Model Class Screening Report for Hydrometric Station Projects in Ontario Region

Environment Canada

Prepared by:
Environment Canada
and AECOM Canada Ltd.
(formerly Gartner Lee Limited)

Date:
April 2011

This Report should not be perceived as a substitute for the *Canadian Environmental Assessment Act*, the *Fisheries Act* or any other federal legislation referred to in this Report. In the event of any inconsistency between this Report and the legislation, the latter would prevail. Individuals with specific legal concerns are urged to seek legal advice.

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1. Introduction

Canada's water resource is a fundamental part of the country's diverse and complex ecosystem. The management of this resource has evolved as a cooperative endeavour between the federal and provincial governments. The national hydrometric program is a good example of this cooperation. This program provides for the collection, interpretation, and dissemination of surface water quantity data and information that is vital to meet both human water management and ecosystem needs across the country.

The national hydrometric program is carried out under formal agreements signed between Environment Canada and each of the provinces and Indian and Northern Affairs Canada representing the territories in 1975, under the Canada Water Act. The agreements provide for the collection of surface water quantity data on a national basis, with costs shared according to specific interests and needs. The hydrometric program's network of water level and stream flow stations is managed and maintained through separate agreements between Environment Canada and the provincial and territorial authorities or other parties of interest. Each agreement establishes a Coordinating Committee composed of members representing all parties to the agreement. The committee meets at least once a year to plan and continually review the water quantity survey network. Among its more specific tasks, a committee would, for example:

- review and determine the designation of stations (for example, a station could be designated as Federal, Federal-Provincial or Provincial and would be funded respectively at 100%, 50%, 0% by the Federal Government);
- assure the maintenance of standards in procedures, data compilation and instrumentation;
- review annual operating costs;
- prepare annually a new fund transfer schedule; and
- prepare an annual report of activities and costs.

The role played by Environment Canada at a specific station can vary depending on where it is located and on the station's designation. But, in general, Environment Canada operates all stations in Canada, except in Quebec, and receives funds from the counterparties for providing its services. Therefore, it is often the project proponent (i.e., the party that proposes the project). In Quebec it is the opposite: the provincial government operates the stations and receives the funds. Station information and the data collected are maintained in a national archive and made available to clients and the public via Environment Canada's Water Survey Program website at http://www.ec.gc.ca/rhc-wsc.

Hydrometric stations are located on lakes, rivers, and streams of many sizes, ranging from drainage basins as small as a few hectares to large watersheds. At each station, water level data are recorded continuously, using a mechanical (analogue) recorder or in digital form using an electronic recorder, or

"data logger". Measurements are done periodically to define a relationship between water level and discharge, which is used to generate a time series of stream flow data from the recorded water level data.

The monitoring technology is currently a mix of aging analogue water level recorders and modern digital recorders. Approximately 45% of the network has now been fitted for telemetry in support of real-time data processing and dissemination. Real-time technology has helped to significantly improve the efficiency of operation through the continuous monitoring of the sensors at remote stations. This has enabled the efficient scheduling of repair and maintenance visits.

Nearly 80 percent of the active hydrometric stations were constructed to serve a specific water management purpose at a specific site. However, over time the data from many of these stations will be used to address numerous other water-related issues. The other 20 percent of the hydrometric stations are strategically located to document hydrological characteristics and processes required to understand the regional hydrology. Some monitoring stations are required for determining the quantity of water crossing the Canada/United States border or water levels in a shared water body. These are referred to as international gauging stations.

A national modernization strategy is in place with the goal of providing more efficient and effective data acquisition, processing and dissemination, and providing these services in real-time. Under this strategy, automated state-of-the-art technology is being introduced to all aspects of the field, office, and data delivery elements of the hydrometric program.

As part of this modernization strategy Environment Canada plans to undertake a variety of physical works related to hydrometric stations. This work may involve the construction and operation of new stations, decommissioning of selected stations and conducting clean-up (site remediation) activities. In order to proceed with such physical works, Environment Canada must conduct an environmental assessment (EA) to fulfill its requirements under the *Canadian Environmental Assessment Act* (CEAA). From Environment Canada's experience over the last two years with individual project screenings and from recent experience with the development of Class Screenings, it is now evident that more gains in efficiency can be achieved by using a Class Screening process for these projects.

Environment Canada initiated the preparation of this model class screening report (MCSR) in order to fulfill its requirements under CEAA, through a consistent and streamlined EA procedure. The longer term objective is to have a MCSR that would be applicable nationally for the construction, operation, modification, clean-up and decommissioning of hydrometric stations as well as the possible abandonment of some underground structures. Environment Canada will be responsible for all reporting and coordination requirements under CEAA and this MCSR.

As a potential Responsible Authority (RA) for projects that require an authorization under the *Fisheries Act*, Fisheries and Oceans Canada has agreed to use the Class Screening process with Environment Canada to fulfill its EA requirements.

Transport Canada will be an RA for projects that require an authorization under the *Navigable Waters Protection Act* (NWPA) and which trigger CEAA. Transport Canada has also agreed to use the process outlined in this MCSR to fulfill its EA requirements.

1.1 Class Screening and the Canadian Environmental Assessment Act

The *Canadian Environmental Assessment Act* (the Act) and its regulations set out the legislative basis for federal environmental assessments. The legislation ensures that the environmental effects of projects involving the federal government are carefully considered early in project planning. The Act applies to projects which require a federal authority (FA) to make a decision or take an action, whether as a proponent, land administrator, source of funding or regulator (issuance of a permit or license). The FA then becomes a responsible authority (RA) and is required to ensure that an environmental assessment of the project is carried out prior to making its decision or taking action.

Most projects are assessed under a screening type of assessment. A screening systematically documents the anticipated environmental effects of a proposed project, and determines the need to modify the project plan or recommend further mitigation to eliminate adverse environmental effects or minimize the significance of these effects.

The screening of some repetitive projects may be streamlined through the use of a class screening report. This kind of report presents the accumulated knowledge of the environmental effects of a given type of project and identifies measures that are known to reduce or eliminate any significant adverse environmental effects. The Agency may declare such a report appropriate for use as a class screening after taking into account comments received during a period of public consultation.

A model class screening consists of two reports:

- A model class screening report (MCSR) that defines the class of projects and describes the associated environmental effects, design standards and mitigation measures; and
- A class screening project report (CSPR) that describes any additional information (e.g. environmental setting, environmental effects, design standards and mitigation measures, and follow-up) needed for each project assessed under the MCSR, and a determination regarding the significance of environmental effects of that project.

The following six criteria for model class screenings apply to the projects assessed in this MCSR:

1. *Well-defined project:* A class screening process is applicable to hydrometric station projects because the proposed construction, operation and maintenance, clean-up, decommissioning and abandonment of hydrometric stations involve a number of common physical works and activities. These projects are well defined in terms of the equipment used, how and where hydrometric stations are installed, and how the equipment and station sites are maintained, cleaned-up and decommissioned. The design, function and purpose of the all works and activities assessed in this MCSR are described in detail based on common best practices.

2. *Well-understood environmental setting:* While site specific details are unknown, the environmental settings for hydrometric stations are well understood. For example, all hydrometric stations are located along lakes, rivers, and streams. Sites for the station shelters are typically located on flat areas or table lands above the stream bank. Typically, natural stream controls such as riffles or rapids exist. Hydrometric station sites are typically located far enough above the confluence with other streams or reservoirs to avoid backwater during high flow periods and often contain a pool for the gauge, preferably above the riffle or rapids. Many station sites are located along existing road rights-of-way near bridges.

3. *Unlikely to cause significant adverse environmental effects, taking into account mitigation:* The projects assessed in this MCSR are identical to hundreds of other projects that have been assessed by Environment Canada as individual screenings. The limited range of physical works and activities undertaken, the application of standard mitigation measures and the implementation of strict clean-up protocols help ensure that hydrometric station projects are unlikely to cause significant adverse environmental effects.

4. *Follow-up measures (if necessary)*: The MCSR provides a mechanism for its users to consider the need to conduct follow-up and to report the results. As such, follow-up will be considered on a project by project basis.

5. *Effective and efficient planning and decision-making process*: From Environment Canada's experience over the last several years with individual project screenings and from recent experience with the development of Class Screenings, it is now evident that more gains in efficiency can be achieved by using a Class Screening process for these projects. This MCSR ensures that its users obtain and consider sufficient information about the projects to determine the appropriateness of the MCSR, determine the need for and methods of consultation, consider project effects and mitigation measures that are not included in the MCSR, and determine the significance of residual and cumulative adverse effects.

6. *Public concerns unlikely:* For several decades, Environment Canada has assessed projects identical to those assessed in this MCSR. There have been no, or very few, public concerns regarding these projects.

Class screening is a two-part EA process consisting of a Model Class Screening Report (MCSR) and a Class Screening Project Report (CSPR) which are described below.

Model Class Screening Report (MCSR)

A MCSR sets out the EA process for projects within a particular class. The MCSR typically includes the rationale for the projects included in the class, the scope of project, the scope of assessment, the typical environmental setting, the potential environmental effects, the mitigation measures to be applied, and follow-up and monitoring requirements, if applicable. The MCSR also describes the process and procedures that will be followed in assessing projects within the class including roles and responsibilities, referrals, documentation requirements, an amendment mechanism and any other issue that is appropriate.

Class Screening Project Report (CSPR) (forms)

A (CSPR) is a project specific class screening report that is prepared in accordance with the procedures outlined in the MCSR. The CSPR contains additional site specific information to supplement the information contained in the MCSR. Typically, CSPRs are designed as forms for the RA(s) to fill out and sign-off. Together, the MCSR and the CSPR constitute a class screening and provide the basis for meeting the requirements of CEAA.

1.2 Applicability of Class Screening to Hydrometric Station Projects in Ontario

This MCSR was developed by Environment Canada in cooperation with the Agency, Fisheries and Oceans Canada, Transport Canada and other government departments and provincial authorities. This MCSR is intended for use in Ontario by Environment Canada as a tool to:

- promote the protection of the environment and ensure that hydrometric station projects are undertaken in an efficient and effective manner; and
- provide a consistent, predictable and streamlined approach to EA of hydrometric station projects;
- improve the information exchange with project proponents by clarifying expectations in the EA process; and
- contribute towards national guidance for Environment Canada staff.

The class screening helps ensure that all requirements of CEAA are fully addressed. It also helps ensure that Environment Canada demonstrates exemplary compliance with CEAA, which is consistent with its role in promoting EA as a tool to anticipate and prevent the degradation of environmental quality. In

developing and applying this class screening process Environment Canada is encouraging the integration of environmental factors into planning and decision-making in support of sustainable development.

1.3 Development of the Model Class Screening Report

The major steps that were followed to develop the MCSR are illustrated in Figure 1.3-1, followed by a brief description of each step.

Table 1.3-1
Major Steps in the Development of the MCSR

1. Definition of the Project Class: • project description • identification of trigger under the *Canadian Environmental Assessment Act*
2. Description of environmental effects of hydrometric station projects.
3. Identification and development of design standards and mitigation measures for potential environmental effects of projects and associated activities.
4. Development of the format and requirements for the Class Screening Project Report (CSPR).
5. Preparation of the Model Class Screening Report (MCSR).
6. Submission to the Canadian Environmental Assessment Agency for review and declaration.

Step 1: Definition of the Project Class

The first step in the development of the MCSR was to review the hydrometric station projects that have been undertaken or are planned to be undertaken in Ontario by Environment Canada to determine if they are all subject to CEAA and may be amenable to and benefit from a class screening assessment approach. From this review, appropriate criteria for hydrometric station projects and their associated activities to be included in the MCSR were identified.

Step 2: Description of the Environmental Effects of Hydrometric Station Projects

The second step in the process was to identify and describe the potential environmental effects of the projects that are covered by the MCSR. This involved:

- describing the typical activities and equipment used that are associated with the construction, operations, modification and maintenance, station clean-up, and decommissioning and abandonment of hydrometric station projects;
- describing the typical environmental components that are potentially affected during all project phases;
- identifying the potential environmental effects of project activities;
- identifying appropriate and accepted design standards and mitigation measures to avoid, reduce or eliminate the adverse environmental effects that could potentially occur;
- assessing potential effects of accidents and malfunctions and identifying accepted control and response measures;
- considering potential cumulative effects; and,
- identifying potential residual effects (including cumulative effects) and their likely significance.

Step 3: Identification and Development of Design Standards and Mitigation Measures for Projects and Associated Activities

The third step in the development of the MCSR was based on the results of the second. In this step, design standards and mitigation measures applicable to the class of hydrometric station projects were identified and further described. The design practices and mitigation measures reflect accepted environmental best management practices and standards for the construction, operation, modification and maintenance, clean-up, and decommissioning and abandonment of hydrometric stations.

Step 4: Development of the Format and Requirements for the Class Screening Project Report (CSPR)

The fourth step in developing the MCSR was to identify and outline the process and procedures through which a screening of a project subject to the class would be completed. This involved examining the results of steps 1, 2 and 3 and incorporating them in the screening process. Recognizing that the environmental setting at each project location could be different, emphasis was placed on procedures to identify site specific conditions and to adjust design standards and mitigation measures to reflect

variations in the environmental conditions. Once the screening process was determined, the format and requirements for the CSPR were identified. The CSPR documentation highlights the site specific variations and provides instructions for referring to, and recording the outcome of consultations with, certain agencies. In particular, specific sections are provided to record referrals to competent ministers under the Species At Risk Act (SARA) and to other RAs for projects requiring a Section 35(2) authorization under the *Fisheries Act* from Fisheries and Oceans Canada, or an approval under Paragraph 5 of the NWPA from Transport Canada.

Step 5: Preparation of the Model Class Screening Report (MCSR)

In this step, the results of all of the previous steps were brought together to form the MCSR for hydrometric station projects in Ontario. The report describes the:

- type of projects covered by the MCSR and any associated activities that should be included in the assessments;
- typical environmental settings in which these kinds of projects are located;
- typical environmental effects associated with these projects;
- design standards and mitigation that would be applied, given both the environmental setting and the project characteristics;
- the significance of environmental effects;
- follow-up and monitoring requirements; and,
- process and procedures by which class screenings would be conducted under the MCSR, including the information required to be documented in a CSPR.

Step 6: Submission to the Canadian Environmental Assessment Agency for Review and Declaration

The MCSR was submitted to the Agency for declaration in accordance with the requirements of CEAA.

1.4 Consultations

Consultation with Federal or Provincial Government Departments and Agencies

During the development of this MCSR, consultation was undertaken within Environment Canada through a special committee comprised of representatives from a variety of Environment Canada branches, and the Agency. Consultations were also undertaken with other federal departments such as Fisheries and Oceans Canada, Indian and Northern Affairs Canada, Transport Canada and Industry Canada. Consultations with Provincial authorities such as the Ontario Ministry of Natural Resources, and Ontario Ministry of Environment were also undertaken during this federal / provincial coordination meeting.

A draft of the MCSR was issued for comment to Fisheries and Oceans Canada, Indian and Northern Affairs Canada, Parks Canada, Industry Canada and Transport Canada. Provincial agencies such as the Ontario Ministry of Natural Resources, Ministry of Environment and Conservation Ontario were also provided a draft MCSR for review. All comments received were considered and the report modified where appropriate.

Consultations were undertaken for the 2011 re-declaration of this MCSR with Fisheries and Oceans Canada, Transport Canada, the Canadian Environmental Assessment Agency, and representatives from Environment Canada's EA program in the Department's headquarters and regional offices, and environmental assessment practitioners from within the Department's hydrometric program who conduct class screenings using this MCSR.

Public Consultation

Following its submission to the Agency, the MCSR underwent a period of public review prior to declaration. The Agency conducted this public consultation on the MCSR during December 2003 and January 2004. All comments received were taken into consideration before its declaration.

2. Hydrometric Station Projects Subject to the Class

The following sections define those hydrometric station projects that are subject to Model Class Screening and those excluded from the Model Class Screening due to project or site specific conditions.

2.1 Projects Subject to CEAA

To require an EA under CEAA, a project must:

1) be an undertaking in relation to a physical work (that is not otherwise excluded by the provisions of the *Exclusion List Regulations*) or a physical activity captured in the *Inclusion List Regulations* of CEAA; and
2) under section 5 of CEAA, have Environment Canada or another federal authority with one or more of the following responsibilities:
    a) is the proponent of the project;
    b) grants money or other financial assistance to the project;
    c) grants an interest in land to enable the project to be carried out; or
    d) exercises a regulatory duty in relation to a project, such as issuing a permit, license or authorization that is covered under the *Law List Regulations*.

Hydrometric station projects include the construction, operation and maintenance, modification, clean-up, decommissioning and abandonment of hydrometric stations. These undertakings are considered to be physical works and are therefore subject to CEAA. Clean-up work at hydrometric stations triggers CEAA through the *Inclusion List Regulations* (paragraph 41.1) and is considered to be a physical activity.

Since Environment Canada is either the proponent of hydrometric station projects or grants money or other financial assistance to projects subject to this MCSR, Environment Canada has declared itself a RA under Section 5 of CEAA. Fisheries and Oceans Canada may also declare itself a RA for some hydrometric station projects outlined in this MCSR, if there is a requirement to issue an authorization under Sections 35(2) of the *Fisheries Act*, which is a trigger under the *Law List Regulations* of CEAA. Transport Canada may also declare itself a RA for some of Hydrometric Station projects outlined in the class, if there is a requirement to issue an approval under section 5 or paragraph 6(4) of the NWPA, which may trigger CEAA through the *Law List Regulations.* In such cases where Environment Canada and either of these other federal departments are RAs for a project, Environment Canada will coordinate the completion of the CSPR for the project in consultation with those RAs.

A number of other federal departments may play a role as an expert federal department for the assessment of hydrometric station projects. They may provide advice and guidance and/or mitigation that address site specific issues on a project-by-project basis.

2.2 Projects Excluded under CEAA

Projects may be excluded from an EA if they are described on the *Exclusion List Regulations.* Hydrometric station projects that trigger CEAA are not likely to be described in the *Exclusion List Regulations*. This is primarily because such projects are all carried out in or within 30 m from a water body; and/or may involve the likely release of a polluting substance into a water body.

2.3 Projects Subject to the Model Class Screening Report

Although this MCSR focuses on Ontario Region, it is intended that in the longer term it will be a nation-wide tool. Hydrometric station projects subject to the MCSR are those undertakings in relation to a physical work or physical activities as described in Table 2.3-1.

Table 2.3-1.
Projects Subject to the MCSR

Name of Class	Summary Description
1. New or Modified Hydrometric Stations	➢ The proposed construction, modification, operation and maintenance, decommissioning and abandonment of hydrometric stations in the Province of Ontario.
2. Hydrometric Station Cleanup	➢ The proposed cleanup of contaminated shelters and soils at hydrometric stations in the Province of Ontario.
3. Hydrometric Station Cleanup and Decommissioning	➢ The proposed clean-up of contaminated shelters and soils, decommissioning and abandonment of hydrometric stations in the Province of Ontario.

2.4 Projects Not Subject to the Model Class Screening Report

Some projects which require an EA under CEAA are not subject to this MCSR as their environmental effects are either unknown or may be significant. In some cases, this may be known at the beginning of the EA process (based on the project information provided by the project proponent) or during the preparation of the EA, based on new information about the project and its environmental setting. Such projects are not covered by this MCSR and will require a separate individual EA. The project or site specific conditions that would force a project out of this Class Screening are as follows:

- any "physical works" or "physical activities" for which CEAA applies and that are not described in Table 2.3-1;
- projects that would require a permit under the *Species at Risk Act* (SARA)

- projects that are likely to have an adverse effect on species at risk, either directly or indirectly, such as by adversely affecting their habitat*****. For the purposes of this document species at risk include:
  - species identified on the List of Wildlife Species at Risk set out in Schedule 1 of SARA, and including the critical habitat or the residences of individuals of that species, as those terms are defined in subsection 2(1) of SARA
  - species that have been recognized as "at risk" by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) or by provincial or territorial authorities;
    - Note that this MCSR does apply to projects in areas that may contain species at risk; however, **if after commencing a class screening using this MCSR, it becomes known or reasonably suspected that species at risk could be adversely affected by the project, do not proceed.** Refer to Section 7.1 "Instructions for Completing a Class Screening Project Report" for guidance.
- projects located in a National Park;
- projects located in a Migratory Bird Sanctuary or National Wildlife Area;
- projects that involve clean-up of any contaminant other than hydrocarbons (e.g., from equipment leaks) and mercury;
- projects within or adjacent to a water body, which involve the excavation, exposure or storage of natural rock with demonstrated acidic drainage;
- projects that involve the development of new permanent roads or trails required to provide access for the movement of heavy machinery;
- projects that involve the construction, decommissioning or abandonment of structures on two sides of an international or inter-provincial boundary;
- projects that involve the deposit of a deleterious substance into waters frequented by fish or into any place under any conditions where the deleterious substance may enter waters frequented by fish, and
- projects that involve the deposit of a substance that is harmful to migratory birds into waters or an area frequented by migratory birds or into a place from which it may enter such waters or such an area that is harmful to migratory birds.

Note that if at any time after commencing a CSPR, it becomes known or reasonably suspected that species at risk could be adversely affected by the project, do not proceed.

2.5 Projects that Require Referral to or Consultation with Other Federal or Provincial Government Departments and Agencies

In certain circumstances, hydrometric station projects may require consultation with a specific unit of Environment Canada, consultation and/or a referral to another federal or provincial government

department or agency to address projects or site-specific issues (e.g. species at risk, fisheries, navigable waters, requirements for provincial work permits, etc.). Please refer to Chapter 6 of this MCSR for details on the roles and responsibilities of regulatory and advisory departments involved in projects assessed under this MCSR.

Competent Minister for Species at Risk

Under s.79(1) of SARA, the RA **must** notify the competent Minister (or Ministers) if the project is likely to affect a listed wildlife species or its critical habitat. The notification must be made in writing. Competent ministers under SARA are:

a) the Minister of Fisheries and Oceans Canada with respect to aquatic species, other than individuals mentioned in paragraph (b); and

b) the Minister of the Environment with respect to all other individuals, including individuals in or on federal lands that are administered by that Minister and that are national parks, national historic sites, national marine conservation areas, or other protected heritage areas as those expressions are defined in subsection 2(1) of the *Parks Canada Agency Act*;

As of December 12, 2003, the Parks Canada Agency reports to Parliament through the Minister of the Environment. However, it remains an agency that is separate from Environment Canada and continues to exercise the powers, duties and functions relating to the species at risk within the protected areas it manages. Where individuals of species at risk are located in protected areas managed by Parks Canada, notifications should be sent to the Parks Canada Agency.

Depending on the species at risk, the RA must without delay notify Environment Canada, Parks Canada or Fisheries and Oceans Canada. Where there is more than one competent minister responsible for the species affected, notification must be sent to each department or agency with responsibility for the species. All three have determined that notification should be regional, through the usual EA channels for that department.

Parks Canada's authority under SARA is limited to the protected areas it manages. Projects within National Parks are not eligible for assessment under this MCSR; however, it may be appropriate to notify Parks Canada if a project is adjacent to a protected area they manage in the case where individuals of the species at risk under concern may cross park boundaries. Such notification would be required under 79(1) of SARA.

Subsection 79(2) of SARA requires that, where a federal EA is being carried out on a project that may affect a listed wildlife species or its critical habitat:

- potential adverse effects on the listed species or its critical habitats must be identified and mitigated;
- the effects on the listed species must be monitored, if the project is implemented; and
- such mitigation measures must be consistent with recovery strategies and action plans.

Environment Canada

Internal consultation with **Environment Canada – Canadian Wildlife Service** is required to confirm whether or not there are any project specific mitigation measures (in addition to those identified in the MCSR) to be applied to the project to ensure that there is no potential for significant adverse effects on migratory birds, species at risk (for which Environment Canada is the expert FA or other implications with respect to the *Migratory Birds Convention Act* 1994, *SARA* and the Federal Policy on Wetlands Conservation.)

