



# Environmental Construction Operations (ECO) Plan Framework

2011 EDITION



## **PUBLISHING INFORMATION**

**TITLE:** Environmental Construction Operations (ECO) Plan Framework  
*Instructions for Preparing ECO Plans for Alberta Transportation, City of Calgary and City of Edmonton Construction Projects*

**PREPARED BY:** Alberta Transportation  
The City of Calgary  
The City of Edmonton

**DOCUMENT HOLDER:** The City of Calgary, Environmental & Safety Management, under the terms of the ECO Plan Framework Memorandum of Understanding (*EXT 03 – ECO MOU*).

**EDITION:** 2011 edition. This document replaces the 2009 edition released 16 November 2009.

**RELEASE DATE:** 1 January 2011

**NOTE:** This document is revised annually. If this document is hard copy, it is not controlled and may not be the most current version. Check the websites listed below for the most current version.

**ADDITIONAL COPIES:** To download a free electronic copy:

Alberta Transportation	The City of Calgary	The City of Edmonton
<a href="http://www.transportation.alberta.ca">www.transportation.alberta.ca</a>	<a href="http://www.calgary.ca/em">www.calgary.ca/em</a>	<a href="http://www.edmonton.ca/enviso">www.edmonton.ca/enviso</a>

To purchase printed copies online:  
[www.calgaryonlinestore.com](http://www.calgaryonlinestore.com)

For information on purchasing printed copies in Calgary in person:  
Local Calls: 311; Outside of Calgary: (403) 268-CITY (2489)



## Table of Contents

<b>Environmental Construction Operations (ECO) Plan Checklist.....</b>	<b>a</b>
<b>Introduction .....</b>	<b>i</b>
ECO Plan Process.....	ii
Contractor Roles & Responsibilities .....	iii
Instructions .....	iv
<b>Step 1 Project Setting &amp; Site Activities .....</b>	<b>1</b>
1.1 Project Description.....	1
1.2 Environmental Sensitivities .....	1
1.3 Site Activities.....	2
<b>Step 2 Project Schedule &amp; Site Drawing(s).....</b>	<b>3</b>
2.1 Project Schedule .....	3
2.2 Site Drawing(s) .....	3
<b>Step 3 Potential Environmental Impacts &amp; Controls .....</b>	<b>7</b>
3.1 Potential Environmental Issues & Impacts .....	7
3.2 Permits, Approvals & Authorizations .....	8
3.3 Mitigation Strategies .....	8
3.4 Erosion & Sediment Control .....	10
<b>Step 4 Waste Management &amp; Hazardous Materials.....</b>	<b>11</b>
4.1 Waste Management & Hazardous Materials.....	11
<b>Step 5 ECO Plan Implementation.....</b>	<b>13</b>
5.1 Site Representative.....	13
5.2 Training & Communication .....	14
5.3 Monitoring & Reporting .....	15
5.4 Documentation.....	15
5.5 ECO Plan Update .....	16
<b>Step 6 Environmental Emergency Response Procedures.....</b>	<b>17</b>
6.1 Environmental Emergency Response Procedures .....	17



# Environmental Construction Operations (ECO) Plan Checklist

Project Name: \_\_\_\_\_

Site Representative(s) (Name & Company): \_\_\_\_\_

ECO Plan submitted to (Jurisdiction): \_\_\_\_\_

Note: All checklist items are expected in the ECO Plan. Explain any deficiencies in the comments section on page b.  
 Ensure that this checklist is signed and submitted with the ECO Plan.

ECO Plan Framework Section	Content Requirements	YES	NO	N/A
<b>STEP 1: Project Setting &amp; Site Activities</b>				
1.1 Project Description	A brief description of the project and its location is provided.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.2 Environmental Sensitivities	Sensitive or protected features that could be impacted as a result of the Contractor's activities are described.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.3 Site Activities	A scope of work and a list of all construction or related activities to be undertaken during the project are provided.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>STEP 2: Project Schedule &amp; Site Drawing(s)</b>				
2.1 Project Schedule	A project schedule is provided, including scheduled shut-downs and restricted work periods due to environmental requirements.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.2 Site Drawing(s)	One or more site drawing(s) are provided, indicating the site location; site set-up and layout; erosion and sediment controls (as appropriate for the jurisdiction); and, environmental sensitivities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>STEP 3: Potential Environmental Impacts &amp; Controls</b>				
3.1 Potential Environmental Issues & Impacts	The potential environmental issues and impacts that may result from the construction activities are described.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.2 Permits, Approvals & Authorizations	List required project permits, approvals and authorizations. As applicable, environmental mitigation measures prescribed by regulatory agencies and included in project permits, approvals and authorizations are described.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.3 Mitigation Strategies	Procedures, controls or best management practices (BMPs) to prevent or reduce adverse impacts on the environment are provided.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.4 Erosion & Sediment Control	Erosion and sediment controls are provided, as appropriate for the jurisdiction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

