressed in the Wildlife Management Plan.

Projects must minimize disruption to wildlife habitats as much as possible. All necessary precautions are to be taken by project personnel to avoid creating situations that attract wildlife.

#### **7.13.5 Design and Implementation Considerations**

The Wildlife Management Plan will be prepared through field assessments by the ecological consultant to confirm the presence of sensitive species and their habitats. The plan will identify wildlife mitigation activities and strategies including:

- Field assessments to confirm that impacts of the specific design features and construction methods proposed in the project specifications do not exceed those assumed in the Environmental Assessment or other applicable environmental guiding document for the project;
- The identification of construction mitigation measures (general and site specific) including timing restrictions, wildlife salvage, prevention of barriers to wildlife movement, and buffer retention;
- Specific mitigation measures identified through consultation with the Aquatic Habitat Toronto working group; and
- The inclusion of wildlife enhancement considerations in site rehabilitation and restoration planning.

Wildlife protection measures are to address the specific types of terrestrial and aquatic species and communities that are identified to occur in the habitat areas and that could be affected by the proposed works. For projects that may impact wildlife, a wildlife specialist will provide monitoring during key animal activity periods and/or where wildlife may impact or be impacted by construction activities.

Noise and vibration mitigation measures, as outlined in the EPP in Section 7.8, should be consulted in order to minimize effect on wildlife and their habitats.

### **7.13.6 Maintenance, Monitoring, and Documentation**

#### **Aquatic Wildlife**

General procedures for the maintenance and monitoring of the aquatic environment will:

- Consider and incorporate (where applicable) the recommendations made for protection of the aquatic environment in an Environmental Assessment that may have been conducted for the project;
- Minimize disturbance to all wetlands when activities are carried out through or adjacent to these areas;
- Where possible conduct activities in the vicinity of aquatic habitats during winter months to reduce impacts to the aquatic environment;
- Fence the entire construction site and install silt fencing along all protected aquatic wildlife habitats and water bodies within 30 m of the construction site;
- Organic and mineral soils that are excavated from wetlands may be used as berms to isolate the construction area from the adjacent wetland or aquatic wildlife habitat; and
- When monitoring of watercourses in the vicinity of the project suggest that the aquatic environment may be affected by the work, (e.g., transport of sediment), implement mitigation measures to address the concern.

Where avoidance of construction activities in or near wetlands or water bodies is not possible, the construction manager and / or contractor is to implement habitat enhancements as identified by the wildlife expert. These enhancements may include rip rap and vegetation plantings to provide a greater in-water habitat diversity and improve riparian vegetation.

#### **Terrestrial Wildlife**

General procedures for the maintenance and monitoring of terrestrial wildlife are to include:

- A survey of the construction site to identify terrestrial wildlife, nesting birds, amphibians using vernal pools, reptile nest activity, and movement between habitat areas as well as general mammal movement;
- Appropriate actions must be taken should sensitive species be identified;
- Clear vegetation during winter to reduce impacts to species that use the areas as corridors and nest sites (where possible);
- Fence construction areas to prevent wildlife access; and
- Avoid unnecessarily removing or destroying terrestrial wildlife habitat.

All construction personnel must report wildlife observations that may impact or be impacted by project-related activities to the wildlife consultant. Should terrestrial wildlife be encountered on the project site, personnel are to move a safe distance away from the animal and wait for the animal to move off the project site. Should an animal persist on-site, an appropriate response plan is to be developed by the wildlife consultant in consultation with the construction manager and / or contractor, TRCA and Ontario MNR.

The construction manager and / or contractor must submit a Wildlife Management Plan (if applicable) to Waterfront Toronto prior to the commencement of any work on site. In addition (as part of each Quarterly Update Report), a summary of Wildlife Management activities undertaken must be provided, along with issues encountered and mitigation measures implemented.