Other internal consultations within **Environment Canada** may also be required to confirm whether or not there are any project specific mitigation measures (in addition to those identified in the MCSR) to be applied to the project to ensure that there is no potential for significant adverse effects on soils, groundwater or surface water due to the potential discharge of a deleterious substance.

Fisheries and Oceans Canada

Consultation with Fisheries and Oceans Canada, as an FA, is required to confirm whether or not there are any project specific mitigation measures (in addition to those identified in the MCSR) to be applied to the project to ensure that there is no potential for significant adverse effects on species at risk (for which the Minister of Fisheries and Oceans Canada is the competent minister) or other implications with respect to *SARA.*

Referral to Fisheries and Oceans Canada, as a potential RA, is required when works or undertakings may require a regulatory approval under the *Fisheries Act.* Where a *Fisheries Act* authorization is required, Fisheries and Oceans Canada will also be a RA for the EA as this regulatory approval will trigger CEAA. For the purposes of this MCSR, Fisheries and Ocean Canada have identified the following works or undertakings that would typically require a referral for regulatory review and approval:

- construction, modification, decommissioning or abandonment of stream control structures, such as weirs, flumes, gabion baskets, or other, that result in a change in operation, a barrier to fish movement or alteration of flows; and
- construction, modification or decommissioning or abandonment of hydrometric stations that involve the use of explosives in or near water where the mitigation measures outlined in the Guideline for the use of Explosives in or near Canadian Fisheries

Waters[1] (Department of Fisheries and Oceans, 1998) cannot be met or an explosive charge greater than 1 kg per detonation is required.

Fisheries and Oceans Canada's national and area Operational Statements (available 2005/2006 onwards) list project designs and mitigation measures that would, when applied under specific circumstances for certain types of projects, prevent adverse effects on fish habitat. These Operational Statements are being made available to federal government departments, including Environment Canada. Proponents who intend to implement fish habitat protection measures outlined in the Operational Statements should notify Fisheries and Oceans Canada of their plans but may proceed with their project without a formal review under the *Fisheries Act.* Any Operational Statements relevant to projects assessed by this MCSR should be considered in association with the applicable measures described in this document.

Transport Canada

Transport Canada should be consulted whenever there are questions as to whether project or site specific conditions warrant project specific mitigation measures pertaining to navigation in addition to those identified in the MCSR or if there is any uncertainty whether the project may interfere with navigation, as the Navigable Waters Protection Program makes the determination of navigability.

*The Navigable Waters Protection Ac*t (NWPA) provides for the protection of the public's right to navigation in Canada. With the exception of those works described under the NWPA Minor Works and Waters Order, no work shall be built or placed in, on, over, under, through or across any navigable water without prior NWPA approval.

"Works" are defined under the NWPA as:

a) any man-made structure, device or thing, whether temporary or permanent, that may interfere with navigation; and
b) any dumping of fill in any navigable water, or excavation of materials from the bed of any navigable water, that may interfere with navigation.

Navigable waters are defined as any body of water capable of being navigated by floating vessels of any description for the purpose of transportation, recreation or commerce, and includes a canal or any other body of water created or altered for public use as a result of the construction of any work.

Certain works, called "minor works", that will not limit or prevent navigation, do not require approval pursuant to the NWPA under the condition that they will be placed, built and maintained according to the NWPA Minor Works and Waters Order. Classes of works addressed under the Minor Works and Waters

[1] *This document can be found at:*
http://www.dfo-mpo.gc.ca/canwaters-eauxcan/infocentre/guidelines-conseils/guides/explosguide/index_e.asp

Order include aerial cables, docks and boathouses, dredging, erosion protection works, water intakes, pipeline crossings, submarine cables, temporary works and winter crossings.

The determination of "minor" is a self-assessment tool, meaning that it is the responsibility of the proponent to determine if their works are considered minor in accordance with the Minor Works and Waters Order. In the event that works to be placed in, on, over, under, through or across navigable waters are not listed as minor and/or can not be completed in accordance with the specific standards and criteria listed under the Minor Works and Waters Order, an NWPA application must be made. Failure to construct works in accordance with the standards and criteria identified in the Minor Works and Waters Order could result in enforcement action.

The NWPA application process and type of approval required varies depending on the complexity and the nature of proposed works. Once an NWPA application has been made, officials from the Navigable Waters Protection Program determine the extent of interference to navigation associated with the works (i.e. substantial or other than substantial) and determine the applicable NWPA approval required.

Section 5 of the NWPA typically applies to new works affecting navigable waters. Depending on the extent of interference to navigation, works may require either a section 5(2) or 5(3) approval. Works that have the potential to substantially interfere with navigation require an approval under subsection 5(2), triggering the need for an environmental assessment pursuant to CEAA. Works that have the potential to interfere other than substantially require an approval under subsection 5(3). Depending on the type of works (i.e. if the scope of works includes a bridge, boom, dam or causeway), the 5(3) approval process may also trigger the need for an environmental assessment under CEAA.

Section 10 of the NWPA applies to existing "*lawful*" works that are being rebuilt, repaired or altered, provided the changes do not increase interference to navigation. A "*lawful*" work is considered any work not contrary to the law in force at the place of construction of the work at the time of its construction. Section 10 of the NWPA does not trigger the requirement for an environmental assessment pursuant to CEAA.

Section 6(4) of the NWPA allows for the approval of work where construction has already commenced, subject to deposit and notice, as in the case of a proposed new work. Section 6(4) approvals trigger the requirement for an environmental assessment in accordance with CEAA.

This MCSR does not exempt a proponent from the requirement to obtain approval in accordance with Federal laws such as the NWPA.

Other Departments

Depending on the funding partnerships, project location and who acts as the proponent of the project, Environment Canada will consult other departments on a case by case basis.

Provincial and Local Governments and Agencies

Projects involving work in floodplains, wetlands designated sites/areas of special concern (e.g., Areas of Natural or Scientific Interest, Environmentally Significant Areas, etc.) will warrant consultation with the provincial authorities responsible for natural resource management (e.g., Ontario Ministry of Environment, Ontario Ministry of Natural Resources, Conservation Ontario and individual Conservation Authorities). However, project proponents are responsible for ensuring that the project meets all legislative requirements that are applicable at the time of planning and carrying out the undertaking; and that all applicable licenses, permits and authorizations are obtained from relevant authorities.

2.6 Projects that Require Consultation with Aboriginal Groups

Apart from any requirements under CEAA, there may be an obligation to consult Aboriginal groups. In such cases, refer to the relevant policies and guidelines of the Government of Canada concerning aboriginal consultations.

2.7 Determining the Scope of the Project and of the Assessment

This MCSR is limited to the works and physical activities identified in Section 2.3. If a project is associated directly or indirectly with any works and activities not assessed by the MCSR, the RA must determine the scope of the project to be assessed and the corresponding scope of the environmental assessment. The Canadian Environmental Assessment Agency's *Operational Policy Statement for Establishing the Project Scope and Assessment Type under the Canadian Environmental Assessment Act* provides the following guidance:

"In determining whether a project scope should be expanded beyond the project as proposed by the proponent, responsible authorities should consider how the additional components are linked to the project as proposed by the proponent. Where these components are connected actions, for instance:

- where one is automatically triggered by another;
- where one cannot proceed without the other; or
- where both are part of a larger whole and have, if considered separately, no independent utility.

The project scope should generally be expanded to include any such additional component(s). In making a final determination in that regard, it will be important to work in cooperation with any other jurisdiction involved in the assessment (e.g., a province) to ensure that all the components that may have to be included in the scope of the project have been identified and considered.

Project phasing is a common phenomenon in sectors such as infrastructure. In phased projects, details and timing of future phases may not be available and some phases may never be built as originally conceived.

In the assessment of these types of projects, future phases, unless these are connected actions, should be scoped as separate projects, but considered as much as possible as part of the cumulative effects assessment, taking into account the information that is available with respect to the final project as a whole (i.e., all the phases).

Based on the approach recommended in the preceding paragraphs, responsible authorities are expected to agree upon a single scope of project to provide the basis for a single scope of assessment and a single federal assessment process. (See: *Regulations Respecting the Coordination by Federal Authorities of Environmental Assessment Procedures and Requirements*)"

Responsible Authorities using this MCSR must apply the Operational Policy Statement on project scoping and, if in doing so determine that project scope encompasses components that are not captured by the MSCR, **may not proceed with a class screening of any component within the project's scope**.

3. Project Description and Physical Works and Activities

3.1 Hydrometric Stations

Hydrometric stations typically consist of instrument shelters, gauging equipment and data recorders, a power supply and ancillary equipment. The structures and equipment that comprise hydrometric stations are described below.

3.1.1 Instrument Shelters

Many hydrometric stations will have or require an instrument shelter. Various types and sizes of instrument shelters are possible. They vary from the small "look-in" shelters (on average 0.8 m X 0.8 m X 0.6 m high, only large enough to contain equipment, plus hands and/or head when working) to the standard walk-in shelter. Most 12-month stations are equipped with insulated walk-in shelters. Some stations although not in Ontario, are equipped with an electrical or a propane heater to prevent freezing during the winter. Shelters for northern stations may be equipped with an "arctic package", which consists of a highly insulated Styrofoam enclosure within the shelter. This serves to contain heat around the instrumentation. Shelters are built of metal, wood, concrete, or reinforced plastics. Some locations may require certain design and construction materials to conform to adjacent surroundings or withstand vandalism attempts. In some locations, the station warrants provision for accommodating personnel for one or more days. Such shelters will vary in size, design and content, depending on location and circumstances.

3.1.2 Gauging Equipment and Data Recorders

Hydrometric stations are typically equipped with an automatic recording gauge system, either in the form of a stilling well with float-actuated sensors or a pressure-actuated sensor. Pressure-actuated sensors are preferred to stilling wells because they require only a shelter and minimal ground disturbance and in-water works, resulting in fewer environmental effects. As such, the vast majority of future projects will have pressure-actuated sensors rather than stilling wells.

3.1.2.1 Stilling Wells

Stilling wells are usually installed at permanent gauging sites where banks are not subject to scour or erosion. A stilling well is a vertical well constructed of treated wood staves, metal pipe, concrete, corrugated culvert or other suitable material. Its dimensions can range from 0.5 m to 1.5 m in diameter and from 1 m to 15 m in depth.

A stilling well is usually placed a few metres onshore in the bank. It is connected with the body of water by steel intake pipes (through which water may freely flow in either direction). The well may also be placed directly in the body of water and secured to a wharf, bridge pier, abutments or dyke wall. The bottom of the stilling well must be at least 0.3 m below the minimum expected water level. The top must be above the maximum expected water level. A properly constructed stilling well must have the same water level as the lake or stream and be deep enough to cover all expected ranges in stage.

Intakes connect the well to the stream or lake such that when the water level changes in the stream, the level simultaneously changes in the well. A typical in-bank installation has two intakes: a lower pipe intake usually 3” in diameter and an upper intake of pipe of either 2x6 or 2x8 pressure treated wood box construction. The pipe intake is equipped with a flushing system for removing accumulations of silt. The intakes are installed perpendicular to the stream to prevent drawdown and surging in the well and provide a dampening effect for rapidly changing stage at flow stations. Some pipe intakes are equipped with a static tube that prevents surging and drawdown in the well. This tube is a short length of perforated pipe attached with a 90° elbow to the end of the intake. The static tube is positioned to point downstream. To prevent freezing, pipe intakes may be equipped with a heat tape for use with 110 V power service or a portable generator.

At flow stations, an upper wood box is sometimes installed approximately 0.5 m above the lower intake and at the same elevation as the control, or slightly higher. It provides an alternate connection to the well when the lower pipe intake is frozen or obstructed.

Data recorders for well installations are float-actuated. A float in the well transmits changes in stage to the recorder. The float is interfaced to the recorder by a beaded cable or perforated tape which rides over a pulley attached to the drive shaft of the recorder. The float wire or tape must hang vertically. The float must be free of any obstructions that would impede its vertical travel with changes in stage.

3.1.2.2 Pressure-Actuated Sensors

Pressure-actuated data recording systems are typically used in lakes and reservoirs. They can also be used in streams and rivers which are relatively stable and silt free. A typical pressure-actuated installation includes a pressure sensor, an interface for the sensor, and a stage recorder/logger. There are submersible and non-submersible sensors. The non-submersible sensor is mounted in an instrument shelter as a replacement for the mercury manometer and may use the same nitrogen gas bubbler and orifice system to monitor the pressure head. The submersible sensor is mounted on the streambed and does not require a bubbler system, eliminating the need for nitrogen gas and all the ancillary plumbing. It is mounted on an orifice block with a cable running back to the shelter.

There are several ways to do the interface between the sensor and the data logger or recorder. The old mechanical method used an instrument called a manometer with an electric motor, chain and sprocket. Manometers have been completely phased out of the Water Survey of Canada gauging station network and are no longer used. Modern electronic technology uses computer based equipment to read changes in the pressure of the nitrogen gas bubbles released by the sensor. This electronic technology has replaced the use of a mercury manometer.

3.1.3 Power Supply and Utilities

Electricity can be used to supply heat to gauge houses and intake pipes and to supply power for instrumentation. Most stations are powered with electricity coming from the local distribution grid and require a 5–25 amp hour gel cell battery and a matched gel cell charger. The battery acts mainly as a power buffer for the charging system, but is the principal power source when the main line power fails. Remote stations, those without a 120 volt power supply, require careful planning to accommodate both daily and seasonal load requirements. A basic power supply for a remote application consists of the following components:

- sealed gel type or lead acid battery of sufficient size to provide power during all seasons;
- solar panel charger sized to the battery and power draw during all seasons;
- solid state solar regulator to provide a constant voltage during all seasons;
- properly sized wiring, correctly marked (colour coded) and terminated (crimped and soldered); and
- proper grounding and lightning protection.

Telemetry instrumentation may require telephone service.

3.1.4 Artificial Stream Controls

Some form of stream control is necessary for the operation of hydrometric stations. Environment Canada attempts to locate its hydrometric stations near such stream controls, whether it is a natural or artificial control. An artificial control may be a weir (e.g., broad crested or V-notch weir, sheet pile weir), a flume (e.g., Parshall flume, H-flume), gabion baskets, or other rock/gravel controls.

Weirs are overflow structures built across an open channel to help measure the discharge in the channel. They may be constructed on or off-site, from materials such as concrete, wood, metal or fibre-glass. Similarly, a flume is a structure that is placed into a stream to provide an open flow section within which discharge can be measured. Gabion baskets and other rock/gravel controls typically involve placement of natural materials in the stream or along the stream bank to control flow.

Natural controls are preferred to artificial ones, however depending on local requirements and site conditions, an artificial stream control may be required as part of the hydrometric station. Existing artificial controls are used where appropriate.

3.1.5 Ancillary Equipment

A metering bridge may also be constructed at some hydrometric stations where stream flow through a stream section is well confined within a narrow section, usually less than 15 m wide. A cableway may be used where no traffic bridge exists near the station, or where an existing traffic bridge may be unsuitable for obtaining high water measurements. Some stations may be equipped with a permanent tagline or with permanent tagline anchor points to assist in making measurements by boat.

3.2 Physical Works and Activities

The proposed construction, operation and maintenance, modification, clean-up, decommissioning and abandonment of hydrometric stations may involve a number of common physical works and activities. These physical works and activities are described below. They represent the manner in which hydrometric station projects are typically implemented throughout each phase of development. They represent minimum project requirements and do not necessarily guarantee that adverse environmental effects will not occur. Mitigation measures to ensure that no significant adverse environment effects occur are identified in subsequent sections of this MCSR.

3.2.1 Vegetation Clearing and Grubbing

Depending on the condition of the station site, some vegetation removal may be required to provide sufficient open space to construct the shelter and provide access to the shoreline (i.e., between the shelter

and shoreline). This would involve cutting, clearing and grubbing of the area using heavy or hand equipment, depending on the vegetation type, size and accessibility of the site. Vegetation may need to be cleared periodically during station operations and maintenance. Clearing is to be kept to a minimum.

3.2.2 Earthworks

Earthworks such as soil stripping, stockpiling and storage, grading, excavation, trenching, filling and compacting will need to be undertaken as part of hydrometric station projects. Earthworks will be required for a variety of activities, including: the construction, maintenance, modification or decommissioning of shelters, stilling well and associated intakes, and pressure actuated sensors.

3.2.3 Operation of Heavy Equipment, Vehicles and Vessels

A variety of heavy equipment / machinery may be used during a project. Heavy equipment / machinery may include backhoes, bulldozers, bobcats. A variety of vehicles and vessels may be used during a project, particularly to access the station site and possibly to take water flow measurements. Typically trucks and trailers are used, however in more remote areas barges, floatplanes, helicopters and motorboats may be required to access the site. Fuel is used by equipment, vehicles and vessels. Re-fuelling and storage of fuel may be required at hydrometric station sites, and would occur at a minimum of 30 m from the water body.

3.2.4 Operation of Hand Machinery

Hand machinery may be used during a project. Hand machinery may include items such as weed whips, chain saws, shovels, pumps, pressure hose, generators, cement mixers, drills. Fuel is used by certain hand machinery. Re-fuelling and storage of fuel may be required at hydrometric station sites, and would occur at a minimum of 30 m from the water body.

3.2.5 Land Based Structures

Work on-shore will be required during a project in order to construct, modify, decommission or abandon structures and equipment such as: shelters, stilling wells, data recorders, fuel caches and utilities. Some of the work will necessarily be done within 30 m of a water body.

Hydrometric shelters may either arrive to the site assembled or disassembled. The construction of a hydrometric shelter, the installation of other equipment and onshore structures proceeds in the following manner:

- construction of foundation or cribbing from existing rocks, wood or poured concrete;
- placement of structure on foundation or cribbing (if shelter arrives assembled);

- construction of shelter floor and attachment to foundation or cribbing;
- assembly of shelter walls, roof structure and attachment to shelter floor;
- insulation of panels and electrical wires where applicable;
- installation of a stilling well at a location a few metres onshore in the bank (if required);
- connection of the stilling well with the body of water by installing steel intake pipes[2]. The bottom of the stilling well must be at least 0.3 m below the minimum expected water level. The top must be above the maximum expected water level; and
- construction of foundations or cribbing from existing rocks, wood or poured concrete, placement of cableway poles onto the foundation, and attachment of cable.[3]

The decommissioning of a hydrometric shelter with no potential for mercury contamination on-site proceeds in the following manner:

- removal of bolts, shelter walls, roof structure from the floor as well as insulation , panel and electrical wires (where applicable) for disposal;
- removal of the flashing on the floor edge, flooring, cribbing or foundation (wood or concrete) piece by piece for disposal;
- removal of stilling well walls (wood or metal) and fill to ground level with clean local material. In some cases, the stilling well can be filled to ground level without removing the walls completely;
- levelling of rocks used for weighting cribbing as appropriate; and
- disposal of all non-hazardous materials at an approved waste disposal facility. Hazardous materials are disposed of at a licensed disposal facility.

The decommissioning of hydrometric shelters, with the potential for mercury contamination on-site, proceeds according to Step 6 of the Hydrometric Stations Cleanup Protocol – Testing and Evaluation (March, 1999). The key activities include:

- removal of bolts located inside joint between the walls and floor typically held by steel cross members;
- removal of shelter walls, roof structure from the floor as well as insulation, panel and electrical wires (where applicable);
- placement of a plastic sheet underneath the floor as a catchment for mercury drops during the dismantling of the floor;

2. In some cases, stilling wells are assembled with intakes prior to the installation of the shelter.

3. Another option is to have large metal pads (2' x 2') attached to the tower legs and buried (1' to 2') below surface.

- any surfaces where mercury droplets are encountered are to be wrapped, labelled and removed for disposal as a hazardous substance;
- removal of the flashing on the floor edge and inspect for mercury droplets. If mercury is observed, vacuum all surfaces as the flashing is lifted;
- removal of flooring piece by piece and inspect for mercury. All surfaces are vacuumed as they are removed for disposal;
- after removal of the flooring, inspection of cribbing or foundation surface for mercury and vacuuming;
- removal of plastic sheeting and disposal of as hazardous materials if mercury droplets have been encountered;
- dismantling of cribbing and foundation (wood or concrete), and remove for disposal;
- removal of stilling well walls (wood or metal) and fill to ground level with clean local material;
- levelling of rocks used for weighting cribbing as appropriate; and
- disposal of all materials where mercury was not present at a non-hazardous waste landfill. Hazardous materials are disposed of at a licenses disposal facility.
- where required, the re-establishment of natural vegetation is undertaken.

3.2.6 In Water or Near Water Works

Work within or near water body will be required during a project in order to construct, modify, decommission or abandon in-water structures and equipment such as: pressure-actuated sensors, stilling wells, intakes and artificial stream controls. Some in-water works may also be required to maintain or modify existing weirs and flumes. These works may involve minor excavation to the shoreline (i.e., trenching) or stream bottom (i.e., dredging) to create, maintain or improve a gauge pool, a measurement section or to prepare a place for the installation of an artificial stream control. A gauge pool is an area along the shoreline or within the stream bottom of deeper water within which instrumentation may be placed. It also helps to ensure good connection to the well for the intakes. Depending on the scale of excavation, it can be done with hand tools or larger mechanized equipment, if required.

These works may also involve the installation or removal of hydrometric station structures and equipment within the stream (e.g., stilling wells may also be placed directly in the water body and secured to an existing wharf, bridge pier, abutments or dyke walls).

Where required, artificial flow controls are typically constructed by either by temporarily damming the streams with sand bags and pumping water around the installation site, or by isolating half of the stream using sand bags. Work would be done under “near” dry conditions. In-stream work is conducted over a short period of time, typically over one or two days. Sheet pile weirs are constructed by simply driving

interlocking sections into the river bed and rip-rapping the downstream side with clean or local rock. This type is installed without diverting water. Where required the station site and shoreline are restored with local vegetation to the extent possible.

Maintenance activities may also require the removal of beaver dams or other obstructions to the flow. *Fisheries Act* authorization may be required in situations where the beaver dam or other obstruction provides habitat for an established fish community or when its loss will affect critical or limiting fish habitat. Fisheries and Oceans Canada should be contacted if the beaver dam or other obstruction creates a pond 2 meters or greater in depth, and there are limited other deep areas in the watercourse (i.e. less than one per kilometre of stream) or if the beaver dam or other obstruction is located at a lake outlet, or if an explosive charge greater than 1 kg per detonation is required to breach or remove the dam or other obstruction. A provincial permit may also be required for the removal of some beaver dams.

3.2.7 Station Operation and Maintenance

Depending on the requirements of the data to be collected, hydrometric stations operate on a seasonal, continuous, or a variable basis. Seasonal stations operate less than 12 months each year. These stations usually operate from March to October but may operate for any other period, depending on the purpose of the station. For example, return flow stations for irrigation purposes may operate only during the irrigation season. Other seasonal stations may normally be dry for the period from November to February, so that a continuous record is not required. Continuous stations operate continuously for 12 months each year. Examples of continuous stations include:

- stations on a variety of large or small rivers, lakes and reservoirs, depending on local roads and data requirements;
- interprovincial stations;
- some international stations; and
- stations situated on power generating waters.

All hydrometric stations are routinely visited by trained technologists for maintenance to the station, to check and calibrate recording instruments and measure the stream discharge. To measure discharge, a technician identifies the most suitable cross-section; measures the width of the river; takes depth measurements and velocity readings at 20 to 25 locations along the cross-section to calculate the flow quantity or discharge. This is typically done in a number of ways:

- by wading (walking across the stream);
- using cableways (going across the river in a cable car suspended over it);
- from a bridge;
- using a boat; or

- from the ice cover in winter.

