Alberta Transportation • The City of Edmonton • The City of Calgary

Environmental Construction Operations (ECO) Plan Framework

2012 EDITION

Government of Alberta
Transportation

THE CITY OF Edmonton

THE CITY OF CALGARY

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:	2012 edition. This document replaces the 2011 edition released 1 January 2011.
RELEASE DATE:	1 January 2012
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.
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www.transportation.alberta.ca	www.calgary.ca	www.edmonton.ca/enviso

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Environmental Construction Operations (ECO) Plan Checklist

Project Name: _____

On-Site Representative(s) (Name & Company): _____

ECO Plan submitted to (Name & 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
STEP 1: Project Setting & Site Activities				
1.1 Project Description	A *brief* description of the project and its location is provided.	☐	☐	☐
1.2 Environmental Sensitivities	Site-specific sensitive or protected features that could be impacted as a result of the Contractor's activities are described.	☐	☐	☐
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.	☐	☐	☐
STEP 2: Project Schedule & Site Drawing(s)				
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.	☐	☐	☐
STEP 3: Potential Environmental Impacts & Controls				
3.1 Permits, Approvals, Authorizations & Notifications	List the file name, number and environmental conditions of all required project permits, approvals, authorizations and notifications. Copies of all project permits, approvals, authorizations and notifications (and their associated applications, when referenced in the approval) are appended to the ECO Plan.	☐ ☐	☐ ☐	☐ ☐
3.2 Regulatory Compliance	Specific regulatory requirements (other than those listed in Section 3.1) that directly impact or restrict this construction project are described.	☐	☐	☐
3.3 Mitigation Strategies	Procedures, controls or best management practices (BMPs) to prevent or reduce adverse impacts on the environment are provided.	☐	☐	☐
3.4 Erosion & Sediment Control	Erosion and sediment controls are provided, as appropriate for the jurisdiction.	☐	☐	☐

ECO Plan Framework Section	Content Requirements	YES	NO	N/A
STEP 4: Waste Management & Hazardous Materials				
4.1 Waste Management & Hazardous Materials	Hazardous materials that will be used and/or stored on site are listed.	☐	☐	☐
	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.	☐	☐	☐
STEP 5: ECO Plan Implementation				
5.1 On-Site Representative	Name(s) and contact details for the person(s) who will be the Contractor's On-Site Representative(s) are provided.	☐	☐	☐
5.2 Training & Communication	Training and communication details are provided.	☐	☐	☐
5.3 Monitoring & Reporting	Monitoring and inspection procedures, including a schedule of monitoring activities and reporting procedures, are provided.	☐	☐	☐
5.4 Documentation	Information and/or records that will be maintained relating to the ECO Plan and environmental matters on the project site are described.	☐	☐	☐
5.5 ECO Plan Update	ECO Plan review and update procedures are provided. If the ECO Plan has been updated, a table summarizing all changes is appended.	☐	☐	☐
STEP 6: Environmental Emergency Response Procedures				
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.	☐	☐	☐

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, notifications, 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 an On-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 (see Section 5.5; include a revision summary table such as Table 5-3) and copies of the updated 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, notifications, 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 On-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

STEP 1		
	1.1 Project Description	A *brief* description of the project and its location is provided.
	1.2 Environmental Sensitivities	Sensitive or protected features that could be impacted as a result of the Contractor's activities are described.
	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.

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.

The Contractor is advised to review all available environmental information and reports to pre-screen the subject site for environmental sensitivities and concerns. Example information sources include: Biophysical Impact Assessment; Environmental Impact Assessment; Wetland Assessment; Phase I and/or II Environmental Site Assessment; Risk Management Plan, Remediation Plan; Tank Decommissioning/ Excavation/

Sampling Program; Historic Resources Value (in the Alberta government *Listing of Historic Resources*); and/or Historical Resources Impact Assessment.