### **7.13.7 References**

Species at Risk Public Registry. 2011. [http://www.sararegistry.gc.ca/default\\_e.cfm](http://www.sararegistry.gc.ca/default_e.cfm)

Department of Fisheries and Ocean. 2012. Working in and around Water. [http://www.dfo-mpo.gc.ca/oceans-habitat/habitat/water-eau/index\\_e.asp](http://www.dfo-mpo.gc.ca/oceans-habitat/habitat/water-eau/index_e.asp)

Environment Canada. 2006. Great Lakes Wetlands Conservation Action Plan Highlights Report 2003–2005. Environment Canada, Toronto, Ontario.

Toronto and Region Conservation Authority. 2004. Lower Don Valley Biological Inventory.

Ontario Ministry of Natural Resources. 2000. Significant Wildlife Habitat Technical Guide.

## 8.0 CONTINGENCY AND EMERGENCY RESPONSE PLANS

EPPs are intended to address normal operations at project sites. Regardless of planning and precautions implemented to avoid upset conditions, unexpected events may still occur. Contingency plans for spill control and emergency response plans for unexpected situations provide the means to mitigate or otherwise manage environmental consequences that may result.

Typically, construction managers and / or contractors maintain corporate spill prevention and contingency plans and emergency response plans tailored to the nature of the work being undertaken.

All construction managers and / or contractors working in the DWA are required to develop and implement a **Spill Prevention and Contingency Plan** and an **Emergency Response Plan** that consider the project-related activities being undertaken as part of their contract.

### 8.1 Spill Prevention and Contingency Plan

A Spill Prevention and Contingency Plan provides on-site personnel with information relating to the prevention of spill events involving liquid chemicals or fuels and response procedures should a spill occur. Appropriately-trained personnel can react to spills in a proactive manner so that adverse impacts from such releases are reduced. The Plan may be incorporated into a construction manager and / or contractor's health, safety and environmental manual that is prepared for the contract.

Spill Prevention and Contingency Plans are to include:

#### **Spill Prevention**

- Identification of type and location of fuels or chemicals that are to be stored and used during project-related activities;
- Requirement for all containers to be identified according to the WHMIS standard;
- Proactive methods and procedures for material storage and use to prevent spills, including containment, fuelling inspections and training;
- Requirement for the maintenance of spill response materials (shovels, absorbents, etc.) in a designated area on-site;
- A monitoring program to document condition of materials and compliance with use and storage standards; and
- Provision for employee training on the storage and use of materials and prevention of spills.

#### **Spill Response**

- Spill response procedures for each material that may be spilled with appropriate responses for the potential risk associated with a release;
- Provision for the appropriate delegation of responsibility to specific on-site staff;
- Provision for the assessment of reportable spills;

- Requirements for internal (e.g., WT, contractor management) and external (e.g., MOE Spills Action Centre, Toronto Public Health and City of Toronto Works and Emergency Services) reporting, including follow-up reporting after the response;
- Information on emergency services contacts for spill response;
- Requirements for documentation of the spill and response through photographs of the spill incident; and
- Requirements for the documentation of remediation of the spill area and disposal of spill clean-up materials in accordance with Ontario Regulation 347 under the *EPA*.

## 8.2 Emergency Response Plan

An Emergency Response Plan describes, in detail, a construction manager and / or contractor's policy and procedures for handling and responding to an emergency situation on-site. These policies and procedures must define how the construction manager and / or contractor will protect people and property at the site during an emergency. For the purposes of projects in the DWA, the emergency response plan should be compatible with the City of Toronto's emergency response plan.

As part of an Emergency Response Plan, these measures must include:

- Preparations for reasonably anticipated emergencies (i.e., storms) that provide for the protection of the site and surrounding area from the anticipated emergency;
- Communication protocol in the event of emergencies (i.e., fire, flood, storms, power outages, explosions, etc.);
- Identification of emergency muster stations and the types of materials and documentation that will be maintained at the muster stations (e.g., emergency contacts, first aid kit, site map, evacuation location, fire extinguisher, MSDSs, spill kit and an air horn); and
- Emergency contact information, including fire, medical, security, and evacuation.