The frequency of visits to the stations by hydrometric personnel varies. Visits to discharge stations are made at intervals sufficient to define the stage–discharge relationship or to obtain shift corrections to the curve. Visits are usually made more often during spring runoff or during periods of variable backwater caused by ice conditions, beaver activity, etc. On average, continuous stations are visited 9 to 12 times per year. Visits to northern or remote stations depend on accessibility and the cost of access. For example, during winter, ice thickness at landing sites dictates visits by fixed-wing aircraft. On average, remote stations are visited 4 times per year.

Herbicides and fertilizers are not used. Pesticide use is limited to inside shelters where rodents cause damage to equipment.

3.2.8 Contaminated Soil Cleanup and Handling

Station clean-up involves strict adherence to established field protocol for the assessment and clean-up hydrometric sites. The protocol requires that station clean-up proceed according to prescribed steps, which are summarized below and provided in full detail in Appendix B "Field Protocol for the Mercury Assessment and Cleanup of Hydrometric Stations". In some jurisdictions, a more stringent clean-up standard for mercury is used to meet both the federal and provincial or territorial requirements. For projects subject to this MCSR, the applicable steps in the clean-up process are:

- Site reconnaissance, involves ensuring that a hazard assessment (i.e., physical and chemical hazards) has been completed on-site and appropriate site zones and decontamination areas have been established. Project personnel will familiarize themselves with the general work guidelines, safety equipment and the health and safety plan. Refer to Steps 1 and 2 of the protocol (Appendix B).
- Initial mercury vapour survey, involves preparing the vapour meter and taking background readings at least 20 m up wind of the site, taking readings in the middle of the shelter at breathing level, at the corners of the shelter at floor level, and at any other location where mercury may be present, such as, on tables, behind flashing, under the shelter. Refer to Step 3 of the protocol.
- Shelter clean-up, involves wearing full-face respirators and using a flashlight and magnifying glass to inspect for mercury droplets on surfaces, cracks, in corners and at edges. Using a HEPA filter vacuum cleaner or equivalent, vacuum the shelter inside, but keeping the vacuum itself outside of the shelter. Top layers of the flooring are removed, if present, without damaging the lower layers. All surfaces are washed with biodegradable soap using water from the nearby river, stream or lake. Finally, a Mercsorb and vapour suppressant is liberally applied to all surfaces, with powders swept

into corners and cracks. Residual powders are collected for disposal as a hazardous material. Refer to Step 4 of the protocol.

- Final mercury vapour survey involves preparing the vapour meter and taking background readings at least 20 m up wind of the site, taking readings in the middle of the shelter at breathing level, at the corners of the shelter at floor level, and at any other location where mercury may be present, such as, on tables behind flashing, under the shelter. This step must verify that air quality in the shelter is less that 0.005 mg/m^3. Should the reading indicate residual vapours, additional shelter cleaning and vapour surveys are undertaken. Refer to Step 5 of the protocol.

- Screening for mercury contaminated soils involves determining the presence and extent of mercury contamination in soils. Using a sealed disposable plastic trowel, background soil samples are collected off-site at an undisturbed location (i.e., minimum of 20 m upstream of the site). Other soil samples are taken from targeted locations surrounding the shelter (e.g., in front of the door, 1 m in front of the door, right and left hand corners of the shelter, a metre from the right and left hand corners of the shelter, under the floor of the shelter or under orifice lines leading from the shelter, and any depressions where mercury might collect if swept from the shelter. Samples are taken from the top 20 cm of soil. Soil samples are placed in a plastic bag, labelled, gently mixed with the excess air removed. All samples are stored in a cooler with ice packs at approximately 4°C. Vapour readings are taken using a mercury vapour analyzer and recorded. Readings in excess of 0.018 mg/m^3 for urban designated sites and 0.068 mg/m^3 for remote designated sites are screened as contaminated. In Ontario, the clean-up standard used is 10 ppm of mercury for all sites to meet the guidelines of the Ontario Ministry of Environment. All samples are sent for confirmation to a certified laboratory for Mercury Analysis using cold vapour atomic adsorption spectrophotometry (Environmental Protection Agency method 7471). Refer to Step 6 of the protocol.

- Soil clean-up involves excavation of the contaminated soils and their placement into either 5 gallon pails that can be sealed with a mallet or hammer (remote sites) or cleaned and sealed barrels (vehicle accessible sites). Confirmatory samples from the excavation walls and floor are taken and analyzed with a mercury vapour analyzer for comparison with appropriate screening criteria to determine if further excavation is required. All samples are sent for confirmation to a certified laboratory for Mercury Analysis using cold vapour atomic adsorption spectrophotometry (Environmental Protection Agency method 7471). Pails and barrels containing contaminated mercury soils are to be labelled for transport according to the *Transportation of Dangerous Goods Act*. Refer to Steps 6 and 7 of the protocol.

- If contaminated soils have been removed from the site, excavations are required to regrade the site and fill holes to prevent hazards to Environment Canada personnel and the public. Refer to Step 8 of the protocol.

3.3 Summary of Physical Works and Activities (Project Components)

The physical works and activities associated with each type of hydrometric station project are summarized in the following table (Table 3.3-1). Please note that for the purpose of this MCSR, physical works and activities are also called project components.

Table 3.3-1.
Physical Works and Activities (project components)
for Hydrometric Station Projects
• = interaction, blank = no interaction

Project Components	Classes		
	1. New or Modified Hydrometric Stations	2. Hydrometric Station Cleanup	3. Hydrometric Station Cleanup and Decommissioning
Contaminated Soil Cleanup and Handling		•	•
Earthworks	•	•	•
In-water or Near Water Works	•	•	•
Land Based Structures	•	•	•
Operation of Hand Machinery	•	•	•
Operation of Heavy Equipment, Vehicles and Vessels	•	•	•
Station Operation and Maintenance	•		
Vegetation Clearing and Grubbing	•	•	•

3.4 Accidents and Malfunctions

The following table (Table 3.4-1) identifies the potential accidents and malfunctions associated with each type of hydrometric station project. These accidents and malfunctions may be caused by human error, deliberate action (e.g., vandalism) or by wildlife, which may result in environmental effects. For example, human error or equipment failure may result in a fuel spill which could affect surface water

quality. Vandalism may result in a fire that could potentially results in a loss of terrestrial habitat. Wildlife may also cause structural failures to cableways, tag lines and instrument shelters which could affect navigation. All accidents and malfunctions can cause personal injuries for workers and the public.

Table 3.4.1.
Potential Accidents and Malfunctions Associated with Hydrometric Station Projects
• = interaction, blank = no interaction

Project Components	Accidents and Malfunctions					
	Equipment Misuse or Malfunction	Fires	Spills and Leaks	Structural Failures	Vehicle Collisions	Vessel Collisions
Contaminated Soil Cleanup and Handling						
Earthworks						
In-water or Near Water Works						
Land Based Structures			•	•		
Operation of Hand Machinery	•		•			
Operation of Heavy Equipment, Vehicles and Vessels		•	•		•	•
Station Operation and Maintenance	•		•	•		
Vegetation Clearing and Grubbing						

4. Typical Site Conditions and Environmental Settings

Hydrometric stations are located along lakes, rivers, and streams of many sizes, ranging from drainage basins as small as a few hectares to large watersheds. Station sites are carefully selected to ensure the efficient collection of accurate hydrometric data. The final selection of the gauge site depends on many factors such as:

- the purpose of the hydrometric station;

- the geographical features of the area;
- accessibility, availability of services; and
- the cost of site installation and operation.

Typically, station sites are located along stream sections that have a stable slope. Sites for the station shelters are typically located on flat areas or table lands above the stream bank.

A stream control is necessary for the operation of a hydrometric station. Where natural stream controls such as riffles or rapids exist, hydrometric station sites are typically located far enough above the confluence with other streams or reservoirs to avoid backwater during high flow periods and often contain a pool for the gauge, preferably above the riffle or rapids. It is also desirable to have stream reach that has banks high enough to contain the flow at all ranges (i.e., no multiple channels or extensive floodplain). This enables stage data to be collected for the entire range of stage, and ensures that stage can be recorded at extremely low flow. In these ideal conditions, the stream bed is not likely to be subject to scour or fill, or contain much submergent or emergent aquatic vegetation. As noted previously, artificial stream controls such as an existing weir, flume or other in-water structure (e.g., gabion baskets) may exist at some hydrometric station sites. Environment Canada attempts to locate its hydrometric stations near such stream controls.

Station sites are often located along existing road rights-of-way near bridges. For metering high flows, a bridge in a well-confined stream section is usually desirable. If there is no bridge, the station would be located where a stream reach with high, well-confined banks is suitable for constructing a cableway or metering bridge, or has a section suitable for anchoring a tagline to assist in making measurements by boat.

In most cases, power service should be available, particularly for stations that will be operated during periods of low temperatures. Telephone service may or may not be available at station sites.

5. Environmental Assessment of Hydrometric Station Projects

The EA of hydrometric station projects in Ontario Region is undertaken according to the following steps:

1. The spatial and temporal boundaries of the assessment are defined (Section 5.1).
2. The environmental and related socio-economic components to be considered in the assessment are identified (Section 5.2).

3. Based on experience with numerous hydrometric station projects across Canada, the potential for adverse environmental effects is identified by first defining the project-environment interactions under normal operating conditions (Section 5.3) and as a result of potential accidents and malfunctions (Section 5.4). The physical works and associated activities (project components), the environmental and socio-economical components and the potential accidents and malfunctions described previously are used for this purpose.
4. The potential for effects of the environment on the project are considered. Those projects that are vulnerable to a variety of environmental conditions are identified (Section 5.5).
5. Based on the identified project-environment interactions, the potential environmental effects and mitigation measures for each physical work and activity associated with hydrometric station projects, including accidents and malfunctions are identified (Section 5.6 and Tables A.4-1 to A.4-8).
6. In order to assess the significance of the potential adverse environmental effects, significance criteria and ratings are defined (Section 5.7).
7. Taking into consideration the identified mitigation measures for each potential environmental effect and by applying the significance criteria, the overall significance of the residual environmental effects is determined for each class of projects considered in this MCSR (Section 5.7).

The assessment of cumulative effects and the design of any follow-up program is necessarily project and site-specific. The consideration of cumulative effects and follow-up will be required during the completion of the CSPR.

5.1 Spatial and Temporal Boundaries

An important aspect of the EA process is the determination of the study boundaries. Study boundaries serve to focus the scope of the assessment such that a meaningful analysis of potential effects arising from the proposed project can be made, and aid in determining the most effective use of available study resources. This can take place within the context of the restrictions imposed by project scheduling and the varying degree to which environmental conditions and effects can be quantified and objectively evaluated.

A boundary is a function of the extent and duration of potential interaction between a proposed undertaking and relevant environmental components. Generally, these boundaries are defined by the temporal and spatial characteristics encompassing those periods and areas, during and within which, the environment is likely to interact with, or be influenced by, the project. The EA boundary for hydrometric

station projects is defined by the spatial and temporal extent of similar physical and chemical characteristics of the habitat, such as terrestrial and aquatic environments.

The spatial boundary for determining potential effects includes the project site and 500 m around the site, including 500 m upstream and downstream of any in-water facility or structure. This boundary includes the station site itself and reflects the maximum geographic extent that off-site project effects are likely to be measurable or noticeable.

The definition of the temporal boundary for the EA of hydrometric station projects considered how long project activities typically interact with the environment and the length of time that effects are likely to last.

Hydrometric station projects are conducted on a year round basis; however, most are initiated in spring, summer or fall seasons. Construction activities typically last less than two weeks depending on the specifics of the installation. Modification, maintenance or repair activities are generally of shorter duration unless a major change is required. In this latter case, the project may take as long as the original construction to complete. Clean-up, decommissioning and abandonment may take less than one week depending on the location and complexity of the structure(s) being removed and the extent of soil contamination.

The limited duration of the physical works and activities and Environment Canada's experience over the past several years indicates that adverse environmental effects are not likely to be measurable or noticeable for more than one year. The positive effects associated with station clean-up and decommissioning will be permanent.

5.2 Environmental and Related Socio-economic Components

The potential environmental effects and mitigation measures have been organized according to environmental and related socio-economic components most likely to be affected by the projects covered by this MCSR. These environmental and related socio-economic components are broad aspects of concern for the purpose of organizing and categorizing common types of effects, taking into consideration the ecological context of the projects' environmental settings.

The environmental components identified for the purpose of this MCSR are:

- Air Quality;
- Aquatic Sediments;
- Fauna;
- Flora;

- Groundwater Quality and Quantity;
- Humans;
- Soil Quality;
- Species at Risk - Aquatic;
- Species at Risk - Terrestrial;
- Surface Water Hydrology;
- Surface Water Quality;
- Terrain and Topography;
- Wildlife Habitat (terrestrial and aquatic).

The related socio-economic components identified for the purpose of this MCSR are:

- Cultural and Heritage Resources;
- Economic Conditions; and
- Land and Resource Use (including Navigation Related).

5.3 Environmental Components Potentially Affected by Project Components

The interactions between the project and the environment under normal operating conditions are shown in Table 5.3-1. These interactions (shown as dots) indicate where there is a potential for adverse effects (under normal operating conditions) to occur.

5.4 Environmental Components Potentially Affected by Accidents and Malfunctions

In conducting a project, accidents and malfunctions may occur. These accidents and malfunctions may have negatives effects on the environment. Table 5.4-1 identifies the environmental components that would primarily be affected by potential accidents and malfunctions.

Table 5.3-1
Project – Environment Interactions (Normal Operations)
• = interaction, blank = no interaction

Project Components	Environmental Components													Socio-economic Components		
	Air Quality	Aquatic Sediments	Fauna	Flora	Groundwater Quality and Quantity	Humans	Soil Quality	Species at Risk - Aquatic	Species at Risk - Terrestrial	Surface Water Hydrology	Surface Water Quality	Terrain and Topography	Wildlife Habitat (terrestrial and aquatic)	Cultural and Heritage Resources	Economic Conditions	Land and Resource Use (including Navigation Related)
Contaminated Soil Cleanup and Handling	•		•			•	•	•	•		•					•
Earthworks	•		•		•	•	•		•	•	•	•		•		•
In-water or Near Water Works		•	•					•	•	•	•		•			•
Land Based Structures	•		•						•	•	•	•				
Operation of Hand Machinery	•		•	•		•			•		•				•	
Operation of Heavy Equipment, Vehicles and Vessels	•		•	•		•	•		•	•	•	•	•		•	•
Station Operation and Maintenance	•		•							•	•					•
Vegetation Clearing and Grubbing	•		•	•			•		•		•	•	•			•

Table 5.4-1
Project – Environment Interactions (Accidents and Malfunctions)
• = interaction, blank = no interaction

Accidents and Malfunctions	Environmental Components												
	Air Quality	Aquatic Sediments	Fauna	Flora	Groundwater Quality and Quantity	Humans	Soil Quality	Species at Risk - Aquatic	Species at Risk - Terrestrial	Surface Water Hydrology	Surface Water Quality	Terrain and Topography	Wildlife Habitat (terrestrial and aquatic)
Equipment Misuse or Malfunction						•							
Fires	•			•	•	•							•
Spills and Leaks			•	•	•		•				•		
Structural Failures						•						•	
Vehicle Collisions			•			•							
Vessel Collisions						•							

5.5 Potential Effects of the Environment on the Project

Under CEAA, an EA must consider the potential effects the environment may have on the project as part of the evaluation of effects. Table 5.5-1 identifies those project components that are vulnerable to a variety of environmental conditions. Generally, the potential effects of the environment on hydrometric station projects include:

- Weather-related events (e.g., extreme rainfall, flooding, wind storms, extreme cold or hot weather and ice movement and jamming) can damage or otherwise adversely affect the physical integrity of hydrometric stations, cause runoff and sedimentation during the construction phase and affect the health and safety of workers.
- Physical forces exerted by water flows and currents or ice conditions can damage or adversely affect the physical integrity of in-water equipment, such as intakes, sensors, pipes, lines, etc.
- Forest or brush fires will pose a health and safety risk to workers and could potentially destroy the equipment.

The potential effects of the environment on the project that have been identified can be mitigated through the selection of site, the project design, and the standard operating, maintenance and repair procedures that are described in the mitigation tables referred to in Section 5.6. Where relevant to a particular project, consideration of these impacts should be based on the project's design, proposed construction methods, operational procedures and monitoring plans. Users of the MCSR can provide these project-specific details in Section A.4.2, "Effects of the Environment on the Project" of the CSPR.

Table 5.5-1.
Effects of the Environment on the Project
• = interaction, blank = no interaction

Environmental Conditions	Classes		
	1. New or Modified Hydrometric Stations	**2. Hydrometric Station Cleanup**	**3. Hydrometric Station Cleanup and Decommissioning**
Extreme Cold	•	•	•
Extreme Heat	•	•	•
Extreme Rainfall	•	•	•
Extreme Winds	•	•	•
Flooding	•	•	•
Forest or Brush Fires	•	•	•
Hail	•	•	•
Ice/ Ice Jamming	•	•	•
Snowfall	•	•	•
Subsidence *(e.g., sinking, land slides, cave-ins)*	•		•

5.6 Mitigation Measures for Potential Effects

For each physical work or activity (project component) associated with hydrometric station projects, the potential environmental effects, the related socio-economic effects and effects linked to accidents and malfunctions were identified along with the applicable mitigation measures. These effects and mitigation measures are documented in the CSPR (Tables A.4-1 to A.4-8) located in Appendix A. These mitigation measures represent actions that must be taken by Environment Canada during project implementation. Although, in certain circumstances and depending on local site conditions, a subset of these mitigation measures may be more appropriate than the complete listing in these tables. Should additional mitigation measures be prescribed by other authorities, these must also be included when completing the project-specific CSPR.

5.7 Significance of Residual Environmental Effects

Taking into account the physical works and activities, the identified potential adverse environmental effects and the identified mitigation measures; table 5.7-2 rates the significance of adverse environmental effects that may continue to occur following mitigation. The assessment of significance was undertaken according to the anticipated magnitude, geographic extent, duration, frequency of occurrence, and persistence of each residual effect. For the purpose of this MCSR, the significance criteria were defined and applied according to the definitions in table 5.7-1. In some circumstances, it may be important to also consider ecological context to assess the significance of an effect. The evaluation of this additional criterion would be conducted on a case by case basis in section A.4.1 "Additional Environmental Effects" of the CSPR, when required.

Table 5.7-1.
Criteria Ratings

Criterion	Criteria Ratings		
	Low	**Moderate**	**High**
Magnitude (of the effect)	➢ Effect is evident only at or nominally above baseline conditions.	➢ Effect is likely to be measurable over baseline conditions however is less than regulatory criteria, a published guideline value, or a level that might measurably affect the quality, quantity, value or use of an environmental component or other site specific attribute or feature.	➢ Effect may exceed a regulatory criteria, a published guideline value, or a level that might measurably affect the quality, quantity, value or use of an environmental component of other site specific attribute or feature.
Geographic Extent (of the effect)	➢ Effect is most likely to be limited to the project site/ footprint.	➢ Effect is likely to extend into areas adjacent to the project site/footprint boundary.	➢ Effect is likely to extend into areas beyond those adjacent to the project site/footprint boundary.
Duration (of the effect, in relation to the stages of the work)	➢ Effect is most likely to be evident only during one of the following phases of the project: site preparation, construction or decommissioning.	➢ Effect is likely to be evident during construction, decommissioning and/or operations phase of the project.	➢ Effect is likely to be evident beyond the life of the project.
Frequency (of conditions causing the effect)	➢ Conditions or phenomena causing the effect occur only once.	➢ Conditions or phenomena causing the effect occur may occur more than once, but infrequently.	➢ Conditions or phenomena causing the effect are likely to occur at regular or frequent intervals.

Persistence (of effect)	➢ Effect is likely to be reversible over a short period of time (e.g., within several days or months) after the completion of the activity causing the effect.	➢ Effect is likely to be reversible over an extended period of time (e.g., a growing season, following a freshet).	➢ Effect is likely to be permanent.

After the application of these ratings, an environmental effect is assessed to be either a negligible effect, a minor adverse effect or a significant adverse effect, according to the following definitions:

a) **Negligible Effects (Not Significant)** are those environmental effects which, after taking into consideration applicable mitigation measures have been rated as "low" for the majority (i.e., at least 3 out of 5) of the criteria described above and the effect cannot have been rated to be "moderate" or "high" for either the "magnitude" or "persistence" criteria. Overall, these effects are not likely to be measurable or noticeable beyond the project site / footprint boundary, are only evident during the site preparation, construction or decommissioning phases of the project or occur only once, and are completely reversible within a short period of time.

b) **Minor Adverse / Mitigable Effects (Not Significant)** are those environmental effects which, after taking into consideration mitigation measures, have been rated as "low" or "moderate" for the majority of the criteria described above. Any effect that has been rated as "moderate" or "high" for either the "magnitude" or "persistence" criteria (but not both) is considered to be a minor adverse effect (not significant).

c) **Significant Adverse Effects** are those environmental effects which, after taking into consideration mitigation measures, have a magnitude that is approaching a legal regulatory limit (i.e., moderate) or exceeds a legal limit (i.e., high) and exhibit any or all of the following:

- effect extends into areas beyond those adjacent to the project site/footprint boundary;
- effect is evident beyond the life of the project;
- conditions or phenomena causing the effect occur at regular or frequent intervals; and
- effect is permanent.