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)
- archaeological, paleontological or other historical resources
- 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 3-4 for more details)
- environmental sensitivities (see Section 1.2 for more details)

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

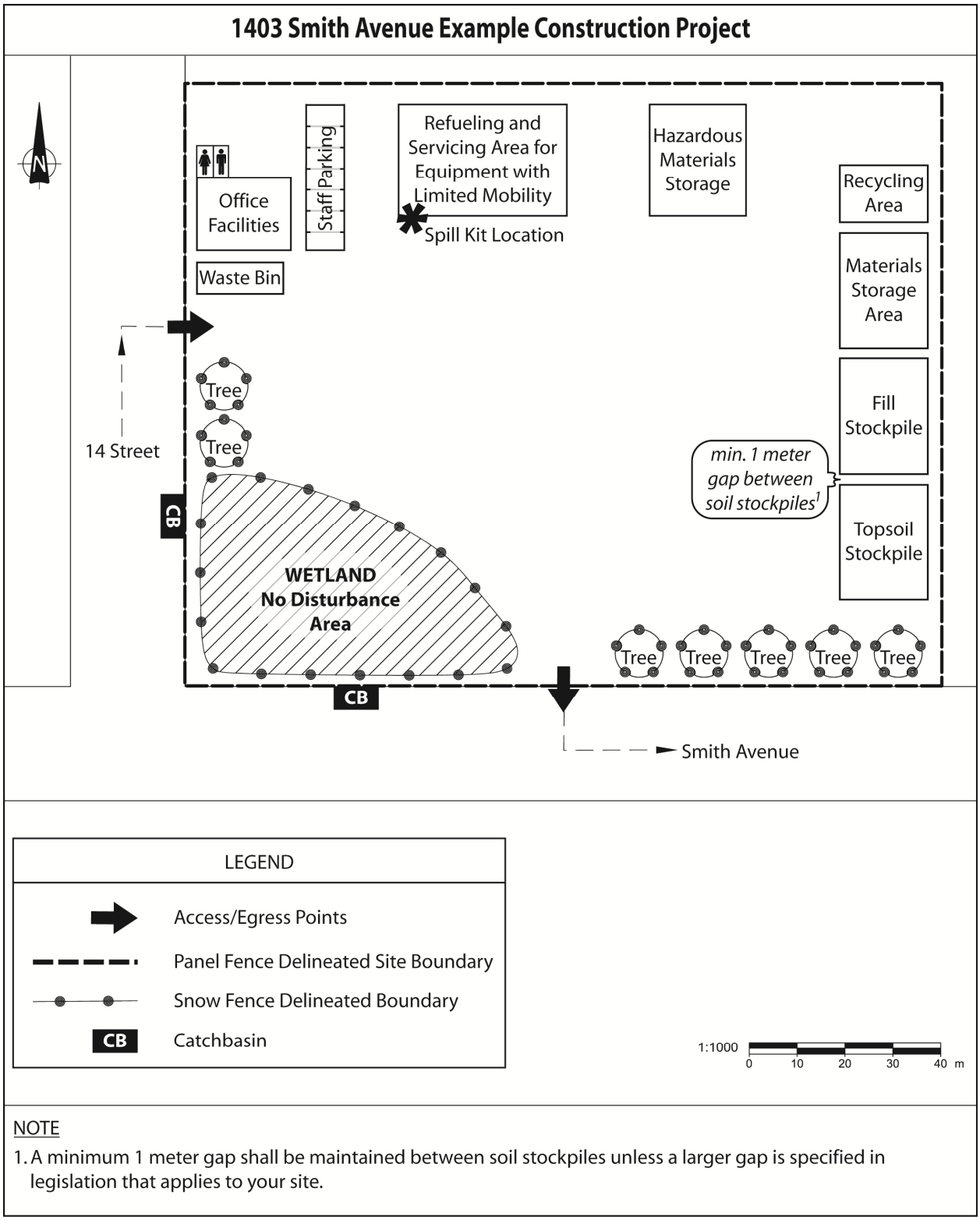
Table 2-1 Example: Information that may be included on Site Drawing(s) as applicable