## **APPENDIX A**

### **Applicable Regulatory Requirements**

**(Note:** Changes in the regulatory environment may occur at any time. Construction managers and / or contractors are responsible for confirming that the cited regulations are current)

Legend: Acronyms			
CCME	Canadian Council of Ministers of the Environment	EC	Environment Canada
CEAA	Canadian Environmental Assessment Act	EC (CWS)	Environment Canada (Canadian Wildlife Service)
CEPA	Canadian Environmental Protection Act	EAA	Environmental Assessment Act
CEQG	Canadian Environmental Quality Guidelines	MOE	Ontario Ministry of the Environment
CSA	Canadian Standards Association	OWRA	Ontario Water Resources Act
DFO	Department of Fisheries and Oceans Canada	SARA	Species At Risk Act
		TSSA	Technical Standards and Safety Authority
		TRCA	Toronto and Region Conservation Authority

Regulatory Component	Agency or Administrator <sup>1</sup>	Part and/or Section	Regulated Activity/Element	Applicable Project Components
Federal Jurisdiction				
<i>Fisheries Act</i> (R.S. 1985, c. F-14).	DFO	s. 35 to 43	Address fish habitat protection and pollution prevention and are intended to ensure activities do not result in harmful alteration, disruption or destruction (HADD) of fish habitat (i.e., Don River, Lake Ontario). The <i>Act</i> prohibits the deposit (by discharge, spraying, releasing, dumping, leaking, or otherwise) of deleterious substances into waters frequented by fish, including lakes and rivers and including storm drains that may lead to such waters. Facilities and activities regulated under this <i>Act</i> are required to conduct environmental effects monitoring as part of a program to assess effectiveness of their activities in terms of legislative and regulatory compliance. Section 37 requires that a proponent receive approval from the Minister or designated person before proceeding with any activity that may result in the HADD of fish habitat or the deposit of any deleterious substance in fish habitat.	Contaminated Soils Management; Erosion and Sediment Control; Fuels and Lubricants Management; Groundwater Management; Stormwater/Surface Water Management; Vegetation Management; Wildlife Management
<i>Canadian Environmental Protection Act</i> (1999, c. 33)	EC	Part 5	CEPA governs pollution prevention and the protection of the environment and human health in order to contribute to sustainable development. Part 5 pertains to controlling toxic substances and provides for the regulation and release of toxic substances.	Contaminated Soils Management; Fuels and Lubricants Management; Groundwater Management; Project-Related Waste Management
		Part 8	Part 8 pertains to environmental matters associated with emergencies and provides requirements for environmental emergency plans, regulations and, remedial actions for an uncontrolled, unplanned or accidental release of a substance into the environment.	Air Quality and Dust Management; Contaminated Soils Management; Erosion and Sediment Control; Fuels and Lubricants Management; Groundwater Management; Project-Related Waste Management; Spill Prevention and Contingency Plan; Emergency Response Plan
<i>Canadian Environmental Assessment Act, 2012</i>	EC and the Canadian Environmental Assessment Agency		Canadian environmental assessment legislation has been updated in 2012 to provide an improved federal environmental assessment process that focuses on large projects that have a greater potential for significant adverse environmental effects.  CEAA 2012 applies to projects described in the <a href="#">Regulations Designating Physical Activities</a> and to projects designated by the Minister of the Environment.	General – will apply to projects outlined in the regulation that are within a wildlife area or migratory bird sanctuary.
Canadian Environmental Quality Guidelines	CCME		Provides nationally endorsed science-based goals for the quality of atmospheric, aquatic and terrestrial ecosystems and <ul style="list-style-type: none"><li>document chemical-specific fact sheets that summarize the key scientific information and rationale for each substance</li><li>detailed summary tables of recommended guidelines for the different media and resource uses, and</li><li>protocols used in developing the CEQG, along with their associated implementation guidance.</li></ul>	General – applies to all WT projects and activities.
<i>Migratory Birds Convention Act</i> , 1994 (1994, c.22)	EC (CWS)		Implements a Convention for protecting and conserving migratory birds — as populations and individual birds — and their nests.	Vegetation Management; Wildlife Management
<i>Species at Risk Act</i>	Minister of Canadian Heritage; DFO;		SARA aims to prevent species, subspecies and distinct populations of wildlife from becoming extirpated or extinct; to provide for the recovery of endangered or threatened species; and to encourage the management of other species to prevent them from becoming at risk.	Wildlife Management