Table 5.7-2 Significance of Residual Environment Effects

Project Components
1 – Contaminated Soil Cleanup and Handling
2 – Earthworks
3 – In-water or Near Water Works
4 – Land Based Structures
5 – Operation of Hand Machinery
6 – Operation of Heavy Equipment, Vehicles and Vessels
7 – Station Operation and Maintenance
8 – Vegetation Clearing and Grubbing

Significance of Adverse Effect
L – Low, M – Moderate, H – High
NEG – Negligible Effect
MAE – Minor Adverse Effect
SIG – Significant Adverse Effect

Potential Environmental Effects
• Biophysical or Socio-economic Effect

Environmental Component	Potential Environmental Effects	Magnitude	Extent	Duration	Frequency	Persistence	Significance of Adverse Effect	Project Component #							
								1	2	3	4	5	6	7	8
Air Quality	• Decreased ambient air quality due to dust and other particulate matter.	L	L	L	L	L	NEG	•	•				•		•
	• Decreased ambient air quality due to emissions and increased concentrations of chemical pollutants.	L	L	L	L	L	NEG	•			•	•	•	•	
Aquatic Sediments	• Physical alteration of water body substrates and/or increased potential for release of sediments downstream, including contaminated sediments.	L	M	L	L	M	MAE			•					
Fauna	• Disruption to fish migration, spawning and nursery periods.	L	M	M	L	L	NEG	•		•				•	
	• Disruption to wildlife migration and movement patterns, breeding, nesting or hibernation.	L	L	L	L	L	NEG	•	•	•	•	•	•		•
	• Possible disease, mortality or decline in populations of wildlife due to exposure to disease bearing organisms (e.g., mosquitoes carrying West Nile Virus).	L	L	M	L	L	NEG		•						
	• Reduced biomass and diversity of aquatic organisms due to physical activities.	L	L	L	L	L	NEG			•					
	• Wildlife injury or mortality from entanglement in silt fences.	L	L	L	L	L	NEG		•	•					
Flora	• Introduction of non-native species, including opportunistic species.	L	L	L	L	L	NEG					•	•		•
	• Loss of unique or otherwise valued vegetation features (e.g., hedgerows and medicinal plants).	L	L	L	L	L	NEG								•
	• Loss of vegetated cover.	L	L	L	L	L	NEG								•

Groundwater Quality and Quantity	• Changes in groundwater flow patterns and levels due to interception of aquifers, changes to infiltration conditions, dewatering or changes to surface flow patterns.	L	L	L	L	L	NEG		•						
	o Changes to yields of wells due to interception of aquifers, changes to infiltration conditions or damage to wells.	L	L	L	L	L	NEG		•						
Humans	• Discomfort to individuals exposed to noise from project activities.	M	L	L	L	L	MAE					•	•		
	• Personal injuries to public and workers during construction activities due to exposure to disease bearing organisms (e.g., mosquitoes carrying West Nile Virus).	L	L	L	L	L	NEG		•						
	• Personal injuries to public and workers due to exposure to mercury vapour and contaminated soil.	L	L	M	M	M	MAE	•							
	o Disruption to residents, businesses, community facilities, recreational and tourist activities, due to increased ambient noise levels.	L	L	M	M	L	NEG					•	•		
Soil Quality	• Contamination of soil and disturbance to microscopic organisms in the soil.	L	L	L	L	L	NEG	•							
	• Disturbance to microscopic organisms in the soil.	L	L	L	L	L	NEG		•						
	• Reduced soil capability through compaction and rutting, and topsoil and mixing of topsoil and layers below.	L	L	L	L	L	NEG		•				•		•
Species at Risk - Aquatic	• Disturbance to aquatic species at risk and/or their critical habitat.	L	L	L	L	L	NEG	•		•					
Species at Risk - Terrestrial	• Disturbance to terrestrial species at risk and/or their critical habitat.	L	L	L	L	L	NEG	•	•	•	•	•	•		•
Surface Water Hydrology	• Adverse effect to water levels and flows due to temporary crossings and ice bridges.	L	L	L	L	L	NEG						•		
	• Adverse modifications to stream or shoreline morphology, texture or topography of stream bed.	L	M	L	L	M	MAE			•					
	• Adverse modifications to surface drainage patterns, affecting stormwater runoff rates and volumes.	L	L	M	L	M	MAE		•		•				
	• Adverse modifications to water flow conveyance, volumes and levels.	L	L	M	L	M	MAE			•					
	• Disruption to water flow at station location due to beaver dams.	L	L	M	M	L	NEG			•				•	
	• Increased ice jamming and flooding potential at bends, bridges, crossings, fordings and other flow constrictions (including effects of flooding on the project).	L	L	M	M	L	NEG			•				•	
	o Disruption to navigation due to changes in surface water levels and flows.	L	L	M	M	L	NEG			•				•	
Surface Water	• Adverse effect to water quality due to temporary crossings and ice bridges.	L	L	L	L	L	NEG						•		

Quality	• Reduced water quality and clarity due to increased erosion and sedimentation, and transport of debris.	L	L	L	L	L	NEG		•	•			•	•	•
	• Reduced water quality and clarity due to increased erosion and sedimentation, and transport of contaminated soils and debris.	L	L	L	L	L	NEG	•							
	• Reduced water quality and clarity due to inputs of contaminants from surface runoff during construction and operation.	L	L	L	L	L	NEG				•	•	•	•	
	o Disruption to community or private surface water supplies (e.g., drinking water, livestock watering, irrigation, commercial and recreational uses).	L	L	L	L	L	NEG	•							
Terrain and Topography	• Changes in slopes, landforms and landscape diversity.	L	L	L	L	L	NEG		•				•		
	• Ground subsidence from soil thaw and poor excavation and backfilling practices; ground surface mounding or structure movement due to frost heave from inappropriate backfill material or shallow foundation depth.	L	L	L	L	L	NEG		•		•				
	• Increased soil exposure resulting in erosion, sedimentation, slope instability and risk of mudslides, slumping, rockfalls, etc.	L	L	L	L	L	NEG		•						•
	o Disruption to farm operations, and to livestock movement and grazing.	L	L	L	L	L	NEG						•		
	o Disruption to resource uses (e.g., hunting, fishing and medicinal plant harvesting).	L	L	L	L	L	NEG								•
	o Increased public access to remote or undeveloped areas, and areas used by Aboriginal persons for traditional purposes.	L	L	L	L	M	MAE								•
	o Loss or disruption to known heritage (in particular, to Aboriginal heritage and spiritually significant sites or areas), archaeological and paleontological features, undiscovered artifacts and features, and areas used for medicinal plant or subsistence harvesting.	L	L	L	L	L	NEG		•						
Wildlife Habitat (terrestrial and aquatic)	• Physical changes to aquatic habitat resulting in a barrier to fish movement and a reduction in area, productive capacity and quality, or a change in function.	L	L	L	L	L	NEG			•					
	• Physical damage and loss of habitat (terrestrial, riparian and/or wetland).	M	L	M	L	L	MAE						•		•
	• Reduced terrestrial habitat quality (i.e., diversity, area, function) and/or increased fragmentation of habitat.	L	L	L	L	L	NEG								•

Table 5.7-2 indicates that after taking into consideration applicable mitigation measures, none of the residual environmental effects are likely to be significant. The vast majority of the residual environmental effects are considered to be negligible and not significant. Negligible effects are not likely to be measurable or noticeable beyond the project site/footprint boundary; will only be evident during the construction or decommissioning phases of the project; will occur only once; and are considered to be completely reversible within a short period of time.

Other environmental effects of hydrometric station projects are considered to be minor adverse effects but not significant. These residual adverse effects may be measurable over baseline conditions; however, they are not likely to exceed a regulatory criterion or a level that might measurably affect the quality, quantity, value or use of an environmental component or a site-specific feature or attribute. They are also not likely to be approaching a regulatory criterion and be permanent. These residual adverse effects might extend into areas adjacent to the project site/footprint; may be evident during the construction, operation or decommissioning phases of the project; may occur more than once, but infrequently; and are considered to be completely reversible within an extended period of time such as a growing season or following a spring freshet.

5.8 Cumulative Environmental Effects and Mitigation

Cumulative effects are those incremental effects on an environmental component, a site-specific feature or attribute, caused by a hydrometric station project when added to or combined with the effects from other past, existing, and future operations at the site and other projects or activities off-site.

The effects of hydrometric station projects alone are expected to be negligible or minor over the short and long-term. However, the effects of these projects in combination with others must be considered on a site-specific basis. For the types of projects described in this MCSR, the EA practitioner should do the following:

- determine if the project in its site specific context will have any adverse residual effects as identified in this MCSR;
- determine whether or not any of these adverse residual effect are likely to affect an environmental component or a site-specific feature or attribute in terms of its quantity, quality, value or use at any stage in the project (i.e., construction, operation, maintenance, decommissioning, abandonment);
- identify other past, existing or future projects or activities in the vicinity of the project (e.g., upstream or downstream, upgradient or downgradient; or in the site vicinity);
- if such an adverse effect on an environmental component, site-specific feature or attribute can be demonstrated, determine if the incremental effect of the proposed project acts cumulatively with the effects of other past, existing or future projects identified; and

- determine if the effect of the project, in combination with the other effects, may cause a significant residual adverse effect now or in the future on the environmental component, site-specific feature or attribute, after the application of mitigation for that project.

5.9 Follow-Up Program

Follow-up is defined in CEAA as a program for:

a) verifying the accuracy of the EA of a project; and
b) determining the effectiveness of any measures taken to mitigate the adverse environmental effects of the project.

In accordance with CEAA, an RA must consider whether a follow-up program is needed. Project specific follow-up and monitoring requirements have not and cannot be considered in this MCSR. As such, follow-up will be conducted on a project by project basis.

5.10 Compliance Monitoring

When Environment Canada has made a determination that a project is not likely to cause significant adverse environmental effects, after taking into consideration mitigation measures, then it shall ensure that the mitigation measures are implemented. This can be done by stipulating the mitigation measures to be implemented and follow-up requirements as individual conditions of approval; or by appending the CSPR to any permits, approvals, authorizations, agreements, etc.

Environment Canada may choose to include a general statement in the documentation that all commitments regarding the project design, mitigation measures and follow-up shall be fulfilled. This could include a provision requiring the preparation of a compliance report to allow for Environment Canada to audit or monitor the project for compliance purposes. An EA compliance report would indicate how mitigation measures and other conditions of approval were addressed, if any deviations from the measures originally identified in the EA occurred, and if so, why were they necessary. For certain projects, Environment Canada may choose to require the services of an environmental inspector (preferably an Aboriginal community member when a project affects Aboriginal interests) to ensure that all necessary environmental requirements are addressed during various stages of project development.

6. Regulatory and Advisory Departments Involved in Hydrometric Station Projects

6.1 Environment Canada's Roles and Responsibilities

Environment Canada will not exercise any power or perform any duty or function which may allow the project to proceed until completion of the EA (ss. 11(2)).

It should be noted that since the RA is Environment Canada, the MCSR can be applied, where appropriate, by Environment Canada until such time as the Agency declares the MCSR not to be a class screening report or the declaration period expires.

To this end, it will be the responsibility of Environment Canada to:

- advise the proponent of the information requirements and provide the necessary forms that must be completed by the project proponent;
- determine whether the undertaking is a project that requires a screening in accordance with CEAA;
- Ensure that appropriate projects are referred to any other RAs identified;
- determine whether a project fits within the class of projects defined in this MCSR;
- obtain consensus among all relevant RAs that the process outlined in this MCSR meets their respective EA requirements and that Environment Canada, as the lead RA, will prepare the CSPR;
- ensure that a CSPR is prepared for each project subject to this MCSR;
- ensure that scientific and technical issues identified in the CSPR are reviewed and addressed by experts;
- make a determination and take a course of action concerning the proposed project pursuant to sub-section 20(1)(a) of CEAA by approving or rejecting the proposed project, or reclassify and subjecting the project to an individual screening and take a course of action pursuant to sub-section 20(1) of CEAA;
- maintain a project file that includes all records produced, collected or submitted with respect to the EA, ensure convenient public access to these records and respond to information requests in a timely manner;
- place a regular statement on the Registry Internet site describing the extent to which the MCSR has been used, as identified in section 7.2;

- indicate in each CSPR information on the cumulative effects assessment for the project to which that CSPR applies if a follow-up program is required;
- post specific records to the Canadian Environmental Assessment Registry in relation to a model class screening report, and any related class screening project reports;
- ensure that for any project that is proceeding, all appropriate mitigation measures are implemented (paragraph 16(1)d); and
- determine whether a follow-up program is required and, when appropriate, ensure it is designed and implemented (s. 38).

Environment Canada may:

- delegate the conduct of the CSPR, and any part of the design and implementation of a follow-up program, with the exception of making its Section 20(1) determination under CEAA;
- choose to provide additional opportunities for public consultation during preparation of the CSPR; or
- choose to reclassify the project and conduct the EA as an individual screening.

6.1.1 Environment Canada – Canadian Wildlife Service

The Canadian Wildlife Service provides expert advice regarding wildlife matters that are the responsibility of the federal government. This includes the protection and conservation of migratory birds and nationally important wildlife habitat, species at risk, research on nationally important wildlife issues, control of international trade in endangered species, and international treaties. Environment Canada – Canadian Wildlife Service is also responsible for the enforcement of the *Species at Risk Act* and the *Migratory Birds Convention Act*, 1994.

Consultation with Environment Canada – Canadian Wildlife Service is required to confirm whether or not there are any project specific mitigation measures (in addition to those identified in the MCSR) to be applied to the project to ensure that there is no potential for adverse effects on species at risk, migratory birds or federal wetlands. The Canadian Wildlife Service may also provide expert advice regarding how to enhance the beneficial effects to wildlife and their habitats resulting from hydrometric station projects.

6.1.2 Environment Canada – Other

Environment Canada is responsible for a variety of other programs and services, including the co-ordination of Environment Canada's specialist information and knowledge for the review of projects that are subject to CEAA, enforcement of the *Canadian Environmental Protection Act*, 1999 and regulations, enforcement of the pollution prevention provisions of the *Fisheries Act* , emergency prevention and

preparedness, and participation in the delivery of many national programs such as the National Pollutant Release Inventory, regulations development, etc).

Consultation with Environment Canada is required to confirm whether or not there are any project specific mitigation measures (in addition to those identified in the MCSR) to be applied to the project to ensure that there is no potential for adverse effects on soils, groundwater or surface water due to the potential discharge of a deleterious substance.

6.2 Roles and Responsibilities of Other Responsible Authorities and Expert Departments

In certain circumstances, the completion of a CSPR for hydrometric station projects may require consultation and/or a referral to a federal department for expert advice or, as is the case with Fisheries and Oceans Canada, a referral to a department as a potential RA. Fisheries and Oceans Canada has agreed to use the Class Screening process with Environment Canada to fulfill its EA requirements. The following sections describe the roles and responsibilities of other Responsible Authorities and expert departments that are likely to be involved in hydrometric station projects.

6.2.1 Fisheries and Oceans Canada - *Fisheries Act*

The federal *Fisheries Act* gives the Minister of Fisheries and Oceans Canada the legislative authority to protect fish and fish habitat from destructive activities in waters that are or may be frequented by fish. Fisheries and Oceans Canada administers the habitat and pollution protection provisions of the Fisheries Act under Sections 22(1), 22(2), 22(3), 32, 35(2) and 37(2) and are binding on all levels of government and the public in areas such as:

- the provision of sufficient water flows;
- the passage of fish around migration barriers;
- the screening of intake screens;
- the prohibition against the destruction of fish by means other than fishing unless authorized by Fisheries and Oceans Canada;
- the restrictions on fishing near a barrier;
- the deposit of a deleterious substance into waters frequented by fish unless authorized by regulation; and,
- the prohibition against the harmful alteration, disruption or destruction (HADD) of fish habitat unless authorized by Fisheries and Oceans Canada.

Role as Federal Authority (FA) When Conducting Class Screenings Under the MCSR:

Fisheries and Oceans Canada, in the role of a FA, participated in the development of this MCSR for Hydrometric Station Projects by providing suggested mitigation, as defined in the Policy for the Management of Fish Habitat (1986) to the generic EA. The aim of the suggested mitigation is to reduce and/or eliminate the effects on water quality and fish passage, and the destruction of fish and fish habitat. Fisheries and Oceans Canada often plays a role as a FA (expert department) for many of the Hydrometric Station projects on a project-by-project basis in the CSPR forms. The forms allow for a FA to ensure that scientific and technical issues have been addressed and if necessary to provide Environment Canada with extra mitigation to an individual project with an aim to reduce and/or eliminate effects on fish and fish habitat. In situations where a harmful alteration, disruption or destruction (HADD) of fish habitat is expected, Fisheries and Oceans Canada will provide advice on mitigation and compensation to assist Environment Canada in ensuring the objectives of its department's Habitat Policy are met. An authorization under the *Fisheries Act* will be required if there is an expected HADD of fish habitat.

Referrals to Fisheries and Oceans Canada are required (as outlined in Section 2.5) when the works or undertakings may require a regulatory approval under the *Fisheries Act*. Through this referral process, Fisheries and Oceans Canada (in the role of a FA) can provide additional advice and mitigation to Environment Canada on a project-by-project basis.

Role as Responsible Authority (RA) When Conducting Class Screenings Under the MCSR:

Aside from providing expert advice as a FA, Fisheries and Oceans Canada is also a RA for projects that require a regulatory approval under the *Fisheries Act*. Following a review of the MCSR, and after providing suggested mitigation to the MCSR to reduce effects on fish and fish habitat, Fisheries and Oceans Canada recognized that some of the proposed Hydrometric Station projects may still require a *Fisheries Act* section 35(2) for the HADD of fish habitat or section 32 authorization for the killing of fish by means other than fishing (e.g., blasting).

As mentioned in Section 2.5, a referral to Fisheries and Oceans Canada is required when the works or undertakings may require a regulatory approval under the *Fisheries Act*.

If Fisheries and Oceans Canada proposes to issue specific authorizations or approvals associated with a project under the *Fisheries Act*, they become a RA in accordance with the *Law List Regulations* of CEAA. In such cases where Environment Canada and Fisheries and Oceans Canada are both Responsible Authorities for a project, Environment Canada will coordinate completion of the CSPR in consultation with Fisheries and Oceans Canada.

6.2.2 Transport Canada

The *Navigable Waters Protection Act* (NWPA) provides for the protection of the public's right to navigation in Canada. With the exception of those works described under the NWPA *Minor Works and*

Waters Order, no work shall be built or placed in, on, over, under, through or across any navigable water without prior NWPA approval. Please refer to section 2.5 for further details.

This MCSR does not exempt a proponent from the requirement to obtain approval in accordance with Federal laws such as the NWPA. The NWPA still requires that the proponent apply for approval of any work located in, on, over, under, through or across any navigable water.

If Transport Canada issues specific authorizations or approvals associated with a project under the NWPA, they become a RA in accordance with the *Law List Regulations* of CEAA. In such cases where Environment Canada and Transport Canada are both Responsible Authorities for a project, Environment Canada will coordinate completion of the CSPR in consultation with Transport Canada.

6.2.3 Indian and Northern Affairs Canada and Aboriginal Groups

In fulfilling its mandate, Indian and Northern Affairs Canada works collaboratively with Aboriginal groups and other federal, provincial and territorial government agencies. Indian and Northern Affairs Canada should be consulted, as a FA, when a project falls on or otherwise affects reserve land.

6.3 Coordination with Provincial Authorities

Hydrometric station projects may require consultation with Provincial authorities for expert advice. For example, projects involving works within floodplains, wetlands or provincially designated sites of special concern (e.g., Areas of Natural or Scientific Interest, Environmentally Significant Areas, etc.) will warrant consultation with the provincial authorities responsible for natural resource management (e.g., Ontario Ministry of Environment, Ontario Ministry of Natural Resources, Conservation Ontario and individual Conservation Authorities). However, project proponents are responsible for ensuring that the project meets all legislative requirements and that all relevant licenses, permits and authorizations are obtained.

7. Preparation of Class Screening Project Reports

Environment Canada, or a third party delegated to complete a CSPR on behalf of Environment Canada, and any other RAs, will undertake or delegate the preparation of a CSPR for each project subject to this MCSR. The CSPR applicable to hydrometric station projects subject to this MCSR is provided in Appendix A.

It will also be the responsibility of Environment Canada to ensure that all information contained in the CSPR is as accurate as possible, that the project and identified mitigation measures are implemented appropriately, and that any required follow-up is undertaken as specified in the EA, and any other regulatory permit or authorization.

7.1 Instructions for Completing a Class Screening Project Report

The CSPR applicable to hydrometric station projects subject to this MCSR is provided in Appendix A. This section provides instruction for completing the CSPR.

Section A.1 of the CSPR is intended to document whether or not CEAA and the MCSR apply. Upon review of the project description, a determination needs to be made as to whether or not CEAA applies. CEAA and the MCSR apply when:

a) The project is an undertaking in relation to a physical work that is not otherwise excluded from assessment under the *Exclusion List Regulations* or if it is described in the Schedule to the Act. If any component of the project involves a physical work that is not described in the Exclusion List or in the Schedule to the Act, then the project shall be scoped broad enough to include the entire physical work; or;

b) The project involves any physical activity that is not in relation to a physical work but that requires an assessment under the *Inclusion List Regulations.* Refer to the *Inclusion List Regulations* for all physical activities *not* involving physical works; and

c) Environment Canada and/or another Federal Authority referred to in this report (s. 5 of CEAA) is:

- the proponent of a project;
- grants money or other financial assistance to a project;
- grants an interest in land to enable a project to be carried out; or
- exercises a regulatory duty in relation to a project, such as issuing a permit, license or authorization that is covered under the Law List Regulations.

Because Environment Canada is either the proponent of hydrometric station projects or grants money or other financial assistance to projects subject to this MCSR, CEAA is always triggered. It is the responsibility of Environment Canada to contact other federal departments so they can determine if they are also required to conduct an EA of the proposed project.

The CSPR can only be used for the projects described in this MCSR. Any project that is not described in the MCSR is either excluded from CEAA or else must be assessed outside this MCSR, by an individual screening.

Table A.1-1 of the CSPR lists all projects that are covered by this MCSR. After reviewing a project description, the specific class of project under assessment should be identified. There are three possible choices:

1. new or modified hydrometric stations;
2. hydrometric station clean-up; and
3. hydrometric station clean-up and decommissioning.

Once a determination has been made as to whether the undertaking is a "project" that requires a screening in accordance with CEAA and whether the project fits within one or more classes of projects defined in this MCSR, the remainder of the CSPR will need to be completed.

Section A.2 of the CSPR must be completed prior to, or in consultation with other Federal and Provincial Authorities. This section provides relevant authorities with sufficient information about the project and its environmental setting to allow them to provide expert advice. In particular, Fisheries and Oceans Canada and Transport Canada, could provide expert advice, or determine whether they need to make a regulatory decision under the *Fisheries Act* or the NWPA, respectively.

A completed Section A.2 of the CSPR will generally contain the following:

- the National Environmental Assessment System (NEAS) number (Section A.2.1);
- Environment Canada file number (Section A.2.1);
- project title (Section A.2.2);
- project location (Section A.2.2);
- map(s) or air photo(s) of the project location and general vicinity if available (Section A.2.2);
- project description (Section A.2.3 - see below for more information)
- listing of all Responsible Authorities and triggers (Sections A.2.4 and A.2.5);
- key contact information (Section A2.6); and
- project schedule information, including anticipated work start and completion dates (Section A.2.7).

In section A.2.3of the CSPR the description of the project would include a brief explanation of its purpose and of the physical works or activities involved. In accordance with this MCSR, the following descriptions are required (if applicable to the project):

- contaminated soil clean-up and handling (e.g., type of work to be undertaken);
- earthworks (e.g., area to be excavated and location);
- in water or near water works (e.g., description of in-water structures and equipment to be installed or removed);
- land based structures (e.g., description of land based structures and equipment to be installed or removed);
- operation of hand machinery (e.g., description of hand machinery to be used);
- operation of heavy equipment (types of equipment, vehicles and vessels to be used);
- station operation and maintenance activities (e.g., flushing of intakes, personnel visits); and
- vegetation clearing and grubbing (e.g., approximate area / amount of vegetation affected).

For all projects in areas where species at risk are present at any time during their lifecycle, immediately consult with the relevant department (Environment Canada or Fisheries, Oceans Canada or Parks Canada*) regarding the appropriateness of conducting a class screening. Even after receiving a "green light" from the experts, you must continue to consider effects on species at risk through the preparation of the class screening report and elevate the assessment to an individual screening if any harmful effects are anticipated.**

* Parks Canada's authority under SARA is limited to the protected areas it manages. Projects within National Parks are not eligible for assessment under this MCSR; however, it may be appropriate to notify PCA if a project is adjacent to a protected area managed by PCA, and there are individuals of species at risk that may cross park boundaries. Such notification would be required under 79(1) of SARA; in addition, Parks Canada may have specialists that can provide valuable information on the species in question.

** Note that SARA establishes prohibitions protecting individuals of a threatened or endangered listed species, their residences, and critical habitat; permits may be issued subject to certain conditions. For information on SARA and its provisions, visit the SARA Public Registry. Note that provincial or territorial prohibitions may also apply. The EA does not override your responsibility to comply with applicable legislation.

The following Environment Canada documents offer guidance regarding federal environmental assessment obligations under the SARA and how to address them:

- "Addressing Species at Risk Act Considerations Under the *Canadian Environmental Assessment Act* for Species Under the Responsibility of the Minister responsible for Environment Canada and Parks Canada", September 2010:

  - http://www.registrelep-sararegistry.gc.ca/document/dspDocument_e.cfm?documentID=2100
  - This document has been prepared to provide guidance on specific obligations under the SARA for species under the responsibility of the Minister responsible for Environment Canada and Parks Canada as they relate to federal environmental assessment. Specifically, the guide shows how certain SARA requirements may be addressed at each step of an environmental assessment conducted under the CEAA.

- "The *Species at Risk Act* Environmental Assessment Checklists for Species Under the Responsibility of the Minister Responsible for Environment Canada and Parks Canada", September 2010:
  - http://www.registrelep-sararegistry.gc.ca/document/dspDocument_e.cfm?documentID=2101
  - This document, often referred to as the SARA EA Checklists, provides advice on the main considerations to be incorporated when assessing effects on species at risk (SAR) under the responsibility of the Minister responsible for Environment Canada and Parks Canada and the key steps needed to address the SARA in the context of federal environmental assessments under the CEAA.