ECO Plan Framework Section	Content Requirements	YES	NO	N/A
<b>STEP 4: Waste Management &amp; Hazardous Materials</b>				
<b>4.1 Waste Management &amp; Hazardous Materials</b>	Hazardous materials that will be used and/or stored on site are listed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Expected hazardous and non-hazardous waste materials along with proper handling, containment, storage, transportation and disposal methods are listed. As appropriate for the jurisdiction, estimated waste quantities and specific handling procedures are also provided.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>STEP 5: ECO Plan Implementation</b>				
<b>5.1 Site Representative</b>	Name(s) and contact details for the person(s) who will be the Contractor's Site Representative(s) are provided.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.2 Training &amp; Communication</b>	Training and communication details are provided.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.3 Monitoring &amp; Reporting</b>	Monitoring and inspection procedures, including a schedule of monitoring activities and reporting procedures, are provided.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.4 Documentation</b>	Information and/or records that will be maintained relating to the ECO Plan and environmental matters on the project site are described.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>5.5 ECO Plan Update</b>	ECO Plan review and update procedures are provided.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>STEP 6: Environmental Emergency Response Procedures</b>				
<b>6.1 Environmental Emergency Response Procedures</b>	Potential incidents that may impact the environment are identified, and emergency response procedures to prevent and respond to incidents are provided. An environmental emergency response contact list is also provided.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments (include relevant special provisions and/or conditions for the project):

---



---



---

\_\_\_\_\_  
 Contractor Principal-in-Charge Signature                      Name (please print)                      Date



## Introduction

In 2008, Alberta Transportation, and The Cities of Calgary and Edmonton developed a common Environmental Construction Operations (ECO) Plan Framework (the Framework) to meet the needs of the three organizations. The creation of a common ECO Plan Framework was driven by:

- a need expressed by contractors and consultants to streamline the process
- a need for consistency among the three jurisdictions
- the recognition that environmental issues on construction sites are similar, regardless of the jurisdiction in which they occur

The purpose of this Framework is to provide instructions on ECO Plan development common to all three jurisdictions. In addition, the headings within the Framework can be used as headings within the project-specific ECO Plan.

**DEFINITION: Environmental Construction Operations (ECO) Plan**

*An ECO Plan is a Contractor's plan for the identification and mitigation of potential environmental impacts that may occur as a result of their activities.*

### ***Contents of an ECO Plan***

An ECO Plan consists of written procedures and drawings addressing the environmental mitigation and protection issues relevant to construction activities being performed on a specific project site. An ECO Plan identifies:

- the environmental setting of the project
- the on-site individual responsible for addressing environmental issues
- potential environmental issues on the project
- permits, approvals, authorizations, guidelines and standards applicable to the project
- mitigation measures to prevent or minimize environmental impacts
- implementation, monitoring, training, communication and review of the ECO Plan
- environmental emergency response procedures

### ***ECO Plan Objectives***

The objective of the ECO Plan is to prevent and/or minimize environmental impact(s). The development and implementation of the ECO Plan will:

- ensure environmental considerations are part of the decision-making process
- ensure compliance with applicable regulatory requirements, bylaws and guidelines
- demonstrate environmental commitment by all parties involved, both in writing and in action, to stakeholders and the public

### **ECO Plan Process**

The development and implementation of an ECO Plan is the Contractor's responsibility. An ECO Plan may be required by Alberta Transportation, The City of Calgary or The City of Edmonton in the contract/tender documents.

The development of the ECO Plan must follow this Framework. The ECO Plan checklist at the front of this document (see pages a-b) should be used to ensure all the components of the ECO Plan are addressed. If any of the required information is not included, the ECO Plan will be considered deficient and will be returned to the Contractor for revision.

**The ECO Plan must include a completed ECO Plan checklist.  
The checklist must identify a Site Representative and be signed by the Contractor Principal-in-Charge.**

Upon receipt of the ECO Plan from the Contractor, the ECO Plan will be reviewed for completeness and:

- If accepted to the mutual satisfaction of the Contractor and the reviewer (i.e., reviewers include The City of Calgary, The City of Edmonton or the consultant for Alberta Transportation projects), the Contractor will be advised in writing by the relevant jurisdiction that the ECO Plan is complete.
- If any deficiencies are identified or if the reviewer has any questions related to the ECO Plan, they will follow up with the Contractor. If it is determined that the ECO Plan is incomplete, it must be modified and completed to the mutual satisfaction of all parties. All changes to the ECO Plan must be documented and copies of changes to the ECO Plan forwarded to the reviewer and other parties, as applicable. No work may begin until all parties have agreed to the ECO Plan.