Regulatory Component	Agency or Administrator <sup>1</sup>	Part and/or Section	Regulated Activity/Element	Applicable Project Components
	MOE; TRCA			
<i>Canada Wildlife Act</i>	EC (CWS)		The Act provides protection of marine areas and wildlife in danger of extinction and also prescribes measures for the conservation of wildlife.	Wildlife Management
<i>CSA Z94.4-02 Selection, Use and Care of Respirators</i>	CSA		Guidance document for the selection, use and care of respirators should methane or other contaminants be present on a project site.	Contaminated Soils Management; Methane Control; Project-Related Waste Management
Provincial Jurisdiction				
<i>Environmental Protection Act</i> (R.S.O. 1990, c. E-19).	MOE	Part II, s. 6 and 14	This Act provides for the protection and conservation of the natural environment. These provisions address general provisions for contamination and discharge and prohibits the discharge of any contaminant into the natural environment, if the discharge causes or may cause an adverse effect.	General – applies to all WT projects and activities.
		Part II, s. 9 9.2, 9.6-11 Repealed. May need to revisit	This section regulates air emissions and the issuance of Cs of A for Air and Noise. This pertains specifically to projects that require the installation of gas interception and venting systems for methane gas control.	Methane Control
		Part III, s. 23	This section addresses motor and motor vehicles and prohibits the operation of a motor or motor vehicle that does not comply with the regulations.	Traffic Management
		Part V, s. 26 and Part IX, s. 86	This section addresses waste management and litter. Section 26 includes the prohibition of storage or disposal of wastes that are likely to create a nuisance, or that may violate the <i>Ontario Water Resources Act</i> . Section 86 of the Act prohibits the abandonment of any material in a place, manner, receptacle or wrapping such that it is reasonably likely that the material will become litter.	Erosion and Sediment Control; Fuels and Lubricants Management; Project-Related Waste Management; Stormwater/Surface Water Management; Vegetation Management
		Part V, s. 27	This section regulates waste management systems and the issuance of Certificate of Approvals. This pertains specifically to the removal and treatment of contaminated soils and management of project-related wastes.	Contaminated Soils Management; Project-Related Waste Management
		Part X	This Part addresses spills and includes provisions for spill prevention and spill contingency plans, notice of spills, duty to mitigate and restore, and disposal of pollutants.	Fuels and Lubricants Management; Groundwater Management; Project-Related Waste Management; Vegetation Management; Spill Prevention and Contingency Plan; Emergency Response Plan
<i>Environmental Assessment Act</i> (R.S.O. 1990, c. E.18)	MOE	Part II	The EAA provides for the protection, conservation and wise management of the environment, including the social, economic and cultural aspects of the environment. Major public and designated private undertakings must conduct an EA prior to obtaining permits. Regardless of the undertaking size, type and proponency (e.g., private sector), it may be designated as subject to the EAA by the Minister.	General – applies to all WT projects and activities.
<i>Ontario Water Resources Act</i> (R.S.O. 1990, c. 0.40)	MOE	s. 29 to 34, 53	The OWRA provides for the conservation, protection and management of Ontario's waters and for their efficient and sustainable use, to promote long-term environmental, social and economic well-being. The Act governs the release of contaminants to waters, such that the water must not be impaired. Sections 29 to 33 pertain to the supervision of all surface waters and groundwaters and prohibits or regulates the discharge of polluting material and sewage. Section 34 provides for the taking of water while section 53 pertains to the issuance of a C of A for industrial sewage wastewater discharge.	Erosion and Sediment Control; Fuels and Lubricants Management; Groundwater Management; Project-Related Waste Management; Stormwater/Surface Water Management
<i>Planning Act</i> (R.S.O. 1990, c. P.13)	City of Toronto	Part V	This Act relates to land use controls and related administration, including zoning by-laws and site-plan control. If any zoning amendments and site plan approvals/agreements are required, this Act must be followed.	General – applies to all WT projects and activities.
<i>Health Protection and Promotion Act</i>	Ministry of Health		Establishes a role for TPH in aspects of a project that relates to the protection of the health of people of Ontario.	Air Quality and Dust Management; Contaminated Soils Management; Erosion and Sediment Control; Fuels and Lubricants Management; Groundwater