Table 7.1-1 provides a sample of a completed Table A.2-1 from the CSPR.

Table 7.1-1.
Sample of Completed Table A.2-1. (Project Description)

Physical Work or Activity (Project components)	Description (provide details where applicable)
• Contaminated Soil Cleanup and Handling (e.g., type of work to be undertaken)	Areas of potential contamination will be identified and all clean-up activities will be completed in accordance with the Field Protocol for the Mercury Assessment and Cleanup of Hydrometric Stations (App B)
• Earthworks (e.g., area to be excavated and location)	Excavation of approximately 1 m^3 will be required to remove mercury contaminated soils.
• In-water or Near Water Works (e.g., description of in-water structures and equipment to be installed or removed)	Bubble tube located along riverbed, secured with natural rocks. No other in-water structures are present (Refer to photographs). No work will be undertaken on these pieces of equipment.
• Land Based Structures (e.g., description of on-shore structures and equipment to be installed or removed)	Existing wooden gauge shelter located within 30 m of the shoreline will be cleaned of mercury (Refer to photographs)
• Operation of Hand Machinery (e.g., description of hand machinery to be used)	Hand machinery will be limited to hand saws, hand augers, shovels and rakes. Plastic sealable drums will be used to store contaminated soils.
• Operation of Heavy Equipment (e.g., types of equipment, vehicles and vessels to be used)	One half ton pick-up truck will be used to access the site via an existing road.
• Station operation and maintenance (e.g., flushing of intakes, personnel visits)	Personnel visit for site clean-up will be of approximately 2 days duration. Ongoing site visits for station operations and maintenance will be on an as required basis. No other station maintenance activities are anticipated.
• Vegetation Clearing and Grubbing (e.g., approximate area / amount of vegetation affected)	No vegetation clearing required. Some cut-back of shrubs on-site may be required to facilitate access to station shelter.

A completed Section A.3 of the CSPR will provide a description of the existing environment according to various aspects pertaining to the project that are listed in Column 1 of Table A.3-1. All of these aspects may or may not be relevant to the project under assessment. Applicable descriptions of those aspects that are relevant to the project and its proposed location(s), should be entered in Column 2 of Table A.3-1. **Any Species at Risk that are likely to occur in the project area must be identified.** Table 7.1-2 provides a sample of completed Table A.3-1 from the CSPR.

EA practitioners are encouraged to refer to maps, figures or photos and /or contact local provincial and federal authorities for site specific information on migratory birds, species at risk, wetlands, important habitat areas and other environmental features. Where appropriate, EA practitioners may use the web sites below, however it should be noted that such web sites may not always provide sufficient detailed information for a site specific description of existing conditions.

1. Web site that allow you to identify species assessed by COSEWIC:
    - http://www.cosewic.gc.ca
2. Conservation Data Centres or Natural Heritage Information Centres accessible through NatureServe Canada, provides a searchable database on conservation status, taxonomy and distribution:
    - http://www.natureserve-canada.ca/
3. SARA Registry provides an updated list of Schedule 1 species, recovery strategies or action plans which identify critical habitat, and information on SARA including prohibitions:
    - http://www.sararegistry.gc.ca/

The MCSR can be used to assess projects in areas in which Species at Risk are found, providing the project and all of its associated activities:

- do not require a permit under SARA and/or
- will not have an adverse effect, either temporary or permanent, on species at risk including their residences and critical habitat.

For all projects in areas where Species At Risk are present at any time during their lifecycle, immediately consult with the relevant department or agency (Environment Canada, or Fisheries and Oceans Canada, or Parks Canada) regarding the appropriateness of using this CSPR for your project. Note that Section 2.5 of this MCSR provided more information about competent ministers under SARA and instructions for notifying the appropriate authorities if the project is likely to have effects (beneficial or adverse) on Species at Risk. After consulting with expert Departments, effects on Species at Risk must continue to be considered throughout the preparation of the CSPR.

Table 7.1-2.
Sample of Completed Table A.3-1 (Existing Environment)

Site Characteristics and Parameters	Description (provide details where relevant)
Work Area	
➢ Approximate area directly affected by the project *(in hectares or sq. m)*	Approximately 0.5 ha
➢ Proposed access to site *(i.e., existing road/trail, water access or aircraft)*	Access to the site is available from Highway 102 via an existing trail approximately 500 m in length. Access using a motorboat is also possible along the river from an existing marina located approximately 2.5 km upstream of the hydrometric station.
Surface Waters	
➢ Conditions of existing on-site slopes (ground slopes, stream banks, shorelines)	On-site slopes are gentle (less than 1% grade). The stream bank and shoreline are also gentle with a less than 2% grade. There are no areas of unstable slopes on-site or in the site vicinity.
➢ Type of on-site water bodies (watercourses, ponds, lakes, wetlands)	The site is located along the Tackhart River.
➢ Lengths of shorelines or stream banks to be affected by the project	The site will occupy approximately 5 m of shoreline.
➢ Surface water flow volumes	The Tackhart River is approximately 50 m wide with a flow volume of approximately 500 m^3 / sec.
➢ Surface water quality	No water quality data exists for the Tackhart River. There does not appear to be any major sedimentation or contaminant issues based on local land uses.
➢ Types of aquatic substrates on-site	Mainly rocky and bedrock streambed.
➢ Distance to nearest surface water intake	Nearest surface water intake exists 500 m downstream.
Wildlife and Habitat	
➢ Type of natural vegetation / ground cover on site property. Identify any plant Species at Risk. (on-site and study area). Identify conservation status.	The site area is dominated by lichens, shrubs on rock barrens along the river shoreline. The species present are not of conservation concern. No Species at Risk have been identified.
➢ Fish and wildlife species. Identify any Species at Risk. *(on-site and study area)* Identify conservation status	Major fish species include: Walleye and Northern Pike. Major wildlife species include: wolf, hare, black bear, ground squirrel. The species present are not of conservation concern. No Species at Risk have been identified
Land Use	
➢ Site use within the past 12 months	Site has been in operation for 30 years.
➢ Land uses on adjacent properties	A seasonal hunt camp or a teepee structure located within 500 m of the station suggest that the area is used on an occasional basis for hunting, trapping and fishing.

Site Characteristics and Parameters	Description (provide details where relevant)
➢ Proximity to areas of special conservation value	The site is not located within or adjacent to any parks, wildlife sanctuaries, or community conservation areas. The nearest area of special concern is Wood Buffalo National Park, located over 50 kilometres away within another watershed.
➢ Other existing structures such as bridges, piers, buildings (on-site and adjacent properties)	A seasonal hunt camp or a tepee structure located within 500 m of the station suggest that the area is used on an occasional basis for hunting, trapping and fishing.
➢ Land ownership and/or access arrangements	Site is located on crown land.
➢ Federal, Provincial or Territorial land status or special designation	None.
➢ Aboriginal interest *(e.g. traditional use)*	First Nation community exists approximately 35 km upstream of the site. A tepee structure located within 500 m of the station suggests that the area is used on an occasional basis for hunting, trapping and fishing.
➢ On-site presence of known historical, heritage, archaeological or other site of cultural importance	None identified.
➢ Navigability of watercourse/ waterbody (consult Transport Canada to determine	Transport Canada has confirmed the Tackhart River is navigable.
Groundwater	
➢ Distance to nearest groundwater well	None identified.
➢ Groundwater quality	No contaminants issues identified.
Land	
➢ Soil quality	No contaminants issues identified.
➢ Types of soils on-site	On-site soils are largely thin cyosols and brunisols over bedrock. A till moraine exists approximately 500 m from the site.
Other	
➢ Other	None

Section A.4 of the CSPR is intended to describe the environmental effects and mitigation measures that are applicable to various physical works and associated activities (including their associated accidents and malfunctions) that may be undertaken for hydrometric station projects. This Section is intended to identify and describe those environmental effects and mitigation measures that are applicable to the project. To complete Section A.4 of the CSPR, the following steps should be undertaken:

a) Identify which of the 8 physical works and associated activities (project components) are likely to be undertaken.

b) Indicate the project phases during which these activities will likely occur. The project phases are listed at the top of each table. A physical work or activity may occur in more than one phase of the project. Check (X) all phases that are applicable.

c) For each physical work and associated activity that you checked, review the environmental effects and mitigation measures for each physical work and associated activity.

d) Ensure that the standard mitigation measures identified encompass all the likely effects of the project. Section A.8 of the CSPR is provided for the identification of additional mitigation you may identify or recommended by others through consultation.

e) DO NOT proceed with the CSPR if the project requires additional mitigation measures that change the project's function such that it is no longer described by the MCSR and/or will result in significant residual environmental effects. In such conditions, an individual screening is required for the project.

As the CSPR considers a wide range of common scenarios, it is expected that the full range of effects and mitigation measures listed for each physical work and associated activity may not pertain to every project. Discretion is to be applied when determining which, if any, of the listed measures are not required as a condition of project approval.

In Section A.4.1, describe any adverse environmental effect(s) **not described in Tables A.4-1 to A.4-8** that are likely to occur as a result of the project, or any effects that are uncertain. Include the recommended mitigation measures and the significance of the residual adverse effects. **Any residual adverse environmental effects that are deemed to be significant will result in a determination of "Significant Adverse Effects" in Section A.10 "Determination" of the CSPR, or will require changes to the project.** .

In Section A.4.2, describe any effect(s) of the environment on the project that are **not described in Tables A.4-1 to A.4-8** and that are likely to occur as a result of the specific project location (also refer to Table 5.5-1 of the MCSR for more information on the types of effects covered in Tables A.4-1 to A.4-8). Describe the proposed measures (e.g., design, operating procedures, monitoring and contingency plans) to prevent or manage these effects, and the significance of any anticipated residual effects.

Section A.5 of the CSPR is intended to assess cumulative adverse effects of the project in combination with other past, existing or future (certain or reasonably foreseeable) projects or activities that *also* affect or *may also* affect any of the environmental components. The cumulative effects assessment should include those environmental components for which residual adverse environmental effects have been identified in the CSPR. Other past, existing or future projects or activities are to be identified and described in Table A.5-1 of the CSPR. If no other projects are identified, specify "Not Applicable" in the table.

Table 7.1-3 provides a sample of a completed Table A.5-1 from the CSPR. The EA practitioner should consult within Environment Canada, other departments, governments and Aboriginal groups and where appropriate members of the public to identify other projects and activities that may cause an adverse cumulative effect. If there is any potential for adverse cumulative effects, they must be described along with any recommended mitigation measures. The significance of any adverse cumulative effects will also need to be determined. **Any adverse cumulative environmental effects that are deemed to be significant <u>will</u> result in a determination of "Significant Adverse Effects" in Section A.10 "Determination" of the CSPR, or will require changes to the project.** .

Table 7.1-3. Sample of Completed Table A.5-1 (Other Projects and Activities)

Environmental Component(s) experiencing residual adverse environmental effects	Past, Existing, Planned or Likely Projects/Activities that can affect the Environmental Component	Description of Cumulative Effect(s)	Proposed Mitigation for Cumulative Adverse Effect(s)	Significance of Cumulative Adverse Effect(s)
Wildlife Habitat (terrestrial and aquatic)	Historical agricultural activities adjacent to the project area. Existing hydro corridor right-of-way adjacent to project area.	Cumulative reduction and fragmentation of terrestrial habitat due to historical clearing of woodlots for agricultural practices, regular maintenance mowing of hydro right-of-way, and vegetation clearing required for temporary access to the project site.	The effect will be short-term and will be mitigated by restoring disturbed areas with plant species that are native to the project area.	Negligible
Fauna	Planned recreational trail in proximity to the project area.	Changes in wildlife behaviour due to cumulative effects of disturbance caused by human activity associated with the trail use and ongoing maintenance activities required for the project.	The effect will be mitigated by erecting signage to advise workers and visitors of wildlife sensitivities and installing barriers to control access. Wildlife responses will be monitored to determine whether further measures are required.	Minor Adverse

Section A.6 of the CSPR may be completed, if applicable, to identify any other matter relevant to the class screening such as anticipated beneficial effects of the project.

In Section A.7 of the CSPR, the EA practitioner must identify whether or not any referrals or consultation were undertaken, identify those parties involved, when and where consultations took place and identify any issues raised and how they were addressed. Documentation of the results of these referrals and consultations, within the CSPR or attachments, is important.

In Section A.8 of the CSPR, the EA practitioner must identify whether or not any additional mitigation measures were identified through consultation. The class screening should not proceed if the project-specific mitigation measures recommended by others fundamentally change the project under assessment. Project proponents must ensure that the standard mitigation measures identified for each effect are relevant and are implemented.

In Section A.9 of the CSPR, the EA practitioner must identify if a follow-up program is required for the project and if yes, describe the project specific follow-up activities that are warranted to verify the environment effects or the effectiveness of the mitigation measures. The responsibilities for each follow-up activity should also be identified.

In Section A.10 of the CSPR, Environment Canada and any other RA using the MCSR must make a determination in accordance with sub-section 20(1)(a) of CEAA, based on the MSCR and the completed CSPR. The options available to the RAs are limited to the following:

1. The project is not likely to cause significant adverse environmental effects and the project can proceed with application of the mitigation measures specified in the EA report.
2. The project is likely to cause significant adverse environmental effects that cannot be justified and therefore the project cannot proceed.

Once a decision on whether or not the project should proceed, the individuals involved in preparing, reviewing and approving the CSPR must be identified in Section A.11. Each person must authorize the CSPR. If there were more than one RA, representatives from the other Responsible Authorities will also need to authorize the CSPR.

7.2 The Canadian Environmental Assessment Registry

The purpose of the Canadian Environmental Assessment Registry (the Registry) is to facilitate public access to records relating to environmental assessments and to provide notice in a timely

manner of assessments. The Registry consists of two components – an Internet site and a project file.

The Registry project file must include a copy of the MCSR and all related CSPRs. The RA maintains the file, ensures convenient public access, and responds to information requests in a timely manner.

The Registry Internet site is administered by the Agency. The RA and the Agency are required to post specific records to the Internet site in relation to the MCSR and any related CSPRs.

Upon declaration of the MCSR, the Act requires RAs to post on the Internet site of the Registry, at least every three months, statements of projects for which an MCSR was used. Each statement should be in the form of a list of projects, and should include:

- the title of each project for which the MCSR was used;
- the location of each project;
- RA contact information (name, phone number, address, email); and
- the date when it was determined that the project falls within the class of projects covered by the report.

Note: The schedule for posting statements is:

- no later than July 15 (for projects assessed from April 1 to June 30)
- no later than October 15 (for projects assessed from July 1 to September 30)
- no later than January 15 (for projects assessed from October 1 to December 31)
- no later than April 15 (for projects assessed from January 1 to March 31).

8. Procedures for Revising the Model Class Screening Report

The RA will notify the Agency in writing of its interest to revise the MCSR as per the terms and conditions of the declaration. It will discuss the proposed revisions with the Agency and affected federal government departments and may invite comment from stakeholders on the proposed changes. For a re-declaration of the MCSR, a public consultation period will be required. The RA will then submit the proposed revisions to the Agency, along with a statement providing a rationale for each revision proposed as well as a request that the Agency amend or re-declare the MCSR.

8.1 Amendments

The purpose of an amendment is to allow for minor modifications to the MCSR after experience has been gained with its operation. Amendments do not require public consultation and do not allow for changes to the term of application. In general, amendments to the MCSR can be made if the Agency is satisfied that changes:

1. represent editorial changes intended to clarify or improve the document and procedures screening process;
2. streamline or modify the planning process;
3. do not materially alter either the scope of the projects subject to the MCSR or the factors to be considered in the assessment required for these projects; and/or

8.2 Re-declaration

The purpose of a re-declaration is to allow substantial changes to the MCSR after experience has been gained with its operation. Re-declarations require a public consultation period. A re-declaration of an MCSR may be undertaken for the remaining balance of the original declaration period or for a new declaration period if the changes:

- extend the application of the MCSR to projects or environmental settings that were not previously included, but are similar or related to projects included in the class definition;
- represent modifications to the scope of the projects subject to the MCSR or the factors to be considered in the assessment required for these projects;
- reflect new or changed regulatory requirements, policies or standards;
- introduce new design standards and mitigation measures;
- modify the federal coordination notification procedures;
- extend the application of the MCSR to RA(s) who were not previously declared users of the report;
- remove projects that are no longer suitable for the class;
- extend the term of application of the MCSR; and /or
- result in significant changes to the class screening project report template.

9. Term of Application

This report will be in effect for five (5) years from its date of declaration. Near the end of the MCSR declaration period, and at other times as necessary, Environment Canada will review content and usage to allow for report updates and the preparation for potential re-declaration.

10. References and Further Guidance

Environment Canada, 1992:

Hydrometric Technician Career Development Program. Volumes 1-5. Water Resources Branch, Environment Canada (1992).

Fisheries and Oceans Canada

Operational Statement - Beaver Dam Removal, Version 3.0 http://www.dfo-mpo.gc.ca/regions/central/habitat/os-eo/provinces-territories-territoires/on/os-eo03-eng.htm

Fisheries and Oceans Canada, 1998:

Canadian Technical Report of Fisheries and Aquatic Sciences 2107 - Guidelines for the Use of Explosives In or Near Canadian Waters.

Fisheries and Oceans Canada, 1995:

Freshwater Intake End-of-Pipe Fish Screen Guidelines (March 1995), 27 pages.

Gas Research Institute, 1997:

Field Analytical Techniques for Mercury In Soils – Technology Evaluation (May 1997), 50 pages.

O'Connor Associates, 1998:

Risk from Mercury Exposure at Hydrometric Stations (June 1998), 100 pages.

Public Works and Government Services Canada, 1999:

Hydrometric Stations Cleanup Protocol – Testing and Evaluation (March 1999), 200 pages.

11. Glossary of Terms

Term	Definition
Biodegradable	Any substance that decomposes through the action of micro-organisms.
Compensation for Loss	The replacement of natural habitat, increase in the productivity of existing habitat, or maintenance of fish production by artificial means in circumstances dictated by social and economic conditions, where mitigation techniques and other measures are not adequate to maintain habitats for Canada's fisheries resources.
Cumulative Environmental Effects	The effects on the environment, over a certain period of time and distance, resulting from effects of a project when combined with those of other past, existing, and imminent projects and activities.
Deleterious Substance	Any substance that, if added to any water, would degrade or alter or form part of a process of degradation or alteration of the quality of that water so that it is rendered or is likely to be rendered deleterious to fish or fish habitat or to the use by humans of fish that frequent that water, or any water that contains a substance in such quantity or concentration, or that has been so treated, processed or changed, by heat or other means, from a natural state that it would, if added to any other water, degrade or alter or form part of a process of degradation or alteration of the quality of that water so that it is rendered or is likely to be rendered deleterious to fish or fish habitat or to the use by man or fish that frequent that water.
Ecosystem	"A dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit." (*Canadian Environmental Protection Act*, 1999)
Endangered Species	"A wildlife species that is facing imminent extirpation or extinction." (*Species at Risk Act*)
Environment	" 'environment' means the components of the Earth, and includes (*a*) land, water and air, including all layers of the atmosphere, (*b*) all organic and inorganic matter and living organisms, and (*c*) the interacting natural systems that include components referred to in paragraphs (*a*) and (*b*)"." (*Canadian Environmental Assessment Act*)
Environmental Assessment	In respect of a project, an assessment of the environmental effects of the project that is conducted in accordance with the *Canadian Environmental Assessment Act* and the regulations.
Environmental Effect	In respect of a project, a) any change that the project may cause in the environment, including any change it may cause to a listed wildlife species, its critical habitat or the residences of individuals of that species, as those terms are defined in subsection 2(1) of the *Species at Risk Act*, (b) any effect of any change referred to in paragraph (a) on (i) health and socio-economic conditions, (ii) physical and cultural heritage, (iii) the current use of lands and resources for traditional purposes by aboriginal persons, or (iv) any structure, site or thing that is of historical, archaeological, paleontological or architectural significance, or (c) any change to the project that may be caused by the environment, whether any such change or effect occurs within or outside Canada; (*Canadian Environmental Assessment Act*)
Erosion	The process of wearing away the earth's surface through the action of wind and water.
Exclusion List	A list of projects, prescribed pursuant to CEAA, which do not require assessment under CEAA.
Fish	Includes parts of fish, shellfish, crustaceans, marine animals and any parts of shellfish, crustaceans or marine animals, and the eggs, sperm, spawn, larvae, spat and juvenile stages of fish, shellfish, crustaceans and marine animals.

Term	Definition
Follow-Up Program	A program for: a) verifying the accuracy of the environmental assessment of a project; and b) determining the effectiveness of any measures taken to mitigate the adverse environmental effects of the project. (*Canadian Environmental Assessment Act*)
Fuel	Any form of matter that in its primary use is combusted or oxidized for the generation of energy.
Groundwater	All water under the surface of the ground.
Habitat	"(*a*) in respect of aquatic species, spawning grounds and nursery, rearing, food supply, migration and any other areas on which aquatic species depend directly or indirectly in order to carry out their life processes, or areas where aquatic species formerly occurred and have the potential to be reintroduced; and (*b*) in respect of other wildlife species, the area or type of site where an individual or wildlife species naturally occurs or depends on directly or indirectly in order to carry out its life processes or formerly occurred and has the potential to be reintroduced." (Species at Risk Act)
Inclusion List	A list of physical activities, prescribed pursuant to CEAA, that are not related to a physical work but are subject to assessment under CEAA.
Migratory Birds	"A migratory bird referred to in the Convention, and includes the sperm, eggs, embryos, tissue cultures and parts of the bird." (*Migratory Birds Convention, Act, 1994*)
Mitigation	In respect of a project, the elimination, reduction or control of the adverse environmental effects of the project, and includes restitution for any damage to the environment caused by such effects through replacement, restoration, compensation or any other means. (*Canadian Environmental Assessment Act*)
Pesticide	Virtually any thing that is designed to control, destroy, attract or repel a pest. The *Pest Control Products Act and Regulations* refer to a pesticide as a "control product". These control products usually come in the form of a chemical, organism or device.
Public Lands	Lands, including submerged lands, that belong to Her Majesty in right of Canada or that the Government of Canada has the power to dispose of, whether or not such disposal is subject to the terms of any agreement between the Government of Canada and the government of a province.
Rehabilitation	The return of a species, population or ecosystem to a healthy, functioning state.
Release	Includes discharge, spray, inject, inoculate, abandon, deposit, spill, leak, seep, pour, emit, empty, throw, dump, place and exhaust.
Sites Remediation	The action taken to correct damage from pollution through any one of the following: a) the removal of equipment or buildings or other structures or appurtenances; b) the conducting of investigations to determine the presence of substances; c) the decontamination buildings or other structures or other appurtenances, or land or water; d) the stabilization, contouring, maintenance conditioning, or reconstruction of the land surface; or e) any other procedure, operation, or requirement specified in the regulations.
Restoration	The return of a species, population or ecosystem to its state prior to disturbance.
Soil	"The naturally occurring, unconsolidated mineral or organic material at least 10 cm thick that occurs at the earth's surface and is capable of supporting plant growth. In this definition 'naturally occurring' includes disturbance of the surface by human activities such as cultivation and logging but not displaced materials such as mine spoils. Soil extends from the earth's surface through the genetic horizons, if present, into the underlying material to the depth of the control section. Soil may have water covering its surface to a depth of 60 cm or less either at low tide in coastal areas or during the driest part of the year in areas inland." (Agriculture and Agri-Food Canada, *The Canadian System of Soil Classification*, Third Edition, 1998)
Species at Risk	"An extirpated, endangered or threatened species, or a species of special concern." (*Species at Risk Act*)
Spoil	Soil materials other than topsoil excavated from the trench. In most cases, the excavated soil is suitable for return to the pipeline trench, and allows for re-contouring of the right-of-way.