**The ECO Plan must be submitted to the appropriate jurisdiction a minimum of fourteen (14) calendar days prior to the pre-construction meeting. All ECO Plans must be submitted and reviewed prior to construction.**

## **Contractor Roles & Responsibilities**

All Contractors need to be aware of their responsibilities for protecting the environment. The Contractor is responsible, either by its own actions or through its subcontractors, for providing the resources needed to develop and implement the ECO Plan. The Contractor is responsible for ensuring subcontractors understand their roles and responsibilities, and operate in compliance with the ECO Plan.

Contractors must refer to the terms and conditions contained in contracts, agreements, permits, approvals and authorizations to be fully aware of their responsibilities. In general, Contractors must:

- a) Identify the potential environmental issues and environmental mitigation measures to prevent or minimize environmental impacts.
- b) Identify and acknowledge permits, approvals, authorizations, guidelines and standards applicable to the project.
- c) Prepare and update the ECO Plan in accordance with this ECO Plan Framework.
- d) Submit copies of the ECO Plan to the consultant for Alberta Transportation projects or The City Project Manager for municipal projects.
- e) Revise the ECO Plan as required based on reviewer (i.e., The City of Calgary, The City of Edmonton or the consultant for Alberta Transportation projects) comments.
- f) Identify an on-site individual to be the Contractor's Site Representative to maintain environmental controls and address any environmental issues or questions that arise. The Contractor must identify this individual within the ECO Plan (see the top of the ECO Plan Checklist and Section 5.1) and at the pre-construction meeting.
- g) Ensure that staff and subcontractors are trained to identify, address and report potential environmental problems.
- h) Review the ECO Plan requirements at orientation meetings, the pre-construction meeting, tailgate meetings, etc.
- i) Implement and maintain environmental mitigation measures in accordance with the ECO Plan.

- j) Take appropriate and timely action to correct and record any deficiencies.
- k) Take action (e.g., shut down work) when it is recognized that an impact to the environment may occur or has occurred.
- l) Ensure that all subcontractors comply with the ECO Plan.
- m) Sufficiently monitor the work site to ensure that the ECO Plan is effective for all conditions, including inclement weather and shut-down periods. All monitoring efforts must be documented.

## Instructions

This Framework will assist the Contractor with ECO Plan preparation. In order for the environment to be protected, it is critical that all parties be aware of their respective responsibilities concerning environmental protection. This includes complying with legislation, specifications and guidelines, as well as any roles and responsibilities defined under the applicable Environmental Management System.

The following sections describe the six basic components of an ECO Plan.

***This document guides project-specific ECO Plan development. Boxes (like this one) are located at the start of each section, and contain specific summaries of what is required in that section.***

## Step 1 Project Setting & Site Activities

<b>STEP 1</b>	<b>1.1 Project Description</b>	A <i>brief</i> description of the project and its location is provided.
	<b>1.2 Environmental Sensitivities</b>	Sensitive or protected features that could be impacted as a result of the Contractor's activities are described.
	<b>1.3 Site Activities</b>	A scope of work and a list of all construction or related activities to be undertaken during the project are provided.

### 1.1 Project Description

*In this section, provide a brief description of the project and its location.*

The project should be described in sufficient detail to provide the reviewer with a basic understanding of the construction project. It should include at a minimum:

- legal land description
- municipal address (if applicable)
- type of project

### 1.2 Environmental Sensitivities

*In this section, describe site-specific sensitive or protected areas that could be impacted as a result of the Contractor's activities.*

This section must demonstrate an understanding of the sensitive or protected areas that could be impacted as a result of the Contractor's activities. Items described must be specific to the project site.

Features that may require environmental protection should be highlighted such as:

- wildlife and wildlife habitat
- waterbodies (e.g., wetlands, streams, creeks)
- vegetation (e.g., trees, rare plants)
- contamination

Features described in this section must be noted and included on the site drawing(s) (see Section 2.2).

### 1.3 Site Activities

*In this section, provide a scope of work and a list of all construction or related activities to be undertaken during the project.*

This section will include scope of work, as well as a list of all construction and demolition activities (e.g., earthworks, surfacing, saw cutting, stream crossings). The ECO Plan will describe the Contractor's specific on-site construction activities that could result in environmental impacts.

## Step 2 Project Schedule & Site Drawing(s)

STEP 2	2.1 Project Schedule	A project schedule is provided, including scheduled shut-downs and restricted work periods due to environmental requirements.
	2.2 Site Drawing(s)	One or more site drawing(s) are provided, indicating the site location; site set-up and layout; erosion and sediment controls (as appropriate for the jurisdiction); and, environmental sensitivities.