Regulatory Component	Agency or Administrator <sup>1</sup>	Part and/or Section	Regulated Activity/Element	Applicable Project Components
				Management; Project-Related Waste Management; Spill Prevention and Contingency Plan; Emergency Response Plan
<i>Building Code Act</i> , 1992 (S.O. 1992, c. 23)	City of Toronto	s. 8 to 14	These sections pertain to construction and demolition and includes the issuance of building permits. Required for the demolition and/or construction of buildings and structures associated with WT projects.	General – applies to all WT projects and activities.
<i>Waste Diversion Act</i> , 2002 (S.O. 2002, c. 6)	Waste Diversion Ontario and MOE	s. 25	This Act promotes the reduction, reuse and recycling of waste and provides for the development, implementation and operation of waste diversion programs.	Project-Related Waste Management
O. Reg. 347 (R.R.O. 1990) General - Waste Management	MOE	s. 17.1 to 23	Reg. 347 addresses the management, handling and disposal of waste. Under this regulation, waste generators and waste carriers are required to obtain identification numbers for any waste generation facility that is involved in the production, collection, handling or storage of subject waste which includes solid and hazardous waste.	Contaminated Soils Management; Project-Related Waste Management
O. Reg. 102/94 and O.Reg 103/94 – Waste Audits and Waste Reduction Work Plans & Industrial, Commercial, and Institutional Source Separation Programs	MOE	Part IV and V	These Parts pertain to the requirements for waste audits, waste reduction and waste work plans for large construction and demolition projects.	Project-Related Waste Management
O. Reg. 169/03- Ontario Drinking Water Quality under the <i>Safe Drinking Water Act</i>	MOE	s. 1& 2	To ensure that construction projects protect groundwater supplies on adjacent lands.	Contaminated Soils Management; Fuels and Lubricants Management; Groundwater Management
<i>Pesticide Act</i> (R.S.O. 1990, c. P.11)	MOE	s. 4	This Act must be adhered to when undertaking landscaping activities.	Vegetation Management
MOE Guideline NPC-119	MOE		NPC-119 regulates the amount of noise and vibration produced during blasting operations associated with construction activities.	Noise and Vibration Management
MOE Noise Assessment Criteria in Land Use Planning	MOE		Outlines the requirements for feasibility and detailed noise impact studies should a project generate sound levels exceeding the requirements outlined in the document.	Noise and Vibration Management
Weed Control Act (R.S.O. 1990, c. W.5)	Ministry of Agriculture Food and Rural Affairs		This Act provides for reducing the infestation of noxious weeds and to reduce plant diseases by eliminating plant disease hosts.	Vegetation Management
<i>Ontario Heritage Act</i> (R.S.O. 1990, c. O.18)	Ontario Ministry of Culture	Part IV & VI	This Act provides for the protection and conservation of cultural heritage and archaeological resources. Archaeological clearance must be obtained prior to construction and authorization is required for design. This Act must be adhered to in case there is the discovery of archaeological resources (handling, excavation and reporting of find) during construction.	Archaeological and Heritage Resources Management
O. Reg. 217/01- Liquid Fuels, <i>Technical Standards and Safety Act</i> & <i>WHMIS Regulation</i> . (R.R.O. 1990, Reg. 860, s. 26.)	TSSA		This Act is to ensure that vehicle handling, fuelling and fuel storage during construction are in accordance with the TSSA.	Fuels and Lubricants Management
Fire Protection and Prevention Act (O.Reg. 213/07) and Ontario Fire Code	The Office of the Fire Marshal	Part 4	This part of the Act provides guidelines for storing and handling of flammable and combustible liquids.	Fuels and Lubricants Management
		Part 5	This part of the Act provides guidelines for the storage, handling, and use of hazardous materials.	Project-Related Waste Management
O. Reg. 166/06, under the <i>Conservation Authorities Act</i>	TRCA		This regulation ensures that planning, construction and operation activities are undertaken in accordance with the guidelines of the TRCA, which grants permission for development in or on the areas near shorelines, streams and rivers, and wetlands if, in its opinion, the control of flooding, erosion, dynamic beaches, pollution or the conservation of land will not be affected by the development.	General – applies to all WT projects and activities