Term	Definition
Surface Water	Water in a watercourse on the surface of the ground.
Sustainable Development	"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." (Brundtland Report, 1987; Sustainable development focuses on improving the quality of life for all of the Earth's citizens without increasing the use of natural resources beyond the capacity of the environment to supply them indefinitely.)
Topsoil	"The layer of soil moved in cultivation. Presumably fertile soil material used to top-dress road-banks, gardens, and lawns. The uppermost part of the soil that is ordinarily moved in tillage, or its equivalent in uncultivated soils. It ranges in depth from 7.5 to 25 cm (3 to 10 inches) and is frequently designated as the 'plow layer', the 'Ap layer,' or the 'Ap horizon.' (Agriculture and Agri-Food Canada, *Glossary of Terms in Soil Science*, 1976)
Trigger	An action by a federal authority that triggers or initiates the need for an environmental assessment; that is, one or more of the following duties, powers, or functions in relation to a project: a) proposes the project; b) grants money or other financial assistance to a project; c) grants an interest in land for a project; or d) exercises a regulatory duty in relation to a project, such as issuing a permit or license, that is included in the Law List prescribed in CEAA's regulations.
Water	All water on or under the surface of the ground.
Water body	The bed and shore of a river, stream, lake, creek, lagoon, swamp, marsh or other natural body of water; or a canal, ditch, reservoir, or other man-made surface feature, whether it contains or conveys water continuously or intermittently.
Wetland	Land that is saturated with water long enough to promote wetland or aquatic processes as indicated by poorly drained soils, hydrophytic vegetation and various kinds of biological activity which are adapted to a wet environment. Wetlands include bogs, fens, marshes, swamps and shallow waters (usually 2 m deep or less) as defined in *The Canadian Wetland Classification System* published by the National Wetlands Working Group of the Canada Committee on Ecological Land Classification (1987).
Wildlife species	A species, subspecies, variety or geographically or genetically distinct population of animal, plant or other organism, other than a bacterium or virus, that is wild by nature and (a) is native to Canada; or (b) has extended its range into Canada without human intervention and has been present in Canada for at least 50 years (*Species at Risk Act*)

12. List of Acronyms and Short Forms

COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CEAA/The Act	*Canadian Environmental Assessment Act*
CSPR	Class Screening Project Report
EA	Environmental Assessment
FA	Federal Authority
HADD	Harmful alteration, disruption or destruction

MCSR	Model Class Screening Report
NEAS	National Environmental Assessment System
NWPA	*Navigable Waters Protection Act*
RA	Responsible Authority
SARA	*Species at Risk Act*
The Agency	The Canadian Environmental Assessment Agency
The Registry	The Canadian Environmental Assessment Registry

Appendix A

Class Screening Project Report (CSPR)

for the Model Class Screening Report for Hydrometric Station Projects in Ontario Region

To be completed by Environment Canada or its delegate

A.1 Application of the Model Class Screening Report (MCSR)

The following sections will assist in determining whether or not the *Canadian Environmental Assessment Act* (CEAA) and the MCSR apply.

A.1.1 Does the CEAA Apply?

☐ ***Yes*** *(proceed)* ☐ ***No*** *(do not proceed with the CSPR)*

The *Canadian Environmental Assessment Act* applies when:

- **The project is an undertaking in relation to any physical work that is not otherwise excluded from assessment under the *Exclusion List Regulations*.** If the project involves a physical work that is not described in the Exclusion List, then CEAA applies to the *entire* project; or
- **The project involves any physical activity that is not in relation to a physical work but that is listed in the *Inclusion List Regulations*.** Refer to the *Inclusion List Regulations* for all physical activities *not* involving physical works; and
- Environment Canada and/or another Federal Authority (s. 5 of CEAA):
    a) is the proponent of a project;
    b) grants money or other financial assistance to a project;
    c) grants an interest in land to enable a project to be carried out; or
    d) exercises a regulatory duty in relation to a project, such as issuing a permit, license or authorization that is covered under the *Law List Regulations*.

Because Environment Canada is the proponent of hydrometric station projects or grants money or other financial assistance to projects subject to this MCSR, CEAA is always triggered. In accordance with the Federal Coordination Regulations under CEAA, it is the responsibility of Environment Canada (as the lead RA), to contact other federal departments so they can determine if they are also required to conduct an EA of the proposed project.

A.1.2 Does the Model Class Screening Report (MCSR) Apply?

The Model Class Screening Report for Hydrometric Station Projects can only be used for the projects described in the table below. Any projects that are not described below are either excluded from CEAA or else must be assessed individually or under another type of MCSR.

Project Components Covered by this MCSR

Table A.1-1 lists all project components that are covered by this MCSR. Check all applicable boxes.

Table A.1-1: Projects Covered by this MCSR

✓	Name of Class	Summary Description
☐	1. New or Modified Hydrometric Stations	The proposed construction, modification, operation and maintenance, decommissioning and abandonment of hydrometric stations in the Province of Ontario.
☐	2. Hydrometric Station Cleanup	The proposed clean-up of contaminated shelters and soils at hydrometric stations in the Province of Ontario.
☐	3. Hydrometric Station Cleanup and Decommissioning	The proposed clean up of contaminated shelters and soils and/or decommissioning and abandonment of hydrometric stations in the Province of Ontario.

A.1.3 Conditions for Not Using the MCSR

The MCSR cannot be used if the project involves any or a combination of the following conditions:

- any "physical works" or "physical activities" for which CEAA applies and that are not described in Table 2.3-1;
- projects that would require a permit under the *Species at Risk Act* (SARA)
- Projects that are likely to have an adverse effect on species at risk, either directly or indirectly, such as by adversely affecting their habitat. *****Species at risk include:
  - species identified on the List of Wildlife Species at Risk set out in Schedule 1 of SARA, and including the critical habitat or the residences of individuals of that species, as those terms are defined in subsection 2(1) of SARA
  - species that have been recognized as "at risk" by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) or by provincial or territorial authorities;
    - Note that this MCSR <u>does</u> apply to projects in areas that may contain species at risk; however, **if after commencing a class screening using this MCSR, it becomes known or reasonably suspected that species at risk could be adversely affected by the project, do not proceed.** Refer to Section 7.1 "Instructions for Completing a Class Screening Project Report" for guidance**.**
- projects located in a National Park;
- projects located in a Migratory Bird Sanctuary or National Wildlife Area;

- projects within or adjacent to a water body, which involve the excavation, exposure or storage of natural rock with demonstrated acidic drainage;
- projects that involve the development of new permanent roads or trails required to provide access for the movement of heavy machinery;
- projects that involve the construction, decommissioning or abandonment of structures on two sides of an international or inter-provincial boundary;
- projects that involve the deposit of a deleterious substance into waters frequented by fish or into any place under any conditions where the deleterious substance may enter waters frequented by fish, and
- projects that involve the deposit of a substance that is harmful to migratory birds into waters or an area frequented by migratory birds or into a place from which it may enter such waters or such an area that is harmful to migratory birds.

If any of the above conditions apply ***DO NOT* proceed with the CSPR. An individual screening, as per Section 18 of CEAA, is required.**

If during the course of the project implementation, the scope of the project changes, the CSPR will need to be modified to reflect the changes or an individual screening will need to be conducted.

A.2 Project Information

A.2.1 Project File Numbers

NEAS Record No.*:* _____ EC File No.: _____

A.2.2 Project Identification

Project Title: _____
Project Location: _____

Is a map(s) or air photo(s) of the project location and general vicinity available? (Maps should display a title, a scale, a drafting date, a north arrow, elevations, latitudes and longitudes, and where applicable bathymetric information).

☐ ***Yes*** ☐ ***No***

A.2.3 Project Description

Briefly explain the purpose of the project below and describe all of the physical works and activities applicable to the project class in Table A.2-1.

_____

_____

_____

_____

Table A.2-1 Description of Project Components

Physical Work or Activity (Project components)	Description (provide details where applicable)
• Contaminated Soil Cleanup and Handling (e.g., type of work to be undertaken)	
• Earthworks (e.g., area to be excavated and location)	
• In-water or Near Water Works (e.g., description of in-water structures and equipment to be installed or removed)	
• Land Based Structures (e.g., description of land based structures and equipment to be installed or removed)	
• Operation of Hand Machinery (e.g., description of hand machinery to be used)	
• Operation of Heavy Equipment (e.g., types of equipment, vehicles and vessels to be used)	
• Station operation and maintenance (e.g., flushing of intakes, personnel visits)	
• Vegetation Clearing and Grubbing (e.g., approximate area / amount of vegetation affected)	

A.2.4 Referral to Fisheries and Oceans Canada and Transport Canada

Fisheries and Oceans Canada and Transport Canada will also be RAs for projects that require an authorization under the *Fisheries Act*, or an approval under the *Navigable Waters Protection Act*, respectively, and which trigger the *Canadian Environmental Assessment Act.* Fisheries and Oceans Canada and Transport Canada have agreed to use the process outlined in this MCSR to fulfill their EA requirements. Refer to Section 2.5 of the MCSR, "Projects that Require Referral to, or Consultation with, Other Federal or Provincial Government Departments and Agencies", for the list of projects that can be assessed using this CSPR for which Fisheries and Oceans Canada and Transport Canada are most likely to be RAs.

A.2.5 Responsible Authority(s) and Trigger(s)

Table A.2-2 Responsible Authorities and Triggers

Trigger	Check *(If Applicable)*	Responsible Authority
Proponent:	**X**	**Environment Canada**
Funding:		
Land:		
Law List:		**Fisheries and Oceans Canada** (Sections 5(2) and 32 of the *Fisheries Act)*
		Transport Canada (Sections 5 and 6(4) of the *Navigable Waters Protection Act)*

A.2.6 Contacts

Environment Canada Contact

Name: _____
Title: _____
Organization: _____
Branch: _____
Program: _____
Address: _____
P.O. Box: _____ *City:* _____
Province: _____ *Postal Code:* _____
Phone Number: _____ *Fax Number:* _____
Email Address: _____

Fisheries and Oceans Canada Contact

(To be completed after referral to Fisheries and Oceans Canada and completion of Section A.7.2 of this CSPR)

Name: _____
Title: _____
Organization: _____
Branch: _____
Program: _____
Address: _____
P.O. Box: _____ *City:* _____

Province:		*Postal Code:*	
Phone Number:		*Fax Number:*	
Email Address:			

Transport Canada Contact

(To be completed after referral to Transport Canada and completion of Section A.7.23 of this CSPR)

Name:			
Title:			
Organization:			
Branch:			
Program:			
Address:			
P.O. Box:		*City:*	
Province:		*Postal Code:*	
Phone Number:		*Fax Number:*	
Email Address:			

Other Regulatory Contacts

Relevant Approval, License or Permit			
Contact Name:			
Street or P.O. Box Address:			
Province/Territory:		*Postal Code:*	
Phone Number:		*Fax Number:*	
Email Address:			
Relevant Approval, License or Permit			
Contact Name:			
Street or P.O. Box Address:			
Province/Territory:		*Postal Code:*	

Phone Number: _____ *Fax Number:* _____

Email Address: _____

_____

Relevant Approval, License or Permit _____

Contact Name: _____

Street or P.O. Box Address: _____

Province/Territory: _____ *Postal Code:* _____

Phone Number: _____ *Fax Number:* _____

Email Address: _____

Environmental Assessment and Project Schedule

EA Start Date: _____

Estimated Work Start Date: _____

Estimated Work Completion Date: _____

A.3 Description of Existing Environment

Various aspects of the project and the existing environment are listed in Column 1 of Table A.3-1 below. All of these aspects may or may not be relevant to the project under assessment. For those aspects that are relevant to the project and its location, provide descriptive information in Column 2 and identify any site specific features or attributes that are considered important and sensitive to project effects. These features or attributes may be defined broadly (e.g., on-site forests) or more specifically as a species (e.g., salmon) or a sensitive feature (e.g., drinking water supply and intake). **Identify any Species at Risk that are likely to occur in the project area.** Refer to maps, figures or photos where relevant. Refer to section 7.1 of the MCSR: "Instructions for Completing a Class Screening Project Report" for suggestions on obtaining information about species at risk that may be within the project's zone of influence, and in conducting any necessary consultation.

Table A.3-1 Description of Existing Environment

Site Characteristics and Parameters	Description (provide details where relevant)
Work Area	
➢ Approximate area directly affected by the project *(in hectares or sq. m)*	
➢ Proposed access to site *(i.e., existing*	

Site Characteristics and Parameters	Description (provide details where relevant)
road/trail, water access or aircraft)	
Surface Waters	
➢ Conditions of existing on-site slopes (ground slopes, stream banks, shorelines)	
➢ Type of on-site water bodies (watercourses, ponds, lakes, wetlands)	
➢ Lengths of shorelines or stream banks to be affected by the project	
➢ Surface water flow volumes	
➢ Surface water quality	
➢ Types of aquatic substrates on-site	
➢ Distance to nearest surface water intake	
Wildlife and Habitat	
➢ Type of natural vegetation / ground cover on site property. Identify any plant Species at Risk. (on-site and study area). Identify conservation status.	
➢ Fish and wildlife species. Identify any Species at Risk. *(on-site and study area)* Identify conservation status	
Land Use	
➢ Site use within the past 12 months	
➢ Land uses on adjacent properties	
➢ Proximity to areas of special conservation value	
➢ Other existing structures such as bridges, piers, buildings (on-site and adjacent properties)	
➢ Land ownership and/or access arrangements	
➢ Federal, Provincial or Territorial land status or special designation	
➢ Aboriginal interest *(e.g. traditional use)*	
➢ On-site presence of known historical, heritage, archaeological or other site of cultural importance	
➢ Navigability of watercourse/waterbody (consult Transport Canada to determine)	
Groundwater	
➢ Distance to nearest groundwater well	
➢ Groundwater quality	
Land	
➢ Soil quality	
➢ Types of soils on-site	
Other	
➢ Other	

A.4 Environmental Effects and Mitigation

Tables A.4-1 to A.4-8 describe the environmental effects and mitigation measures that are applicable to the 8 different project components (physical works and activities) covered in this MCSR. In addition, these tables describe the related socio-economic effects and accidents and malfunctions. This Section is intended to identify those environmental effects and mitigation measures that are applicable the project. To accomplish this, follow the steps below.

a) Check all applicable boxes in Tables A.4-1 to A.4-8 to identify all the project physical works and activities to be undertaken as well as the project phases during which these activities will occur. The project phases are listed at the top of each table.

b) Review the environmental effects and mitigation measures for each physical work and associated activity that you checked.

c) Ensure that the standard mitigation measures identified for each effect are relevant. Further Sections of this CSPR provide for identifying additional mitigation measures that may be needed because of site specific conditions. Additional measures may be identified by you or may be recommended by others through consultation.

d) **If the project requires substantial modifications or additions to the list mitigation measures contained in Tables A.4-1 to A.4-8, verify that the project is still suitable for being assessed using this CSPR. If the project specific mitigation measures required change the project's function such that it is no longer described by the MCSR, an individual screening, as per Section 18 of CEAA is required for this project.**

Note: Fisheries and Oceans Canada has prepared Operational Statements that list project designs and mitigation measures that would, when applied under specific circumstances, prevent adverse effects on fish habitat (for example, for projects that would involve aquatic vegetation removal, beaver dam removal, etc.). As Fisheries and Oceans develops these Operational Statements the mitigation measures that they outline will take precedent over mitigation measures outlined in Tables A.4-1 to A.4-8.

Mitigation should also include all conditions and recommendations contained in *Navigable Waters Protection Act* approvals.

Table A. 4-1 Contaminated Soil Cleanup and Handling

If this physical work or activity applies to the project, check all of the applicable project phases:

☐ *Site Preparation / Construction / Modification* ☐ *Operation / Use / Maintenance* ☐ *Decommissioning/ Abandonment*

Environmental Component	Description of Effect	Mitigation Measures
Air Quality	➢ Decreased ambient air quality due to dust and other particulate matter.	➢ Avoid site preparation or construction during windy and prolonged dry periods. ➢ Cover and contain fine particulate materials during transportation to and from the site. ➢ Instruct workers and equipment operators on dust control methods. ➢ Minimize cutting of vegetation and maintain windbreaks. ➢ Monitor dust conditions visually and take any necessary action to suppress it, as needed. ➢ Place contaminated soils into sealed pails or barrels as soon as possible. ➢ Restore disturbed areas as soon as possible to minimize duration of soil exposure. ➢ Stabilize stored and stockpiled construction materials, debris and excavated soils against wind erosion.
	➢ Decreased ambient air quality due to emissions and increased concentrations of chemical pollutants.	➢ Place contaminated soils into sealed pails or barrels as soon as possible. ➢ Wrap and contain any contaminated materials and waste.
Fauna	➢ Disruption to fish migration, spawning and nursery periods.	➢ Minimize duration of in-water work, whenever possible. ➢ Restrict in-water works to approved timing windows for cold water habitat (June 1 – September 15) and warm water habitat (July 1 – April 1). Timing windows exist to protect fish during migratory, spawning and nursery periods, and when eggs and fry are vulnerable to floodwaters and sediment. Timing windows vary depending upon species present and water temperature. Consult with Ontario Ministry of Natural Resources to verify timing windows applicable to the project site.
	➢ Disruption to wildlife migration and movement patterns, breeding, nesting or hibernation.	➢ Avoid activities during sensitive periods of wildlife migration, staging, nesting, breeding, hibernation or nursing. ➢ Establish vegetated buffer strips between construction zones and areas containing sensitive vegetation and wildlife.
Humans	➢ Personal injuries to public and workers due to exposure to mercury vapour and contaminated soil.	➢ Employ qualified workers. ➢ Ensure technicians have proper respiratory and protective equipment. ➢ Inform members of the public (i.e., residents, boaters, anglers, tourists) of on-site activities and advise them to stay clear of the site. Where mercury contamination was observed, work should proceed rapidly. ➢ Place contaminated soils into sealed pails or barrels as soon as possible.

Environmental Component	Description of Effect	Mitigation Measures
		➢ Prohibit visitation by the public to the site. ➢ Wrap and contain any contaminated materials and waste.
Soil Quality	➢ Contamination of soil and disturbance to microscopic organisms in the soil.	➢ Haul all contaminated materials, wastes and soils off-site and dispose of in an approved disposal facility. ➢ Limit size of stockpiles to avoid anaerobic conditions. ➢ Place contaminated soils into sealed pails or barrels as soon as possible. ➢ Protect stockpiled soils from exposure to and sterilization by solar radiation (or stockpile in an uncovered shaded area). ➢ Wrap and contain any contaminated materials and waste.
Species at Risk - Aquatic	➢ Disturbance to aquatic species at risk and/or their critical habitat.	➢ If any species at risk are known or expected to be present at any time within or adjacent to the project area, consult with Fisheries and Oceans Canada specialists or the relevant provincial authority regarding measures to avoid harmful disturbance to these species.
Species at Risk - Terrestrial	➢ Disturbance to terrestrial species at risk and/or their critical habitat.	➢ If any species at risk are known or expected to be present at any time within or adjacent to the project area, consult with Environment Canada specialists or the relevant provincial authority regarding measures to avoid harmful disturbance to these species.
Surface Water Quality	➢ Reduced water quality and clarity due to increased erosion and sedimentation, and transport of contaminated soils and debris.	➢ Backfill and compact excavations as soon as possible. Optimize degree of compaction to minimize erosion and allow for revegetation. ➢ Do not dispose of soapy wash water directly into a water body, but pour it onto thicker soils located a minimum of 30 m from the shoreline. ➢ Ensure that all materials placed below the high water mark of the water body are clean and free of silt and clay sized particles. All materials must meet the applicable regulations governing the placement of fill in water bodies. ➢ Handle acidic solutions at least 30 m from a water body and over a polypropylene sheet or large plastic container. ➢ Install and maintain silt curtains, sedimentation ponds, check dams, coffer dams or drainage swales, and silt fences around soil storage sites and elsewhere, as required. ➢ Maintain vegetated buffer strips along shorelines and stream banks. If minimum buffers cannot be maintained, avoid grubbing of vegetation root mass in close proximity to shorelines and stream banks. ➢ Minimize clearing, grubbing and grading near water bodies. ➢ Place contaminated soils into sealed pails or barrels as soon as possible. ➢ Securely contain and store all oils, lubricants, fuels and chemicals. If necessary, use impermeable pads or provide berms.

Environmental Component	Description of Effect	Mitigation Measures
		➢ Stabilize slopes as appropriate for local site conditions. Possible methods include hard and soft designs or combinations of designs using crib walls, revetments, gabions, erosion control blankets, live fascines, or brush bundles. ➢ Suspend work prior to imminent storm events. ➢ Wrap and contain any contaminated materials and waste.

Table A.4-1s Related Socio-economic Effects

Socio-economic Component	Description of Effect	Mitigation Measures
Surface Water Quality		
Land and Resource Use	➢ Disruption to community or private surface water supplies (e.g., drinking water, livestock watering, irrigation, commercial and recreational uses).	➢ Ensure that drainage, grading design and cleanup activities do not adversely impact potable wells, ponds, irrigation systems or other uses of water resources in the area. ➢ Minimize construction activities using heavy machinery near water supply intakes. Where possible, use hand machinery. ➢ Provide alternative water supply and remediate damaged intakes.

Table A.4-2 Earthworks

(e.g., soil stripping, stockpiling and storage, grading, excavation, trenching, filling and compacting)

If this physical work or activity applies to the project, check all of the applicable project phases:

☐ *Site Preparation / Construction / Modification* ☐ *Operation / Use / Maintenance* ☐ *Decommissioning/ Abandonment*

Environmental Component	Description of Effect	Mitigation Measures
Air Quality	➢ Decreased ambient air quality due to dust and other particulate matter.	➢ Avoid site preparation or construction during windy and prolonged dry periods. ➢ Cover and contain fine particulate materials during transportation to and from the site. ➢ Instruct workers and equipment operators on dust control methods. ➢ Minimize cutting of vegetation and maintain windbreaks. ➢ Monitor dust conditions visually and take any necessary action to suppress it, as needed. ➢ Restore disturbed areas as soon as possible to minimize duration of soil exposure. ➢ Spray water to minimize dust off paved areas or exposed soils. Use dust suppressants only on large problem areas. ➢ Stabilize high traffic areas with a clean gravel surface layer or other suitable cover material. ➢ Stabilize stored and stockpiled construction materials, debris and excavated soils against wind erosion.
Fauna	➢ Disruption to wildlife migration and movement patterns, breeding, nesting or hibernation.	➢ Avoid activities during sensitive periods of wildlife migration, staging, nesting, breeding, hibernation or nursing. ➢ Avoid creating major obstructions at important wildlife crossing and movement points. ➢ Establish vegetated buffer strips between construction zones and areas containing sensitive vegetation and wildlife.
	➢ Possible disease, mortality or decline in populations of wildlife due to exposure to disease bearing organisms (e.g., mosquitoes carrying West Nile Virus).	➢ Avoid creating still water or stagnant wet areas that may attract and/or propagate disease bearing organisms that may negatively affect wildlife. (Note: If the project involves natural wetlands, once established, the wetland ecosystem will likely mitigate potential effects of disease bearing organisms.)
	➢ Wildlife injury or mortality from entanglement in silt fences.	➢ Avoid using heavy-duty silt fences, particularly those reinforced with wide mesh, in areas where large-bodied amphibians and reptiles (e.g., large snakes) are found.
Groundwater Quality and Quantity	➢ Changes in groundwater flow patterns and levels due to interception of aquifers, changes to infiltration conditions, dewatering or changes to surface flow patterns.	➢ Avoid compacting or other hardening of natural ground surface. ➢ Avoid intercepting aquifers. ➢ Avoid unnecessary disruption of active tile drains. ➢ Maintain surface drainage, natural ponds, and existing ground cover and soil conditions, etc., in groundwater recharge areas.