### 2.1 Project Schedule

*In this section, provide a project schedule that includes scheduled shut-downs and restricted work periods due to environmental requirements.*

The ECO Plan will include a general schedule and sequence of construction activities. It will identify any time-sensitive environmental considerations, including scheduled shut-downs and restricted work periods. For example, in-stream work may be restricted to the times outlined within approvals or authorizations issued by federal and/or provincial regulatory bodies.

### 2.2 Site Drawing(s)

*In this section, provide one or more site drawing(s).*

In this section, provide site drawing(s) of appropriate scale showing:

- location of site
- site set-up and layout
- erosion and sediment controls (as appropriate for the jurisdiction; see Section 3.4 and Table 3-2 for more details)
- environmental sensitivities

Table 2-1 provides some examples of the type of information that may be included on Site Drawing(s) as applicable.

**Table 2-1 Example: Information that may be included on Site Drawing(s) as applicable**

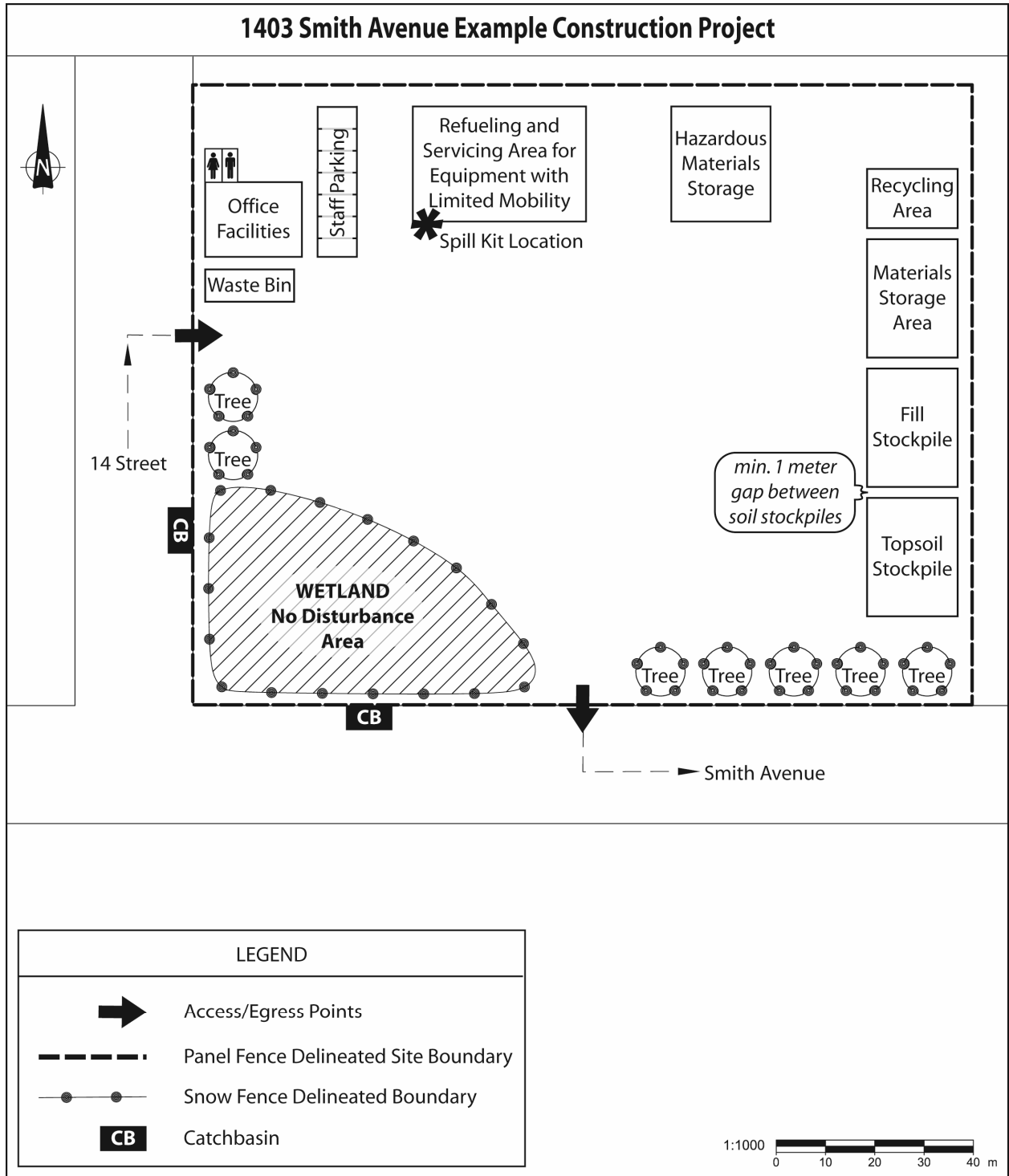
Site Location	Site Set-up and Layout	Erosion and Sediment Controls	Environmental Sensitivities
<ul style="list-style-type: none"> <li>• Site location (e.g., address)</li> <li>• Project boundaries</li> </ul>	<ul style="list-style-type: none"> <li>• Access/egress points</li> <li>• Traffic routes</li> <li>• Temporary parking</li> <li>• Staging areas</li> <li>• Borrow areas</li> <li>• Stockpile locations</li> <li>• Refuelling areas</li> <li>• Waste and hazardous materials storage</li> <li>• Offices</li> </ul>	<ul style="list-style-type: none"> <li>• Erosion and sediment controls as appropriate for the jurisdiction (see Section 3.4 and Table 3-2 for more details)</li> </ul>	<ul style="list-style-type: none"> <li>• Environmentally sensitive areas (e.g., wildlife and wildlife habitat; waterbodies such as wetlands, streams and creeks; vegetation such as trees and rare plants)</li> <li>• Buffers around sensitive areas</li> <li>• Trees to be protected</li> <li>• Stormwater discharge points</li> <li>• Monitoring wells</li> <li>• Contamination</li> </ul>