Regulatory Component	Agency or Administrator <sup>1</sup>	Part and/or Section	Regulated Activity/Element	Applicable Project Components
Erosion and Sediment Control Guidelines for Urban Construction	TRCA		This guideline ensures the protection of water quality during construction and demolition activities	General – applies to all WT projects and activities.
O. Reg. 213/91 – Construction Projects, <i>Occupational Health and Safety Act</i>	Ontario Ministry of Labour	Part II to III	This regulation is to ensure that the construction manager and / or contractor adheres to the MOL labour codes outlined for general construction and excavation practices for all works on a project.	General – applies to all WT projects and activities.
O. Reg. 419/05 – Air Pollution – Local Air Quality	Clean Air Partnership; and MOE	Part III, s. 49	Ensures regulation of emission of contaminants to the air through construction and sandblasting works.	Air Quality and Dust Management
<i>Endangered Species Act</i> , 2007 (S.O. 2007, c. 6)	MOE		Identifies Species at Risk list in Ontario and stipulates the protection and recovery of species and includes prohibition on damage to habitat.	Wildlife Management
O. Reg. 153/04 – Record of Site Condition	MOE		This regulation outlines acceptable standards for soil, groundwater and sediment quality for a site, depending on its land use.	Contaminated Soils Management; Groundwater Management
O. Reg. 903 (R.R.O. 1990) – Wells	MOE		This regulation under the <i>Safe Drinking Water Act</i> ensures the proper construction, decommissioning and abandonment of wells. The standards outlined must be followed should works involving wells be required.	Groundwater Management
Municipal Jurisdiction				
Toronto Municipal Code	City of Toronto	Part II, Ch.363 and 415	Pertain to approvals and permits for building construction, demolition and site development.	General – applies to all WT projects and activities.
		Part II, Ch. 517 and Part III Ch. 950	Pertain to the restrictions on idling of vehicles and traffic and parking provisions and regulations for the city.	Traffic Management
		Part II, Ch. 548	Pertains to littering and dumping of refuse including recyclable materials and prohibited waste.	Project-Related Waste Management
		Part II, Ch. 591	General provisions and limitations for sound levels.	Noise and Vibration Management
		Part II, Ch. 612 and Ch. 813	Restrictions on the use of pesticides (612) and the protection of trees (813).	Vegetation Management
		Part II, Ch. 681	Pertains to stormwater, sanitary and combined sewer discharge requirements.	Erosion and Sediment Control; Fuels and Lubricants Management; Groundwater Management; Stormwater/Surface Water Management
		Part II, Ch. 851-9	Pertains to water supply and in particular permit for a water service connection for the supply of water to the property for construction purposes.	General – dependent on type and requirements of the project
		Ch.658	Pertains to the injury or destruction of vegetation in the ravine and natural feature area	Vegetation Management
Archaeological Master Plan of the Central Waterfront	City of Toronto		Provides guidelines for the management, development review and conservation of known and potential archaeological resources.	Archaeological and Built Heritage Resources Management
The Toronto Green Development Standard 2007	City of Toronto		Provides an integrated set of targets, principles, and practices to encourage sustainable development.	Air Quality and Dust Management ; Erosion and Sediment Control; Project-Related Waste Management Stormwater/Surface Water Management; Vegetation Management