Environmental Component	Description of Effect	Mitigation Measures
		➢ Revegetate compacted ground surfaces to promote infiltration.
Humans	➢ Personal injuries to public and workers during construction activities due to exposure to disease bearing organisms (e.g., mosquitoes carrying West Nile Virus).	➢ Remove standing water from equipment and containers. ➢ Wear protective clothing and insect repellent if working in areas where mosquitoes are breeding.
Soil Quality	➢ Disturbance to microscopic organisms in the soil.	➢ Limit size of stockpiles to avoid anaerobic conditions. ➢ Protect stockpiled soils from exposure to and sterilization by solar radiation (or stockpile in an uncovered shaded area).
	➢ Reduced soil capability through compaction and rutting, and mixing of topsoil and layers below.	➢ Avoid working during wet conditions and/or confine operation to paved or gravel surfaces. ➢ Whenever possible, strip and store topsoil separately from the layers below and return to excavation in sequence.
Species at Risk - Terrestrial	➢ Disturbance to terrestrial species at risk and/or their critical habitat.	➢ If any species at risk are known or expected to be present at any time within or adjacent to the project area, consult with Environment Canada specialists or the relevant provincial authority regarding measures to avoid harmful disturbance to these species.
Surface Water Hydrology	➢ Adverse modifications to surface drainage patterns, affecting stormwater runoff rates and volumes.	➢ Ensure that earthworks do not exacerbate flood hazards nor create undesired obstructions to drainage into natural water bodies. ➢ Maintain effective surface drainage upon completion of the project, which may include re-establishment of, or improvement to, the original site drainage. ➢ Minimize changes to the ground surface and vegetation cover that would affect infiltration and runoff characteristics. ➢ Whenever possible, limit construction time in flood prone areas and any low-lying shoreline areas to 72 hours or less.
Surface Water Quality	➢ Reduced water quality and clarity due to increased erosion and sedimentation, and transport of debris.	➢ Apply wet weather restrictions to construction activity. ➢ Backfill and compact excavations as soon as possible. Optimize degree of compaction to minimize erosion and allow for revegetation. ➢ Comply with any local regulations, policies and guidelines that stipulate a minimum acceptable buffer width (the allowable distance from a water body). Maximum buffer widths are desirable. ➢ Create interceptor swales to divert runoff from the top of slopes that are susceptible to erosion. ➢ Ensure that all materials placed below the high water mark of the water body are clean and free of silt and clay sized particles. All materials must meet the applicable regulations governing the placement of fill in water bodies. ➢ If possible, direct surface drainage away from working areas and areas of exposed soils. To the maximum extent possible, promote overland sheet flow to well vegetated areas.

Environmental Component	Description of Effect	Mitigation Measures
		➢ Install and maintain silt curtains, sedimentation ponds, check dams, coffer dams or drainage swales, and silt fences around soil storage sites and elsewhere, as required. ➢ Securely contain and store all oils, lubricants, fuels and chemicals. If necessary, use impermeable pads or provide berms. ➢ Stabilize slopes as appropriate for local site conditions. Possible methods include hard and soft designs or combinations of designs using crib walls, revetments, gabions, erosion control blankets, live fascines, or brush bundles.
Terrain and Topography	➢ Changes in slopes, landforms and landscape diversity.	➢ Regrade and fill holes immediately upon completion of site work.
	➢ Ground subsidence from soil thaw and poor excavation and backfilling practices; ground surface mounding or structure movement due to frost heave from inappropriate backfill material or shallow foundation depth.	➢ Ensure that backfilling is undertaken using suitable materials free of ice and frozen soils, and that adequate soil compaction is conducted to avoid ground subsidence. Provide additional backfill where subsidence has occurred. ➢ In areas with high groundwater levels, ensure that soils susceptible to frost heave (generally fine sands and silty soils) are not used for backfill.
	➢ Increased soil exposure resulting in erosion, sedimentation, slope instability and risk of mudslides, slumping, rockfalls, etc.	➢ Avoid high risk areas with unstable slopes (e.g., steep slopes and soil liquefaction risk areas). ➢ Create interceptor swales to divert runoff from the top of slopes that are susceptible to erosion. ➢ Direct runoff and overland flow away from working areas and areas of exposed soils. Promote overland sheet flow to the maximum extent possible. ➢ If necessary, install sediment and erosion controls prior to commencing the work and maintain them until the site has been stabilized. ➢ Keep site clearing to a minimum to maintain sufficient vegetated cover and windbreaks. ➢ On steep slopes that do not require grading, hand clear, without grubbing. ➢ Phase work to minimize duration of exposure of disturbed areas at risk. ➢ Stabilize slopes as appropriate for local site conditions. Possible methods include hard and soft designs or combinations of designs using crib walls, revetments, gabions, erosion control blankets, live fascines, or brush bundles.

Table A.4-2s Related Socio-economic Effects

Socio-economic Component	Description of Effect	Mitigation Measures
Groundwater Quality and Quantity		
Land and Resource Use	➢ Changes to yields of wells due to interception of aquifers, changes to infiltration conditions or damage to wells.	➢ Provide alternative water supply and repair or replace damaged wells. ➢ Reduce excavation depths and cuts near wells and sensitive areas, where safe and feasible. ➢ Restore municipal drains and tile drainage fields; test and repair as required.
Terrain and Topography		
Cultural and Heritage Resources	➢ Loss or disruption to known heritage (in particular, to Aboriginal heritage and spiritually significant sites or areas), archaeological and paleontological features, undiscovered artifacts and features, and areas used for medicinal plant or subsistence harvesting.	➢ Conduct detailed field investigations prior to major ground disturbing activities. ➢ Identify, remove and document any significant artifacts in accordance with applicable guidelines. ➢ In consultation with local Aboriginal groups, heritage and archaeological organisations, identify and avoid known significant natural features.

Table A.4-3 In-water or Near Water Works

(e.g., construction, modification, decommissioning or abandonment of in-water structures or equipment such as weirs, flumes, pressure-activated sensors, gabion baskets, stilling wells)

If this physical work or activity applies to the project, check all of the applicable project phases:

☐ *Site Preparation / Construction / Modification* ☐ *Operation / Use / Maintenance* ☐ *Decommissioning/ Abandonment*

Environmental Component	Description of Effect	Mitigation Measures
Aquatic Sediments	➢ Physical alteration of water body substrates and/or increased potential for release of sediments downstream, including contaminated sediments.	➢ If dredging or releasing sediments, confirm whether sediment is contaminated. If sediment is contaminated, implement more stringent measures to prevent release downstream. ➢ Install and maintain sediment and erosion controls (e.g., silt curtains, check dams, coffer dams, silt fences), as required prior to construction. ➢ Keep stream spoils separate from the bank spoils. ➢ Remove accumulated sediments prior to removing barriers (i.e., check dams, on-line ponds, weirs).
Fauna	➢ Disruption to fish migration, spawning and nursery periods.	➢ Minimize duration of in-water work, whenever possible. ➢ Restrict in-water works to approved timing windows for cold water habitat (June 1 – September 15) and warm water habitat (July 1 – April 1). Timing windows exist to protect fish during migratory, spawning and nursery periods, and when eggs and fry are vulnerable to floodwaters and sediment. Timing windows vary depending upon species present and water temperature. Consult with Ontario Ministry of Natural Resources to verify timing windows applicable to the project site.
	➢ Disruption to wildlife migration and movement patterns, breeding, nesting or hibernation.	➢ Avoid activities during sensitive periods of wildlife migration, staging, nesting, breeding, hibernation or nursing. ➢ Establish vegetated buffer strips between construction zones and areas containing sensitive vegetation and wildlife. ➢ Minimize duration of in-water work, whenever possible. ➢ Schedule activities to avoid disturbance to water bird nesting areas until after the young have fledged.
	➢ Reduced biomass and diversity of aquatic organisms due to physical activities.	➢ Ensure that fish which become trapped or isolated as a result of project activities are salvaged to the main channel of the watercourse. ➢ If isolating the work site, remove any remaining fish and return them to an undisturbed area (i.e., fish salvage). Approval should be obtained from the appropriate federal or provincial agencies for this work. ➢ Minimize duration of in-water work, whenever possible. ➢ Restrict in-water works to approved timing windows for cold water habitat (June 1 – September 15) and warm water habitat (July 1 – April 1). Timing windows exist to protect fish during migratory,

Environmental Component	Description of Effect	Mitigation Measures
		spawning and nursery periods, and when eggs and fry are vulnerable to floodwaters and sediment. Timing windows vary depending upon species present and water temperature. Consult with Ontario Ministry of Natural Resources to verify timing windows applicable to the project site.
	➢ Wildlife injury or mortality from entanglement in silt fences.	➢ Avoid using heavy-duty silt fences, particularly those reinforced with wide mesh, in areas where large-bodied amphibians and reptiles (e.g., large snakes) are found.
Species at Risk - Aquatic	➢ Disturbance to aquatic species at risk and/or their critical habitat.	➢ If any species at risk are known or expected to be present at any time within or adjacent to the project area, consult with Fisheries and Oceans Canada specialists or the relevant provincial authority regarding measures to avoid harmful disturbance to these species.
Species at Risk - Terrestrial	➢ Disturbance to terrestrial species at risk and/or their critical habitat.	➢ If any species at risk are known or expected to be present at any time within or adjacent to the project area, consult with Environment Canada specialists or the relevant provincial authority regarding measures to avoid harmful disturbance to these species.
Surface Water Hydrology	➢ Adverse modifications to stream or shoreline morphology, texture or topography of stream bed.	➢ Avoid using dredged material for upland property reclamation by a lake or river shoreline infilling, or disposing in wetlands. ➢ Dispose of contaminated dredged material according to the Ontario Ministry of Environment guidelines. It is the proponent's responsibility to determine if the dredged material is contaminated or not. ➢ Ensure any dredged material disposed of on land, is set back at least 15 m above the high water mark (*Conservation Authorities Act* requirements must be met where Conservation Authorities have jurisdiction). All disturbed soils should be stabilized and revegetated as soon as possible. ➢ Ensure that potential downstream effects due to erosion and mobilization of bed sediments (notably those retained behind channel obstructions and immediately downstream) are considered, and mitigated as necessary, prior to removing any obstructions. ➢ Fully restore stream banks, shorelines, approaches and channels to near original soil materials and contours where this activity is consistent with the purpose of the project. ➢ If appropriate, side-cast uncontaminated dredged material where it is similar to the recipient area, and where its deposition does not impede navigation. Other types of sediment such as fine silt, clay and muck should not be side-cast, but should be disposed of on land. ➢ Install sediment controls around the perimeter of the dredging work areas for the duration of sediment re-suspension, where there is a risk of re-suspended sediment spreading to adjacent areas. ➢ Whenever possible, limit construction time to 72 hours or less. ➢ Where practical, conduct in-stream or wetland work under frozen conditions.
	➢ Adverse modifications to water flow conveyance, volumes and levels.	➢ During the removal or modification of channel obstructions, monitor areas downstream to determine whether they are being affected by changes in water flow and volumes. Base water flow in the channel must be retained at a rate that is equivalent to the flow prior to the removal or modification of the obstruction, or at a level that will support fish downstream of the site.

Environmental Component	Description of Effect	Mitigation Measures
		➢ Make provisions and contingencies for occurrence of unexpected high flow or low flow conditions during activity, as applicable. ➢ Minimize physical changes to existing drainage patterns. ➢ Suspend work prior to imminent storm events.
	➢ Disruption to water flow at station location due to beaver dams.	➢ Comply with Fisheries and Oceans Canada's Operational Statement – Beaver Dame Removal http://www.dfo-mpo.gc.ca/regions/central/habitat/os-eo/provinces-territories-territoires/on/os-eo03-eng.htm ➢ Avoid dismantling beaver dams at any time that is critical to the beavers (i.e., in late fall when beavers are preparing food caches for the winter, and in the spring when kits are still in the lodge) to ensure potential disruption is minimized. ➢ Conduct beaver dam removal at a time when effects on fish can be minimized (i.e., during periods of low water). ➢ Consult with provincial resource management officials regarding any beaver dam removal. Notify Fisheries and Oceans Canada at least fourteen (14) days prior to the start of beaver dam control activities. ➢ Dismantle beaver dams manually. ➢ Dispose of sediment excavated upstream of the beaver dam on land above the high water level. Contain and stabilize the sediment to prevent it from re-entering the fish habitat. ➢ During beaver dam breaching activities, monitor areas downstream to determine whether damage to the channel and adjacent properties receiving additional water volumes are occurring. ➢ Ensure beaver dam breaching activities minimize downstream sediment load. Only a small portion of the dam should be pulled back at one time to allow the water from the beaver pond to be released slowly. As water levels decrease, the size of the opening may be increased to allow complete drainage of the retention area. ➢ Ensure that fish which become trapped or isolated as a result of project activities are salvaged to the main channel of the watercourse. ➢ Ensure that there is no release of sediment or sediment laden water into the watercourse or water body downstream. Sediment can harmfully alter the bed of the receiving waters, or it can contain other contaminants that can alter the water quality or can be toxic to fish. ➢ Remove beaver dams in such a way that there is not a sudden release of water downstream. A sudden release of water can result in flooding, bank erosion and channel alteration. ➢ Retain base water flow in the channel at a rate that is equivalent to the flow prior to the removal of the dam, or at a level that will support fish downstream of the old dam site.
	➢ Increased ice jamming and flooding potential at bends, bridges, crossings,	➢ Avoid placement of materials, including plantings, in channel and floodplain areas that may reduce its natural flow conveyance capacity, and increase the risk of upstream flooding.

Environmental Component	Description of Effect	Mitigation Measures
	fordings and other flow constrictions (including effects of flooding on the project).	➢ Ensure that potential downstream effects due to erosion and mobilization of bed sediments (notably those retained behind channel obstructions and immediately downstream) are considered, and mitigated as necessary, prior to removing any obstructions. ➢ Ensure that there are appropriate cut and fill balances for in-water activities. (Note: Meet all appropriate regulatory requirements.) ➢ If blasting is required, follow the *Guidelines for the Use of Explosives In or Near Canadian Waters* (DFO, 1998). Charges should be minimized (less than one kg and preferably smaller) and placed one-third to halfway down the dam on the downstream face to loosen the dam rather than destroy it. If larger charges are used, a *Fisheries Act* section 32 authorization may be required. ➢ Minimize encroachment of permanent facilities into water bodies by installing projects above the high water mark without infilling whenever possible and consistent with project objectives. ➢ Remove all barriers and obstructions related to construction and break up any ice bridges prior to spring runoff to avoid ice jams, upstream flooding and downstream erosion. ➢ Whenever possible and consistent with the project objectives, leave natural structures (e.g., woody debris) in place, unless they represent a barrier to flow of fish movement.
Surface Water Quality	➢ Reduced water quality and clarity due to increased erosion and sedimentation, and transport of debris.	➢ Conduct in-stream work during dry conditions, where flow is low or under frozen conditions. ➢ Ensure sandbags used for cofferdam construction are filled with clean sand and are free of fine particulates. ➢ Ensure that all materials placed below the high water mark of the water body are clean and free of silt and clay sized particles. All materials must meet the applicable regulations governing the placement of fill in water bodies. ➢ Install and maintain sediment and erosion controls (e.g., silt curtains, check dams, coffer dams, silt fences), as required prior to construction. ➢ Minimize duration of in-water work, whenever possible. ➢ Operate and store all materials and equipment in a manner that prevents any deleterious substance (e.g., petroleum products, silt, etc.) from entering the water.
Wildlife Habitat (terrestrial and aquatic)	➢ Physical changes to aquatic habitat resulting in a barrier to fish movement and a reduction in area, productive capacity and quality, or a change in function.	➢ Avoid dismantling beaver dams at any time that is critical to the beavers (i.e., in late fall when beavers are preparing food caches for the winter, and in the spring when kits are still in the lodge) to ensure potential disruption is minimized. ➢ Avoid summer construction in and adjacent to natural wetlands. ➢ Conduct removal or modification to channel obstructions at a time when effects on fish habitat can be minimized (i.e., during periods of low water). ➢ Consult with regulatory authorities regarding any beaver dam removal. Notify Fisheries and Oceans Canada at least fourteen (14) days prior to the start of beaver dam control activities. ➢ Implement mitigation measures in accordance with any requirements and recommendations stipulated by authorities under the *Fisheries Act*.

Environmental Component	Description of Effect	Mitigation Measures
		➢ Minimize wetland disturbance through use of swamp mats and replacement of locally removed topsoil. ➢ Pump sediment laden dewatering discharge well away from a watercourse and allow it to settle in a stilling basin or filter through riparian vegetation, before re-entering the watercourse, downstream of the construction area. ➢ Restore habitat where necessary. ➢ Revegetate stream banks and shorelines with native species known to be well adapted to the project area. ➢ Upon project completion, remove all sandbags from the water. ➢ When isolating area to work in the dry: (a) maintain existing stream flows downstream of the dewatered work area without interruption, during all stages of the work; ensure that there is no increase in water levels upstream of the dewatered work area; (b) remove fish from the work area prior to dewatering and release them alive immediately downstream; (c) install flow dissipaters and/or filter bags, or equivalent, at water discharge points to prevent erosion and sediment release; (d) before removing the temporary cofferdams, clear out any silt or debris that has accumulated around them.

Table A.4-3s Related Socio-economic Effects

Socio-economic Component	Description of Effect	Mitigation Measures
Surface Water Hydrology		
Land and Resource Use	➢ Disruption to navigation due to changes in surface water levels and flows.	➢ Consult with Transport Canada and/or harbour or port authority. ➢ Implement all conditions and recommendations contained in *Navigable Waters Protection Act* approvals.

Table A.4-4 Land Based Structures

(e.g., shelters, stilling wells, recorders)

If this physical work or activity applies to the project, check all of the applicable project phases:

☐ *Site Preparation / Construction / Modification* ☐ *Operation / Use / Maintenance* ☐ *Decommissioning/ Abandonment*

Environmental Component	Description of Effect	Mitigation Measures
Air Quality	➢ Decreased ambient air quality due to emissions and increased concentrations of chemical pollutants.	➢ Minimize operation and idling of vehicles and gas-powered equipment, particularly during local smog advisories. ➢ Use well-maintained equipment and machinery within operating specifications.
Fauna	➢ Disruption to wildlife migration and movement patterns, breeding, nesting or hibernation.	➢ Avoid activities during sensitive periods of wildlife migration, staging, nesting, breeding, hibernation or nursing. ➢ Avoid creating major obstructions at important wildlife crossing and movement points. ➢ Establish vegetated buffer strips between construction zones and areas containing sensitive vegetation and wildlife. ➢ If necessary, provide wildlife access over, under or around permanent obstructions.
Species at Risk - Terrestrial	➢ Disturbance to terrestrial species at risk and/or their critical habitat.	➢ If any species at risk are known or expected to be present at any time within or adjacent to the project area, consult with Environment Canada specialists or the relevant provincial authority regarding measures to avoid harmful disturbance to these species.
Surface Water Hydrology	➢ Adverse modifications to surface drainage patterns, affecting stormwater runoff rates and volumes.	➢ Maintain effective surface drainage upon completion of the project, which may include re-establishment of, or improvement to, the original site drainage. ➢ Minimize changes to the ground surface that would affect its infiltration and runoff characteristics (e.g., surface hardening, rutting).
Surface Water Quality	➢ Reduced water quality and clarity due to inputs of contaminants from surface runoff during construction and operation.	➢ Direct surface runoff away from water bodies and into stormwater containment facilities or adequately vegetated areas. ➢ Maintain an adequate supply of cleanup materials at the work site. ➢ Store all toxic materials in secure enclosures to prevent leaks and spills into the environment, and to minimize vandalism.
Terrain and Topography	➢ Ground subsidence from soil thaw and poor excavation and backfilling practices; ground surface mounding or structure movement due to frost heave from inappropriate backfill material or shallow foundation depth.	➢ Ensure that backfilling is undertaken using suitable materials free of ice and frozen soils, and that adequate soil compaction is conducted to avoid ground subsidence. Provide additional backfill where subsidence has occurred. ➢ Ensure that foundations or below ground structures have sufficient burial depth. ➢ For shallow foundations, ensure that frost susceptible soils are replaced with suitable, well drained, backfill material placed to an adequate depth.

Environmental Component	Description of Effect	Mitigation Measures
		➢ In areas with high groundwater levels, ensure that soils susceptible to frost heave (generally fine sands and silty soils) are not used for backfill.

Table A.4-4a Related Accidents and Malfunctions

Environmental Component	Description of Effect	Mitigation Measures
Spills and Leaks		
Soil Quality	➢ Reduced soil quality due to spills and leaks.	➢ Capture, contain and clean up spills and leaks immediately. Immediately notify local authorities of a reportable spill. For more information and to find out who to call, refer to Environment Canada's Environmental Emergencies Program website. ➢ Ensure that refuelling and handling of contaminants is conducted off-site, or on impermeable pads, if necessary. ➢ Maintain an adequate supply of cleanup materials at the work site. ➢ Refuel machinery on impermeable pads or buried liners designed to allow full containment of spills.
Surface Water Quality	➢ Reduced water quality and clarity due to spills and leaks.	➢ Capture, contain and clean up spills and leaks immediately. Immediately notify local authorities of a reportable spill. For more information and to find out who to call, refer to Environment Canada's Environmental Emergencies Program website. ➢ Contain any contaminants (e.g., fuels, paints), as well as any contaminated soils or other contaminated materials in secure containers and dispose of them off-site at a licensed disposal facility. ➢ Maintain an adequate supply of cleanup materials at the work site. ➢ Store all toxic materials in secure enclosures to prevent leaks and spills into the environment, and to minimize vandalism.
Structural Failures		
Humans	➢ Personal injuries to public and workers.	➢ Conduct regular inspections and maintenance of all structures. ➢ Construct and operate all surface facilities and foundations in accordance with approved design specifications. ➢ Ensure that all workers are equipped with appropriate safety and protective equipment.

Environmental Component	Description of Effect	Mitigation Measures
		➢ Ensure that structure design, siting and construction meet all federal, provincial and municipal requirements. ➢ Maintain a trained work force and ensure compliance with all occupational health and safety requirements.
Surface Water Hydrology	➢ Adverse modifications to water flow conveyance, volumes and levels.	➢ Conduct regular inspections and maintenance of all structures. ➢ Construct and operate all surface facilities and foundations in accordance with approved design specifications. ➢ In the event of a structural failure, remediate structures and associated effects. ➢ Where appropriate, locate the site and design the station to withstand a major flood. ➢ Where possible, locate land based structures outside of floodplains or on protected structures (e.g., bridges, embankments).
Terrain and Topography	➢ Structural movement or collapse.	➢ Clear site of all litter and food waste to minimize attraction of wildlife. ➢ Conduct regular inspections and maintenance of all structures. ➢ Construct and operate all surface facilities and foundations in accordance with approved design specifications. ➢ In the event of a structural failure, remediate structures and associated effects. ➢ Where appropriate, ensure that all excavations are completely backfilled with appropriate materials. ➢ Where appropriate, locate the site and design the station to withstand a major flood. ➢ Where possible, locate land based structures outside of floodplains or on protected structures (e.g., bridges, embankments).

Table A.4-5 Operation of Hand Machinery

(e.g., weed whips, chain saws, saws, shovels, pumps, pressure hose, generators, cement mixers, drills, etc.)