Site Location	Site Set-up and Layout	Erosion and Sediment Controls	Environmental Sensitivities
• Site location (e.g., address) • Project boundaries	• Access/egress points • Traffic routes • Temporary parking • Staging areas • Borrow areas • Stockpile locations • Refuelling areas • Waste and hazardous materials storage • Offices	• Erosion and sediment controls as appropriate for the jurisdiction (see Section 3.4 and Table 3-4 for more details)	• Environmentally sensitive areas (e.g., wildlife and wildlife habitat; waterbodies such as wetlands, streams and creeks; vegetation such as trees and rare plants) • Buffers around sensitive areas • Trees to be protected • Stormwater discharge points • Monitoring wells • Contamination

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



NOTE

1. A minimum 1 meter gap shall be maintained between soil stockpiles unless a larger gap is specified in legislation that applies to your site.

Step 3 Potential Environmental Impacts & Controls

STEP 3		
	3.1 Permits, Approvals, Authorizations & Notifications	List the file name, number and environmental conditions of all required project permits, approvals, authorizations and notifications. Copies of all project permits, approvals, authorizations and notifications (and their associated applications, when referenced in the approval) are appended to the ECO Plan.
	3.2 Regulatory Compliance	Specific regulatory requirements (other than those listed in Section 3.1) that directly impact or restrict this construction project are described.
	3.3 Mitigation Strategies	The potential environmental issues and impacts that may result from the construction activities are described. Procedures, controls or best management practices (BMPs) to prevent or reduce adverse impacts on the environment are provided.
	3.4 Erosion & Sediment Control	Erosion and sediment controls are provided, as appropriate for the jurisdiction.

3.1 Permits, Approvals, Authorizations & Notifications

In this section, list the file name and number of all required project permits, approvals, authorizations and notifications. Describe in detail the environmental conditions prescribed by regulatory agencies in the approvals.

Append copies of all project permits, approvals, authorizations and notifications (and the associated permit applications, when referenced in the approval) to the ECO Plan.

The Contractor must understand the current environmental legislation, permit conditions, approvals, authorizations and notifications applicable to the project and ensure that their staff and subcontractors are familiar with these requirements. Copies of project permits, approvals, authorizations and notifications (as well as the permit applications, when relevant) should be retained on site during all activities. 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 in this section.

Provide file number and title of all required project permits, approvals, authorizations and notifications and list the environmental conditions prescribed by regulatory agencies in those documents (e.g., Table 3-1). If the approval references the permit application, include the environmental conditions described in that application. Append copies of all project permits, approvals, authorizations and notifications (as well as the associated permit applications, when relevant) to the ECO Plan.

Table 3-1 Example: Project Permits, Approvals, Authorizations & Notifications

Example Project Permit, Approval, Authorization or Notification File Number and Title	Construction Activity	Example Environmental Conditions and/or Mitigation Measure(s) *(as detailed in the permit, approval, authorization or notification OR its application)*
Department of Fisheries & Oceans Canada Authorization CA-10-1249 Watercourse Crossings and Replacements - Tributary to Elbow River - Calgary	All	No in-stream work will occur between May 1 and July 25 and Sept 16 to April 15
		Operate machinery on land in a manner that minimizes disturbance to the banks and beds of the watercourse
	Isolation and dewatering	Remove fish from the work area prior to dewatering and release alive immediately into a staging area upstream or downstream
	etc.	etc.
Alberta Environment & Water Authorization 37/801 to Construct the Access Road Tie-in to the Canal Pathway with the Western Headworks System (WHS) Right-of-Way	All	Disturbance within the canal right-of-way shall be kept to a minimum.
		Surface disturbance within the Department's canal right-of-way is permitted only during dry and/or frozen ground conditions.
		No equipment is permitted within the canal right-of-way outside the work area.
		etc.
Notification under the Code of Practice for Watercourse Crossings (City of Calgary file number 2011WAXP712)	Post-Construction	The crossing site will be inspected annually, at a minimum, during the snow free season.
		All monitoring will be designed and conducted by a qualified aquatic environment specialist.
		etc.
City of Calgary Drainage Permit HPZ0079	Site dewatering	The Permit Holder will cease diverting water immediately and will notify The City of Calgary, and any other required agency if water quality testing results exceed any limits specified by The City of Calgary.
		etc.