**APPENDIX B**

**Applicable Regulatory Agency Contacts for  
Projects in the Waterfront Toronto  
Development Area**

(**Note:** Contact information may change over time. It is the responsibility of all parties to maintain updated information.)

Agency or Administrator	Department	Description	Applicable Project Components	Phone Number
<b>Federal Agency Contact Numbers</b>				
Department of Fisheries and Oceans (DFO)	General	Any activity that may result in the harmful alteration, disruption or destruction (HADD) of fish habitat or the deposit of any deleterious substance in fish habitat must contact the DFO.	Contaminated Soils Management; Erosion and Sediment Control; Fuels and Lubricants Management; Groundwater Management; Project-Related Waste Management; Stormwater/Surface Water Management; Vegetation Management; Wildlife Management	613-993-0999
Environment Canada (EC)	Ontario Regional Office	Governs pollution prevention and the protection of the environment. Should an uncontrolled, unplanned or accidental release of a substance into the environment occur, EC must be contacted.	Air Quality and Dust Management; Contaminated Soils Management; Erosion and Sediment Control; Fuels and Lubricants Management; Groundwater Management; Project-Related Waste Management; Spill Prevention and Contingency Plan; Emergency Response Plan	416-739-4734 Alternate: 1 800 66
	Canadian Wildlife Service	Any activity that could lead to impacts on the protection and management of migratory birds, nationally significant habitat and endangered species.	Wildlife Management	867-393-6700
<b>Provincial Agency Contact Numbers</b>				
Ontario Ministry of the Environment (MOE)	Spill Action Centre (SAC)	All spills or other emergencies must be reported to the SAC as soon as possible. This is a 24/7 service.	Fuels and Lubricants Management	1-800-268-6060 Alternate: 416-325-3000
	Toronto Regional Office Duty Officer –	Projects that may require approval and licenses for discharge of contaminants to the air, surface and ground water; management of wastes; and the use of pesticides must contact this department of the	All applicable EPPs that may require an MOE approval or license for project related activities.	(416) 314-6378

Agency or Administrator	Department	Description	Applicable Project Components	Phone Number
	Operations Division	MOE to ensure compliance with environmental laws.		
	Toronto Regional Office Duty Officer – Investigations and Enforcement Branch	Activities that may violate the Environmental Protection Act, Ontario Water Resources Act, Environmental Assessment Act, and/or Pesticides Act must contact this department of the MOE.	Air Quality and Dust Management; Contaminated Soils Management; Erosion and Sediment Control; Fuels and Lubricants Management; Groundwater Management; Project-Related Waste Management; Spill Prevention and Contingency Plan; Emergency Response Plan	(416) 326-6700
Ontario Ministry of Natural Resources (MNR)	Greater Toronto Area Regional Office	Provides for the protection of fish and wildlife. Any activity that may impact wildlife including their habitat or works in the vicinity of water must contact MNR for consultation on applicable permits/licenses that may be required.	Wildlife Management	(905) 713-7400 Alternate: 1-800-667-1940
Ontario Technical Standard and Safety Authority (TSSA)	General	TSSA must be contacted should a fuels related incident such as carbon monoxide poisoning, pipeline strikes, explosions, spills, leaks, fires, and/or the discovery of petroleum product occur.	Fuels and Lubricant Management; Spill Prevention and Contingency Plan; Emergency Response Plan	416-734-3300 Alternate: 1-877-682-TSSA (8772)
Ontario Provincial Police (OPP)	General	OPP must be informed for activities that require the movement of oversized vehicles on provincial highways and may result in the requirement for a permit.	Traffic Management (Highways)	1-888-310-1122
<b>Municipal Contact Numbers</b>				
City of Toronto	Heritage Preservation	Consultation with Heritage Preservation Services is required prior to activities that involve work on or near a structure on the Inventory of Heritage	Archaeological and Heritage Resources Management	416-338-1076 Alternate: 416-392-1975 or 416-338-1096 for specific inquiries related to