Annotated photographs can be included in this section. Super-imposing construction site set-up and operational details on aerial photographs of appropriate scale and nature is particularly informative.

See the sample site drawing on the following page.



## Sample Site Drawing





## Step 3 Potential Environmental Impacts & Controls

STEP 3	<b>3.1 Potential Environmental Issues &amp; Impacts</b>	The potential environmental issues and impacts that may result from the construction activities are described.
	<b>3.2 Permits, Approvals &amp; Authorizations</b>	List required project permits, approvals and authorizations. As applicable, environmental mitigation measures prescribed by regulatory agencies and included in project permits, approvals and authorizations are described.
	<b>3.3 Mitigation Strategies</b>	Procedures, controls or best management practices (BMPs) to prevent or reduce adverse impacts on the environment are provided.
	<b>3.4 Erosion &amp; Sediment Control</b>	Erosion and sediment controls are provided, as appropriate for the jurisdiction.

### 3.1 Potential Environmental Issues & Impacts

*In this section, describe the potential environmental issues and impacts that may result from the construction activities.*

An environmental impact is any change to the environment (positive or negative) resulting from the construction activities. For the purposes of the ECO Plan, negative impacts are the primary concern.

The Contractor should focus on the environmental impacts over which they have reasonable control. These potential issues and impacts resulting from the Contractor's activities will form the basis of the project-specific ECO Plan.

The review process for potential issues and impacts should consider normal operating conditions; shut-down and start-up conditions; and, any reasonably foreseeable emergency or abnormal situations. Further, ensure the review considers:

- potential releases of emissions to air (e.g., dust)
- potential releases to surface water and groundwater

- potential releases to land (e.g., spills)
- potential to harm habitat or regulated species
- noise and light issues
- site waste management

The review may be conducted and presented in a number of formats, including tables or text. Table 3-1 provides an example of how this can be captured. The ECO Plan must clearly demonstrate that the Contractor has identified how their work may affect the environment. Environmental controls to prevent or minimize these impacts will be required as shown in Table 3-1.

### 3.2 Permits, Approvals & Authorizations

*In this section, list required project permits, approvals and authorizations. As applicable, include environmental mitigation measures prescribed by regulatory agencies and detailed in project permits, approvals and authorizations.*

The Contractor must understand the current environmental legislation, permit conditions, approvals and authorizations applicable to the project and ensure that their staff and subcontractors are familiar with these requirements. Regulators may make site visits and inspections prior to, during and following construction.

Many of the approvals will have been provided in the tender package. Any additional approvals that will be required to do the work must be identified. Mitigation measures that are included in the permits, approvals and authorizations must be reflected in the following section (Section 3.3: Mitigation Strategies).

### 3.3 Mitigation Strategies

*In this section, describe procedures, controls or best management practices (BMPs) that will be used to prevent or reduce adverse impacts on the environment.*

Taking into account the construction activities and potential impacts discussed in Sections 1.3 and 3.1, describe procedures, controls or best management practices (BMPs) that will be used to prevent or reduce adverse impacts on the environment.