3.2 Regulatory Compliance

In this section, describe specific regulatory requirements (other than permits, approvals, authorizations and notifications) that directly impact or restrict construction activities.

The Contractor must understand the current environmental legislation and ensure that their staff and subcontractors are familiar with these requirements. In this section, describe specific regulatory requirements (other than permits, approvals, authorizations and notifications) that directly impact or restrict this particular construction project (e.g., Table 3-2).

Table 3-2 Example: Project Regulatory Requirements (other than permits, approvals, authorizations and notifications)

Name of Legislation	Construction Activity	Environmental Conditions
***Migratory Birds Convention Act* and its regulations**	All	Under the Act and its regulations, no disturbance to nests or nesting birds is allowed during breeding and nesting periods (generally early April to late August in most parts of Canada). To determine the requirements for a specific project, consult with Canadian Wildlife Service and provincial wildlife agencies.
		Nesting and breeding are not the only periods of concern. Project plans may need to accommodate the requirements of spring and fall migration and/or overwintering migratory birds.
		etc.
Alberta *Weed Control Act* and its regulations	All	A person shall control noxious weeds and destroy prohibited noxious weeds that are on land the person owns or occupies.
		Subject to the regulations, a person shall not use or move anything that, if used or moved, might spread a noxious weed or prohibited noxious weed.
		A person shall store refuse that may contain noxious weed seeds or prohibited noxious weed seeds, including screenings from cleaning, sizing or grading seed, in a container that will prevent the scattering of the seeds.
		etc.
City of Calgary Tree Protection Bylaw	All	No person shall remove, move, cut, or prune a Public Tree or cause a Public Tree to be removed, moved, cut or pruned without prior written authorization from the General Manager, Parks.
		No person shall use a Public Tree to secure any object.
		etc.

3.3 Mitigation Strategies

In this section, identify potential environmental issues and impacts that may result from the construction activities. Then provide a summary description of all procedures, controls or best management practices (BMPs) that will be used on this project to prevent or reduce adverse impacts on the environment.

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

Taking into account the environmental sensitivities, construction activities and regulatory requirements discussed in Sections 1.2, 1.3, 3.1 and 3.2, as well as any new sensitivities described in this section, provide a comprehensive summary description of all the 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 permits, approvals, authorizations and/or notifications. Include mitigation measures contained in the contract, including Standard General Conditions or Standard Specifications as applicable. An example illustrating one method of summarizing potential environmental impacts and mitigation measures is provided in Table 3-3.

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

Construction Activity	Potential Environmental Impact(s)	Environmental Mitigation Measure(s)
Earthworks	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
Refuelling and servicing of equipment	Hydrocarbon spills	Ensure spill kits are on all vehicles and workers are trained in their use Designate refuelling areas appropriate distances from waterbodies
In-stream activity	Release of hydraulic fluid	Machinery for in-stream use will use vegetable-based hydraulic oil
Site Maintenance	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 3-4).

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 3-4 Erosion and Sediment Control Requirements by Jurisdiction

Alberta Transportation and The City of Edmonton Requirements
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: • 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)). • 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. For Alberta Transportation projects refer to the *Design Guidelines for Erosion and Sediment Control for Highways* manual (available at www.transportation.alberta.ca). For City of Edmonton projects, refer to *The City of Edmonton Erosion and Sedimentation Control Guidelines* (available at www.edmonton.ca) for specific guidance.
The City of Calgary Requirements
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 & 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). For more information on submission requirements, refer to the current edition of *The City of Calgary Guidelines for Erosion and Sediment Control* (available at www.calgary.ca) 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). The ECO Plan does not replace an Erosion and Sediment Control Report and/or Drawing(s).