Agency or Administrator	Department	Description	Applicable Project Components	Phone Number
	Services	Properties, or prior to any soil disturbance activities.		archaeology
	Toronto Water's 24 hour spill reporting line (Water Services)	Any spill that results in the release of contaminants into catchbasins, stormwater sewers, or watercourses must report the incident to the 24 hour reporting line.	Erosion and Sediment Control; Fuels and Lubricants Management; Spill Prevention and Contingency Plan	311
	Air Quality Information Line	Provides daily information on the smog alert status for the City.	Air Quality and Dust Management	416-338-SMOG (7664)
	Toronto Building Customer Service	Provides formal permission from the City of Toronto to begin construction, demolition, addition or renovation on a property.	Building Permits	416-392-7539
	Solid Waste Management Services	Should be notified and consulted for handling the transfer and disposal of garbage onsite as well as the processing of recyclable materials.	Project-Related Waste Management	311
	Transportation Services	Projects that require road and sidewalk maintenance; street cleaning, snow clearing and road salting; permits for on-street parking; construction events; traffic signs and pavement markings; and/or traffic signals and traffic safety construction planning must contact this department.	Air quality and Dust Management; Traffic Management	311
	Urban Forestry	Projects that require maintenance and protection of private and city owned trees must inform this	Vegetation Management	311 or 416-392-CITY (2489)

Agency or Administrator	Department	Description	Applicable Project Components	Phone Number
	Services	department.		
Toronto Police Service	General	Any activity that may or will compromise the safety of the public or individuals on or near site (i.e. injuries, fire, explosions, vehicle collisions, spills, etc.)	Emergency Response	In an Emergency: 911 Non-Emergency: 416-808-2222
	Traffic Services	Toronto Police must be informed for activities that require the movement of oversized vehicles; local traffic signs/management; and any other construction or design that may impact the safety of the general public.	Traffic Management	416-808-1900
Toronto Fire Service	Fire Prevention South (Toronto) District	Any activity that may or will compromise the safety of the public or individuals on or near site (i.e. injuries, fire, explosions, vehicle collisions, spills, etc.)	Traffic Management; Spill Prevention; Emergency Response	In an Emergency: 911 Non-Emergency: 416-338-9350
Toronto Emergency Medical Service (EMS)	General	Any activity that may or will compromise the safety of the public or individuals on or near site (i.e. injuries, fire, explosions, vehicle collisions, spills, etc.)	Emergency Response	In an Emergency: 911 Non-Emergency: 416-392-2000
Toronto and Region Conservation Authority (TRCA)	Planning and Permits	Any activity within or adjacent to natural areas that may or will cause impacts to stream corridors, wetlands, and along the Lake Ontario shoreline.	Wildlife Management;	416-661-6600 Extension 5271 or 5221

## **APPENDIX C**

### **Recommended Procedures for Methane Management During Construction Activities Across the Designated Waterfront Area**

## **APPENDIX D**

### **Methane Management Approach for Permanent Building Structures Across the Designated Waterfront Area**

**APPENDIX E**  
**Waterfront Toronto**  
**Environmental Management Plan**  
**Quarterly Update Documentation Requirements**