Mitigation measures must be developed based on the Contractor’s own site information, with reference to the consultant’s Risk Assessment (for Alberta Transportation projects), and any relevant conditions contained within approvals and/or authorizations. Include mitigation measures contained in the contract, including Standard General Conditions or Standard Specifications as applicable. Examples of potential environmental impacts and mitigation measures are provided in Table 3-1.

**Table 3-1 Example: Potential Environmental Impacts and Mitigation Measures**

<b>Construction Activity</b>	<b>Potential Environmental Impact(s)</b>	<b>Environmental Mitigation Measure(s)</b>
<b>Earthworks</b>	Erosion and compaction of soils Transport of sediment and associated contaminants by water and wind Sedimentation in infrastructure and waterbodies Loss of vegetation Damage to trees	Minimize the area of exposed soil by phasing stripping and grading work and/or ensuring timely implementation of suitable temporary or permanent soil stabilization measures Implement, inspect and maintain erosion and sediment controls Ensure traffic travels along pre-defined routes and within the confines of the working easements Ensure fencing is placed around the drip lines of trees to be protected from vehicles and equipment
<b>Refuelling and servicing of equipment</b>	Hydrocarbon spills	Ensure spill kits are on all vehicles and workers are trained in their use Designate refuelling areas appropriate distances from waterbodies
<b>In-stream activity</b>	Release of hydraulic fluid	Machinery for in-stream use will use vegetable-based hydraulic oil
<b>Site Maintenance</b>	Disturbance of vegetation Establishment of weed species	Equipment moving from areas with non-native species onto natural areas must be clean and free of weeds Weed control will occur during active construction The ground will be re-seeded and/or re-vegetated as soon as possible with approved species

### 3.4 Erosion & Sediment Control

*In this section, provide project-specific erosion and sediment controls, as appropriate for the jurisdiction.*

Alberta Transportation, and The Cities of Calgary and Edmonton require Erosion and Sediment Control Reports and Drawings on construction projects; however, each jurisdiction has its own specific requirements (see Table 3-2).

Erosion and sedimentation are significant environmental concerns on construction projects. The Contractor must ensure erosion and sediment control measures are implemented, inspected and maintained during the term of the contract.

**Table 3-2 Erosion and Sediment Control Requirements by Jurisdiction**

<b>Alberta Transportation and The City of Edmonton Requirements</b>
<p>In the ECO Plan, descriptions and drawings of erosion and sediment control are required. Items that should be in the ECO Plan include but are not limited to:</p> <ul style="list-style-type: none"> <li>• Text and a corresponding drawing demonstrating the use of appropriate methods, materials and locations of erosion and sediment control near waterbodies (include erosion and sediment control measures on the site drawing (Section 2.2)).</li> <li>• Documentation that shall be utilized by appointed staff for the monitoring of sediment and erosion control for the project site. The Contractor must ensure erosion and sediment control devices are in place and maintained during the term of the contract.</li> </ul> <p>For Alberta Transportation projects refer to the <i>Design Guidelines for Erosion and Sediment Control for Highways</i> manual (available at <a href="http://www.transportation.alberta.ca">www.transportation.alberta.ca</a>). For City of Edmonton projects, refer to <i>The City of Edmonton Erosion and Sedimentation Control Guidelines</i> (available at <a href="http://www.edmonton.ca">www.edmonton.ca</a>) for specific guidance.</p>
<b>The City of Calgary Requirements</b>
<p>City of Calgary projects that require an ECO Plan also require an Erosion and Sediment Control Report and/or Drawing(s). In the ECO Plan, indicate whether an Erosion and Sediment Control Report and/or Drawing(s) was developed for the project. The ECO Plan and the separate Erosion and Sediment Control Report and/or Drawing(s) must be submitted together to The City of Calgary Project Manager. The City of Calgary Environmental &amp; Safety Management will review the ECO Plan, and The City of Calgary Water Resources will review the Erosion and Sediment Control Report and/or Drawing(s).</p> <p>For more information on submission requirements, refer to the current edition of <i>The City of Calgary Guidelines for Erosion and Sediment Control</i> (available at <a href="http://www.calgary.ca">www.calgary.ca</a>) or contact the Erosion Control Coordinator, Water Resources by phone at 3-1-1 (local Calgary calls only) or (403) 268-CITY (for callers outside Calgary).</p> <p>The ECO Plan does not replace an Erosion and Sediment Control Report and/or Drawing(s).</p>

## Step 4 Waste Management & Hazardous Materials

<b>STEP 4</b>	<b>4.1 Waste Management &amp; Hazardous Materials</b>	<p>Hazardous materials that will be used and/or stored on site are listed.</p> <p>Expected hazardous and non-hazardous waste materials along with proper handling, containment, storage, transportation and disposal methods are listed. As appropriate for the jurisdiction, estimated waste quantities and specific handling procedures are also provided.</p>
---------------	---	--