Step 4 Waste Management & Hazardous Materials

STEP 4		
	4.1 Waste Management & Hazardous Materials	Hazardous materials that will be used and/or stored on site are listed. 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.

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 handing, 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
Non-hazardous			
Concrete	X tonnes	Break up and put in concrete bin	Recycle (*provide Recycling Company name*)
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 (*provide Recycling Company name*)
Asphalt	X tonnes	Truck directly to vendor as asphalt is stripped/removed	Recycle (*provide Recycling Company name*)
Cardboard	X tonnes	Cardboard bin	Recycle (*provide Recycling Company name*)
Metal (piping)	X tonnes	Metal bin	Recycle (*provide Recycling Company name*)
Hazardous			
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 (*provide Recycling Company name*)

Step 5 ECO Plan Implementation

STEP 5		
	5.1 On-Site Representative	Name(s) and contact details for the person(s) who will be the Contractor's On-Site Representative(s) are provided.
	5.2 Training & Communication	Training and communication details are provided.
	5.3 Monitoring & Reporting	Monitoring and inspection procedures, including a schedule of monitoring activities and reporting procedures, are provided.
	5.4 Documentation	Information and/or records that will be maintained relating to the ECO Plan and environmental matters on the project site are described.
	5.5 ECO Plan Update	ECO Plan review and update procedures are provided. If the ECO Plan has been updated, a table summarizing all changes is appended.

5.1 On-Site Representative

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

The Contractor must identify an on-site individual to be the Contractor's On-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 On-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 On-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 Environmental Restrictions (e.g., wetlands, rare plants, bird nests, riparian areas)
Environmental Response Procedures (including locations of spill kits, contact information, etc.)
Permit, Approval, Authorization & Notification Requirements, as well as Regulatory Compliance
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, authorizations and notifications

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, Authorizations and/or Notifications, as well as their applications when relevant (often the application forms part of the approval)
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.

If an update to the ECO Plan is required, include a revision summary table with all subsequent versions of the document.

ECO Plan updates are generally required in two main circumstances:

- when an ECO Plan is deficient and returned to the Contractor for revision prior to the start of construction
- when site conditions and/or site activities change during a project or the project changes

All changes to the ECO Plan must be documented (include a revision summary table such as Table 5-3). Clearly summarize what changes have been made and where they are located in the document, referencing applicable sections, pages, drawings and/or note numbers. This revision summary should be located at the front of the revised ECO Plan (just after the cover page). Revised ECO Plans must be forwarded to the reviewer (i.e., The City of Calgary, The City of Edmonton or the consultant for Alberta Transportation projects) and other applicable parties.

If an ECO Plan is determined to be deficient at the review stage, the Contractor is required to modify and complete it to the mutual satisfaction of all parties. No work may begin until all parties have agreed to the ECO Plan.

All ECO Plans must be designed to change according to site conditions and/or site activities 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 (as appropriate) Alberta Transportation, The City of Calgary and/or The City of Edmonton of the changes 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 (as detailed in the last paragraph on page 18; see Table 5-3 for an example).

Table 5-3 Example: ECO Plan Revision Summary Table

Date	ECO Plan Section	Specific Document Reference (Page #, Drawing # or Note #)	Description of Change
25 Oct 2011	1.3	Page 4	In paragraph 5, change the words, “investigate the release”, to the words “review details of the release”.
	2.2	Drawing 2-2	Add Spill Kit location to Site Drawing 2-2.
	5.3	Page 25	Modify Table 5-16 to add the Department of Fisheries and Oceans Canada to the list of regulatory agencies that are contacted.
31 Oct 2011	6.1	Page 32	Modify Step 6 to add "Environmental Site Information Database Change Request Form and Reports (i.e., Phase II ESA, remediation reports, groundwater monitoring reports.)"

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.