### 4.1 Waste Management & Hazardous Materials

*In this section, provide a list of the hazardous materials that will be used and/or stored on site.*

*As well, list anticipated hazardous and non-hazardous waste materials along with proper handling, containment, storage, transportation and disposal methods.*

*As appropriate for the jurisdiction, estimated quantities of waste and specific handling procedures must also be included.*

During the project, various hazardous materials will be used and waste materials will be generated that have the potential to impact the environment. Hazardous materials include oil, fuel, paints, etc. to be used and/or stored on site during construction. Hazardous materials must be stored safe distances from waterbodies or storm sewers. Waste materials include:

- waste generated as part of the contract deliverable (e.g., demolition waste)
- waste generated by the Contactor's activities, such as oil filters, oils, garbage (e.g., plastic, cardboard), paints, solvents, spill clean-up materials, sewage, etc.

The ECO Plan must identify the hazardous and waste materials. The site drawing (Section 2.2) must identify where the hazardous and waste materials will be stored. The ECO Plan must also describe the procedures for the proper handling, containment, storage, transportation and disposal of the materials. Waste disposal

receipts, waste manifests, bills of lading, etc. should be retained. The procedures must comply with applicable regulatory handling, transportation and disposal requirements.

When working for The City of Calgary and The City of Edmonton, the estimated quantities of hazardous and non-hazardous waste, as well as specific handling procedures must be documented and included in the ECO Plan. The Contractor must consider whether the waste materials can be recycled. Table 4-1 provides an example of how to summarize this component of project waste management when working for The City of Calgary and The City of Edmonton.

**Table 4-1 Example: Project Waste Materials, Estimated Quantities, and Handling and Disposal Procedures**

Material to be Handled	Estimated Quantity of Waste	Handling Procedure	Reuse/Recycling/Disposal Method
<b>Non-hazardous</b>			
Concrete	X tonnes	Break up and put in concrete bin	Recycle <i>(provide Recycling Company name)</i>
Wood	X tonnes	Stack next to supply of new form boards for reuse; recycle clean unusable forms in wood recycling bin	Scraps used for formwork, remaining recycled <i>(provide Recycling Company name)</i>
Asphalt	X tonnes	Truck directly to vendor as asphalt is stripped/removed	Recycle <i>(provide Recycling Company name)</i>
Cardboard	X tonnes	Cardboard bin	Recycle <i>(provide Recycling Company name)</i>
Metal (piping)	X tonnes	Metal bin	Recycle <i>(provide Recycling Company name)</i>
<b>Hazardous</b>			
Epoxy	X litres	Stockpiled separately	Container returned to distributor
Concrete washout area	X tonnes	All washout is contained in a designated lined area or is in a self-contained concrete washout system	Recycle <i>(provide Recycling Company name)</i>



## Step 5 ECO Plan Implementation

STEP 5	<b>5.1 Site Representative</b>	Name(s) and contact details for the person(s) who will be the Contractor's Site Representative(s) are provided.
	<b>5.2 Training &amp; Communication</b>	Training and communication details are provided.
	<b>5.3 Monitoring &amp; Reporting</b>	Monitoring and inspection procedures, including a schedule of monitoring activities and reporting procedures, are provided.
	<b>5.4 Documentation</b>	Information and/or records that will be maintained relating to the ECO Plan and environmental matters on the project site are described.
	<b>5.5 ECO Plan Update</b>	ECO Plan review and update procedures are provided.

### 5.1 Site Representative

*In this section, provide the name(s) and contact details for the person who will be the Contractor's Site Representative.*

The Contractor must identify an on-site individual to be the Contractor's Site Representative; this individual is responsible for maintaining the environmental controls and addressing any environmental issues or questions that arise. The Contractor must identify their Site Representative on the ECO Plan Checklist and at the pre-construction meeting.

In this section, provide the name(s) and full contact details for the Contractor's Site Representative.

## 5.2 Training & Communication

*In this section, provide training and awareness procedures that will be used to inform all staff and subcontractors of their ECO Plan responsibilities associated with their activities on the construction site.*

The Contractor is responsible for ensuring that workers are aware of applicable environmental legislation and project-specific requirements prior to work commencing. All personnel on a construction site have the potential to create an impact on the environment. Therefore, effective communication of environmental responsibilities to all staff, including subcontractors, is essential to ensure environmental protection.

ECO Plans must be included as a topic in site orientations, pre-construction meetings and regular site meetings. Minutes of these meetings must be retained and available upon request. Topics for training and awareness sessions may include (but are not limited to) those listed in Table 5-1.

**Table 5-1 Potential Topics for ECO Plan Training and Awareness Sessions**

Topics
ECO Plan Content and On-site Location
Roles and Responsibilities Related to the ECO Plan
Locations of Environmentally Sensitive Areas
Environmental Response Procedures (including locations of spill kits, contact information, etc.)
Permit, Approval and Authorization Requirements
Mitigation Measures
Materials Handling
Waste Handling
Erosion & Sediment Control Concerns

### 5.3 Monitoring & Reporting

*In this section, provide monitoring and inspection procedures that are appropriate to the nature and scale of the project, and that satisfy regulatory and contractual requirements.*

The Contractor will develop appropriate monitoring procedures consistent with the contract terms and conditions, site characteristics, work activities and potential environmental risks associated with the work to be performed. It is the Contractor's responsibility to understand and comply with the reporting requirements, and to ensure all of the environmental controls are working.

In this section, include the following project-specific information:

- locations and items to be inspected
- monitoring frequency
- monitoring during scheduled shut-downs
- reporting requirements related to permits, approvals and authorizations

Deficiencies identified during monitoring activities must be addressed immediately.

### 5.4 Documentation

*In this section, describe the environmental information and/or records that will be maintained relating to the ECO Plan and environmental matters on the project site.*

A master hard copy of documentation relating to the ECO Plan and environmental activities on the project site must be retained at the construction site, be current and available to all personnel, and be available for inspection at all times. Table 5-2 provides an example of the type of information that should be retained on site in hard copy for the project (note that this is not a comprehensive list).

**Table 5-2 Example Types of Documentation to be Retained On Site in Hard Copy**

Documentation
Current ECO Plan
Current Erosion and Sediment Control Report and/or Drawing(s)
Regulatory Permits, Approvals and/or Authorizations
Record of Environmental Incidents (e.g., spill and release records)
Hazardous Materials Inventory
Hazardous and Non-Hazardous Waste Materials Inventory
Completed Environmental Monitoring Records
Site Orientation, Tailgate Meeting and Project Progress Minutes
Fuelling Logs
Relevant Memos Relating to Environmental Matters

## 5.5 ECO Plan Update

*In this section, provide information on how the ECO Plan will be reviewed and updated, and to whom ECO Plan changes will be communicated.*

The ECO Plan must be designed to change according to site conditions with a goal of continually meeting environmental requirements and providing details to proactively protect the environment. For example, in the case of unplanned winter shut-downs, the Contractor must revise the ECO Plan to include the environmental protection measures required for the shut-down period.

Once the ECO Plan is updated, the Contractor is responsible for notifying the changes (as appropriate) to Alberta Transportation, The City of Calgary and/or The City of Edmonton prior to implementation. The Contractor shall communicate the changes to employees and relevant subcontractors, and provide the necessary training before implementing the changes. Modifications to the ECO Plan must provide an equal or better level of avoidance or mitigation. All changes to the ECO Plan must be documented.

## Step 6 Environmental Emergency Response Procedures

### STEP 6

#### 6.1 Environmental Emergency Response Procedures

Potential incidents that may impact the environment are identified, and emergency response procedures to prevent and respond to incidents are provided. An environmental emergency response contact list is also provided.

### 6.1 Environmental Emergency Response Procedures

*In this section, identify potential incidents that may impact the environment, and provide details or copies of emergency response procedures to prevent and respond to potential incidents. As well, provide an environmental emergency response contact list and identify where it will be posted on site.*

The ECO Plan must identify potential incidents that may impact the environment. These incidents could be the result of natural events, accidents, human error or improper work practices.

Examples of potential incidents include:

- contaminant spills and releases to land, water and air from fuels, oils, lubricants and chemicals
- discovery of historic contamination
- erosion events of land (e.g., water, wind), watercourses (e.g., bank erosion, flooding), berms and coffer dams

The ECO Plan must include a current emergency contact list and describe where it will be posted on site. This list must include names and contact details for key personnel and applicable regulatory agencies.

The ECO Plan must provide emergency procedures to prevent and respond to potential incidents that may impact the environment. The emergency response procedures must include:

- training provisions to make Contractor staff and subcontractors aware of their responsibilities during emergency situations
- a list of equipment and materials available on site including their specific location
- initial response to an emergency, describing the steps to be taken and equipment to be used
- immediate reporting of environmental incidents to proper authorities
- post-emergency review, follow-up and improvement of procedures as needed

Ensure that the emergency response plan reflects requirements of the jurisdiction. For example, a chemical spill response within the city of Calgary would involve the Calgary Fire Department Hazardous Materials Response Team; within the city of Edmonton, it would involve Fire Rescue Services Hazardous Materials Team.