If this physical work or activity applies to the project, check all of the applicable project phases:

☐ *Site Preparation / Construction / Modification* ☐ *Operation / Use / Maintenance* ☐ *Decommissioning/ Abandonment*

Environmental Component	Description of Effect	Mitigation Measures
Air Quality	➢ Decreased ambient air quality due to emissions and increased concentrations of chemical pollutants.	➢ Minimize operation and idling of vehicles and gas-powered equipment, particularly during local smog advisories. ➢ Use well-maintained equipment and machinery within operating specifications.
Fauna	➢ Disruption to wildlife migration and movement patterns, breeding, nesting or hibernation.	➢ Avoid activities during sensitive periods of wildlife migration, staging, nesting, breeding, hibernation or nursing. ➢ Establish vegetated buffer strips between construction zones and areas containing sensitive vegetation and wildlife. ➢ Survey the area for active nests, dens, burrows, etc., and avoid disturbing them.
Flora	➢ Introduction of non-native species, including opportunistic species.	➢ Clean heavy machinery and equipment prior to transporting to new location.
Humans	➢ Discomfort to individuals exposed to noise from project activities.	➢ Conform to local noise by-laws and ordinances. ➢ Install noise barriers around work areas in close proximity to sensitive receptors (e.g., homes, schools, community facilities). ➢ Minimize idling of gas powered equipment. ➢ Notify residents of planned events that may cause disturbance, and schedule these activities to avoid sensitive time periods. ➢ Use well-maintained equipment and machinery within operating specifications.
Species at Risk - Terrestrial	➢ Disturbance to terrestrial species at risk and/or their critical habitat.	➢ If any species at risk are known or expected to be present at any time within or adjacent to the project area, consult with Environment Canada specialists or the relevant provincial authority regarding measures to avoid harmful disturbance to these species.
Surface Water Quality	➢ Reduced water quality and clarity due to inputs of contaminants from surface runoff during construction and operation.	➢ Ensure that refuelling and handling of contaminants is conducted off-site, where possible, and away from any water body or from ditches and drains connecting to a water body. ➢ Minimize use and discharge of chemicals and cleaning agents. ➢ Refuel equipment off slopes and well away from water bodies. ➢ Securely contain and store all oils, lubricants, fuels and chemicals. If necessary, use impermeable pads or provide berms.

Table A.4-5s Related Socio-economic Effects

Socio-economic Component	Description of Effect	Mitigation Measures
Humans		
Economic Conditions	➢ Disruption to residents, businesses, community facilities, recreational and tourist activities, due to increased ambient noise levels.	➢ Conform to local noise by-laws and ordinances. ➢ Install noise barriers around work areas in close proximity to sensitive receptors (e.g., homes, schools, community facilities). ➢ Minimize idling of gas powered equipment. ➢ Notify residents of planned events that may cause disturbance, and schedule these activities to avoid sensitive time periods. ➢ Use well-maintained equipment and machinery within operating specifications.

Table A.4-5a Related Accidents and Malfunctions

Environmental Component	Description of Effect	Mitigation Measures
Equipment Misuse or Malfunction		
Humans	➢ Injury to workers during operation of equipment.	➢ Ensure that all workers are equipped with appropriate safety and protective equipment. ➢ Ensure that crews are fully trained in the safe handling of equipment. ➢ Ensure that there are adequate supplies of First Aid equipment on-site. ➢ Use well-maintained equipment and machinery within operating specifications.
Spills and Leaks		
Soil Quality	➢ Reduced soil quality due to spills and leaks.	➢ Capture, contain and clean up spills and leaks immediately. Immediately notify local authorities of a reportable spill. For more information and to find out who to call, refer to Environment Canada's Environmental Emergencies Program website. ➢ Ensure that refuelling and handling of contaminants is conducted off-site, or on impermeable pads, if necessary. ➢ Maintain an adequate supply of cleanup materials at the work site. ➢ Refuel machinery on impermeable pads or buried liners designed to allow full containment of spills.

Environmental Component	Description of Effect	Mitigation Measures
Surface Water Quality	➢ Reduced water quality and clarity due to spills and leaks.	➢ Capture, contain and clean up spills and leaks immediately. Immediately notify local authorities of a reportable spill. For more information and to find out who to call, refer to Environment Canada's Environmental Emergencies Program website. ➢ Contain any contaminants (e.g., fuels, paints), as well as any contaminated soils or other contaminated materials in secure containers and dispose of them off-site at a licensed disposal facility. ➢ Maintain an adequate supply of cleanup materials at the work site. ➢ Store all toxic materials in secure enclosures to prevent leaks and spills into the environment, and to minimize vandalism.

Table A.4-6 Operation of Heavy Equipment, Vehicles and Vessels

(e.g., backhoes, bulldozers, bobcats, trucks, trailers, barges, weed harvesters, vessels, planes, helicopters, etc.)

If this physical work or activity applies to the project, check all of the applicable project phases:

☐ *Site Preparation / Construction / Modification* ☐ *Operation / Use / Maintenance* ☐ *Decommissioning/ Abandonment*

Environmental Component	Description of Effect	Mitigation Measures
Air Quality	➢ Decreased ambient air quality due to dust and other particulate matter.	➢ Install a tarpaulin on material stockpiles and haulage trucks, as appropriate. ➢ Minimize vehicle traffic on exposed soils. ➢ Stabilize high traffic areas with a clean gravel surface layer or other suitable cover material.
	➢ Decreased ambient air quality due to emissions and increased concentrations of chemical pollutants.	➢ Minimize operation and idling of vehicles and gas-powered equipment, particularly during local smog advisories. ➢ Use well-maintained equipment and machinery within operating specifications.
Fauna	➢ Disruption to wildlife migration and movement patterns, breeding, nesting or hibernation.	➢ Avoid activities during sensitive periods of wildlife migration, staging, nesting, breeding, hibernation or nursing. ➢ Ensure that temporary crossings do not impede the natural water flow. ➢ Ensure that temporary crossings do not present a barrier to fish movement. ➢ Establish vegetated buffer strips between construction zones and areas containing sensitive vegetation and wildlife. ➢ Maximize use of existing access roads and trails. Avoid veering off trails. ➢ Minimize operation of machinery in areas where migratory birds are breeding. ➢ Minimize vehicle movements within wildlife habitat areas. ➢ Survey the area for active nests, dens, burrows, etc., and avoid disturbing them. ➢ Use well-maintained equipment and machinery within operating specifications.
Flora	➢ Introduction of non-native species, including opportunistic species.	➢ Clean heavy machinery and equipment prior to transporting to new location.
Humans	➢ Discomfort to individuals exposed to noise from project activities.	➢ Conform to local noise by-laws and ordinances. ➢ Install noise barriers around work areas in close proximity to sensitive receptors (e.g., homes, schools, community facilities). ➢ Minimize idling of gas powered equipment. ➢ Minimize idling of vehicles. ➢ Notify residents of planned events that may cause disturbance, and schedule these activities to avoid sensitive time periods.

Environmental Component	Description of Effect	Mitigation Measures
		➢ Use well-maintained equipment and machinery within operating specifications.
Soil Quality	➢ Reduced soil capability through compaction and rutting, and mixing of topsoil and layers below.	➢ Avoid working during wet conditions and/or confine operation to paved or gravel surfaces. ➢ Maximize use of existing access roads and trails. Avoid veering off trails.
Species at Risk - Terrestrial	➢ Disturbance to terrestrial species at risk and/or their critical habitat.	➢ If any species at risk are known or expected to be present at any time within or adjacent to the project area, consult with Environment Canada specialists or the relevant provincial authority regarding ➢ measures to avoid harmful disturbance to these species.
Surface Water Hydrology	➢ Adverse effect to water levels and flows due to temporary crossings and ice bridges.	➢ Before building snow fill to construct ice bridges in smaller systems, place a pipe culvert or a bundle of debarked logs cabled together at the lowest point of a river or stream to allow winter flows to pass under the bridge and prevent flooding upstream. The culvert or cabled bundle of logs should be attached to the bank such that it can be easily removed before spring thaw. ➢ Ensure that ice bridges do not impede water flow at any time of the year and are minimally v-notched so the bridge will melt from the center gradually to the bed and banks. ➢ If water is being pumped to build up the ice bridge, ensure that the intakes are sized and screened to prevent debris blockage and fish entrainment (refer to DFO's *Freshwater Intake End-of-Pipe Fish Screen Guidelines*). Also, ensure that the watercourse is not pumped dry, resulting in killing over-wintering fish. ➢ Monitor the bridge for signs of melting and upstream flooding. If this occurs, start removing bridge materials. ➢ Remove temporary winter crossings before spring freshet. ➢ Use clear span (across normal flow channel), pontoon or ice bridges for temporary crossings. Where possible, avoid locating temporary bridges at stream bends. ➢ Where possible, locate temporary crossings on straight sections of the channel.
Surface Water Quality	➢ Adverse effect to water quality due to temporary crossings and ice bridges.	➢ Avoid locating temporary crossings in critical fish habitat areas (may need authorization from Fisheries and Oceans Canada). ➢ Construct ice bridges and approaches using clean, compacted snow and ice to a sufficient depth to protect the shoreline. Where snow is limited, cabled log bundles can be used to build up approaches beyond the shoreline. ➢ Construct ice bridges using clean water, ice, snow and woody materials. Remove any other materials used to reinforce the bridge before the spring thaw to prevent jamming and flooding, and avoid obstructing the passage of fish. ➢ Ensure access routes to ice bridges follow existing trails, winter roads or cut lines, wherever possible, to limit clearing of additional vegetation and to prevent soil compaction. ➢ Remove from the work area waste material associated with the temporary bridge and stockpile it well away from the water. Cover stockpiles with biodegradable mats or tarps, or plant them with native

Environmental Component	Description of Effect	Mitigation Measures
		grasses, shrubs or trees to prevent sediment transport and deposition into the water. ➢ When removing winter crossings, seed and plant exposed shorelines with native trees, shrubs or grasses.
	➢ Reduced water quality and clarity due to increased erosion and sedimentation, and transport of debris.	➢ Operate heavy machinery from above the top of the stream bank or on the shore above the normal water level. ➢ Where possible, conduct activities in the dry, above the actual water level and above any expected rises in water level that may occur during a rainfall or snow melt event.
	➢ Reduced water quality and clarity due to inputs of contaminants from surface runoff during construction and operation.	➢ Clean all equipment prior to its entry into the water. Any part of the equipment entering the water should be free of fluid leaks, and externally cleaned/degreased to prevent deleterious substances from contaminating the water. ➢ Ensure that activities for storing, refuelling or maintaining vehicles and equipment are conducted well away from water bodies. ➢ Minimize use and discharge of chemicals and cleaning agents. ➢ Refuel machinery on impermeable pads or buried liners designed to allow full containment of spills.
Terrain and Topography	➢ Changes in slopes, landforms and landscape diversity.	➢ Avoid high risk areas with unstable slopes (e.g., steep slopes and soil liquefaction risk areas). ➢ Avoid movement of heavy machinery in areas with sensitive slopes. ➢ Keep site clearing to a minimum to maintain sufficient vegetated cover and windbreaks. ➢ Regrade and fill holes immediately upon completion of site work.
Wildlife Habitat (terrestrial and aquatic)	➢ Physical damage and loss of habitat (terrestrial, riparian and/or wetland).	➢ Avoid or minimize trampling vegetation with equipment.

Table A.4-6s Related Socio-economic Effects

Socio-economic Component	Description of Effect	Mitigation Measures
Humans		
Economic Conditions	➢ Disruption to residents, businesses, community facilities, recreational and tourist activities, due to increased ambient noise levels.	➢ Conform to local noise by-laws and ordinances. ➢ Install noise barriers around work areas in close proximity to sensitive receptors (e.g., homes, schools, community facilities). ➢ Minimize idling of gas powered equipment. ➢ Minimize idling of vehicles. ➢ Notify residents of planned events that may cause disturbance, and schedule these activities to avoid sensitive time periods. ➢ Use well-maintained equipment and machinery within operating specifications.
Terrain and Topography		
Land and Resource Use	➢ Disruption to farm operations, and to livestock movement and grazing.	➢ Maintain existing access to farm buildings at all times. ➢ Minimize duration of site preparation and construction. ➢ Schedule construction, maintenance and removal activities to avoid major crop harvest periods.

Table A.4-6a Related Accidents and Malfunctions

Environmental Component	Description of Effect	Mitigation Measures
Fires		
Air Quality	➢ Decreased ambient air quality due to smoke.	➢ Avoid using sparking equipment near explosives, refuelling or fuel storage areas. ➢ Ensure that all stationary metallic equipment is properly grounded. ➢ In the event of fires, notify fire departments immediately. ➢ Maintain a trained work force and ensure compliance with all occupational health and safety requirements. ➢ Maximize use of all cleared trees and brush, and avoid slash burning. ➢ Provide adequate fire extinguishers and other fire fighting equipment on-site.

Environmental Component	Description of Effect	Mitigation Measures
Fauna	➢ Disruption to wildlife migration and movement patterns, breeding, nesting or hibernation.	➢ In the event of fires, clean up affected areas by disposing of damaged materials appropriately; incorporate ashes into soils and revegetate property with native species. ➢ In the event of fires, notify fire departments immediately. ➢ Provide adequate fire extinguishers and other fire fighting equipment on-site.
Flora	➢ Physical damage and loss of vegetation.	➢ In the event of fires, clean up affected areas by disposing of damaged materials appropriately; incorporate ashes into soils and revegetate property with native species. ➢ In the event of fires, notify fire departments immediately. ➢ Provide adequate fire extinguishers and other fire fighting equipment on-site.
Humans	➢ Personal injuries to public and workers.	➢ Avoid using sparking equipment near explosives, refuelling or fuel storage areas. ➢ Ensure that all stationary metallic equipment is properly grounded. ➢ In the event of fires, notify fire departments immediately. ➢ Install locks to prevent unauthorized use. Post warning signs. ➢ Maintain a trained work force and ensure compliance with all occupational health and safety requirements. ➢ Maintain contact with fire departments during construction. ➢ Provide adequate fire extinguishers and other fire fighting equipment on-site. ➢ Provide temporary alternative access to property.
Wildlife Habitat (terrestrial and aquatic)	➢ Physical damage and loss of habitat (terrestrial, riparian and/or wetland).	➢ In the event of fires, notify fire departments immediately. ➢ Provide adequate fire extinguishers and other fire fighting equipment on-site.
Spills and Leaks		
Soil Quality	➢ Reduced soil quality due to spills and leaks.	➢ Capture, contain and clean up spills and leaks immediately. Immediately notify local authorities of a reportable spill. For more information and to find out who to call, refer to Environment Canada's Environmental Emergencies Program website. ➢ Ensure that refuelling and handling of contaminants is conducted off-site, or on impermeable pads, if necessary. ➢ Maintain an adequate supply of cleanup materials at the work site.
Surface Water Quality	➢ Reduced water quality and clarity due to spills and leaks.	➢ Capture, contain and clean up spills and leaks immediately. Immediately notify local authorities of a reportable spill. For more information and to find out who to call, refer to Environment Canada's Environmental Emergencies Program website.

Environmental Component	Description of Effect	Mitigation Measures
		➢ Contain any contaminants (e.g., fuels, paints), as well as any contaminated soils or other contaminated materials in secure containers and dispose of them off-site at a licensed disposal facility. ➢ Ensure that refuelling and handling of contaminants is conducted off-site, where possible, and away from any water body or from ditches and drains connecting to a water body. ➢ Maintain an adequate supply of cleanup materials at the work site.
Vehicle Collisions		
Fauna	➢ Injury to wildlife due to proximity of human activities (e.g., road kills and collisions).	➢ Maximize use of existing access roads and trails. Avoid veering off trails. ➢ Minimize traffic along access roads and maintain safe driving speeds. ➢ Minimize vehicle movements within wildlife habitat areas. ➢ Post signs warning of known wildlife crossings along access roads. ➢ Survey the area for active nests, dens, burrows, etc., and avoid disturbing them.
Humans	➢ Personal injuries to public and workers.	➢ Employ qualified workers. ➢ Ensure that all workers are equipped with appropriate safety and protective equipment. ➢ Keep within speed limits. ➢ Minimize the number of vehicles on-site. Use a flag person during heavy traffic periods; and ensure large trucks and heavy equipment have backup signals and indicators.
Vessel Collisions		
Humans	➢ Personal injuries to public and workers.	➢ Employ qualified vessel operators. ➢ Ensure that all vessels are equipped with appropriate safety equipment, complying with Transport Canada's *Small Vessel Regulations*. ➢ Keep within speed limits. ➢ Minimize vessel movements. For example, do not operate vessels after dusk, during fog periods, severe weather events or bad weather. ➢ Moor vessels at marinas or designated locations on-site.

Table A.4-7 Station Operation and Maintenance

If this physical work or activity applies to the project, check all of the applicable project phases:

☐ *Site Preparation / Construction / Modification* ☐ *Operation / Use / Maintenance* ☐ *Decommissioning/ Abandonment*

Environmental Component	Description of Effect	Mitigation Measures
Air Quality	➢ Decreased ambient air quality due to emissions and increased concentrations of chemical pollutants.	➢ Minimize operation and idling of vehicles and gas-powered equipment, particularly during local smog advisories. ➢ Use well-maintained equipment and machinery within operating specifications.
Fauna	➢ Disruption to fish migration, spawning and nursery periods.	➢ Minimize duration of in-water work, whenever possible. ➢ Restrict in-water works to approved timing windows for cold water habitat (June 1 – September 15) and warm water habitat (July 1 – April 1). Timing windows exist to protect fish during migratory, spawning and nursery periods, and when eggs and fry are vulnerable to floodwaters and sediment. Timing windows vary depending upon species present and water temperature. Consult with Ontario Ministry of Natural Resources to verify timing windows applicable to the project site.
Surface Water Hydrology	➢ Disruption to water flow at station location due to beaver dams.	➢ Avoid dismantling beaver dams at any time that is critical to the beavers (i.e., in late fall when beavers are preparing food caches for the winter, and in the spring when kits are still in the lodge) to ensure potential disruption is minimized. ➢ Conduct beaver dam removal at a time when effects on fish can be minimized (i.e., during periods of low water). ➢ Consult with provincial resource management officials regarding any beaver dam removal. Notify Fisheries and Oceans Canada at least fourteen (14) days prior to the start of beaver dam control activities. ➢ Dismantle beaver dams manually. ➢ Dispose of sediment excavated upstream of the beaver dam on land above the high water level. Contain and stabilize the sediment to prevent it from re-entering the fish habitat. ➢ During beaver dam breaching activities, monitor areas downstream to determine whether damage to the channel and adjacent properties receiving additional water volumes are occurring. ➢ Ensure beaver dam breaching activities minimize downstream sediment load. Only a small portion of the dam should be pulled back at one time to allow the water from the beaver pond to be released slowly. As water levels decrease, the size of the opening may be increased to allow complete drainage of the retention area. ➢ Ensure that fish which become trapped or isolated as a result of project activities are salvaged to the main channel of the watercourse. ➢ Ensure that there is no release of sediment or sediment laden water into the watercourse or water

Environmental Component	Description of Effect	Mitigation Measures
		body downstream. Sediment can harmfully alter the bed of the receiving waters, or it can contain other contaminants that can alter the water quality or can be toxic to fish. ➢ Remove beaver dams in such a way that there is not a sudden release of water downstream. A sudden release of water can result in flooding, bank erosion and channel alteration. ➢ Retain base water flow in the channel at a rate that is equivalent to the flow prior to the removal of the dam, or at a level that will support fish downstream of the old dam site.
	➢ Increased ice jamming and flooding potential at bends, bridges, crossings, fordings and other flow constrictions (including effects of flooding on the project).	➢ Ensure that potential downstream effects due to erosion and mobilization of bed sediments (notably those retained behind channel obstructions and immediately downstream) are considered, and mitigated as necessary, prior to removing any obstructions. ➢ If blasting is required, follow the *Guidelines for the Use of Explosives In or Near Canadian Waters* (DFO, 1998). Charges should be minimized (less than one kg and preferably smaller) and placed one-third to halfway down the dam on the downstream face to loosen the dam rather than destroy it. If larger charges are used, a *Fisheries Act* section 32 authorization may be required. ➢ Remove all barriers and obstructions related to construction and break up any ice bridges prior to spring runoff to avoid ice jams, upstream flooding and downstream erosion. ➢ Whenever possible and consistent with the project objectives, leave natural structures (e.g., woody debris) in place, unless they represent a barrier to flow of fish movement.
Surface Water Quality	➢ Reduced water quality and clarity due to increased erosion and sedimentation, and transport of debris.	➢ Conduct in-stream work during dry conditions, where flow is low or under frozen conditions. ➢ Ensure that all materials placed below the high water mark of the water body are clean and free of silt and clay sized particles. All materials must meet the applicable regulations governing the placement of fill in water bodies. ➢ Ensure that potential downstream effects due to erosion and mobilization of bed sediments (notably those retained behind channel obstructions and immediately downstream) are considered, and mitigated as necessary, prior to removing any obstructions. ➢ Install and maintain silt curtains, check dams and silt fences, as required. ➢ Minimize duration of in-water work, whenever possible.
	➢ Reduced water quality and clarity due to inputs of contaminants from surface runoff during construction and operation.	➢ Avoid using products that prevent freezing of the water in a stilling well at non-electrified sites. ➢ Do not dispose of soapy wash water directly into a water body, but pour it onto thicker soils located a minimum of 30 m from the shoreline. ➢ When pumping out stilling wells for de-silting or maintenance purposes, avoid pumping water directly into streams. Ensure sediment laden waters are discharged onto thicker soils located a minimum of 30 m from the shoreline.

Table A.4-7s Related Socio-economic Effects

Socio-economic Component	Description of Effect	Mitigation Measures
Surface Water Hydrology		
Land and Resource Use	➢ Disruption to navigation due to changes in surface water levels and flows.	➢ Consult with Transport Canada and/or harbour or port authority. ➢ Implement all conditions and recommendations contained in *Navigable Waters Protection Act* approvals. ➢ Inform any nearby boaters, anglers or tourists regarding on-site activities. ➢ Minimize use of cableways, vessels and other in-water operations, as much as possible.

Table A.4-7a Related Accidents and Malfunctions

Environmental Component	Description of Effect	Mitigation Measures
Equipment Misuse or Malfunction		
Humans	➢ Personal injuries to public and workers.	➢ Employ qualified workers. ➢ Ensure that all workers are equipped with appropriate safety and protective equipment. ➢ Install locks to prevent unauthorized use. Post warning signs. ➢ Prohibit visitation by the public, and ensure that the station site is securely locked to prevent unsupervised access to the shelter and other equipment.
Spills and Leaks		
Soil Quality	➢ Reduced soil quality due to spills and leaks.	➢ Capture, contain and clean up spills and leaks immediately. Immediately notify local authorities of a reportable spill. For more information and to find out who to call, refer to Environment Canada's Environmental Emergencies Program website. ➢ Ensure that refuelling and handling of contaminants is conducted off-site, or on impermeable pads, if necessary. ➢ Maintain an adequate supply of cleanup materials at the work site. ➢ Refuel machinery on impermeable pads or buried liners designed to allow full containment of spills.

Environmental Component	Description of Effect	Mitigation Measures
Surface Water Quality	➢ Reduced water quality and clarity due to spills and leaks.	➢ Capture, contain and clean up spills and leaks immediately. Immediately notify local authorities of a reportable spill. For more information and to find out who to call, refer to Environment Canada's Environmental Emergencies Program website. ➢ Contain any contaminants (e.g., fuels, paints), as well as any contaminated soils or other contaminated materials in secure containers and dispose of them off-site at a licensed disposal facility. ➢ Maintain an adequate supply of cleanup materials at the work site. ➢ Store all toxic materials in secure enclosures to prevent leaks and spills into the environment, and to minimize vandalism.
Structural Failures		
Humans	➢ Personal injuries to public and workers.	➢ Conduct regular inspections and maintenance of all structures. ➢ Ensure that all workers are equipped with appropriate safety and protective equipment. ➢ Maintain a trained work force and ensure compliance with all occupational health and safety requirements.
Surface Water Hydrology	➢ Adverse modifications to water flow conveyance, volumes and levels.	➢ Conduct regular inspections and maintenance of all structures. ➢ Construct and operate all surface facilities and foundations in accordance with approved design specifications. ➢ In the event of a structural failure, remediate structures and associated effects.
Terrain and Topography	➢ Structural movement or collapse.	➢ Clear site of all litter and food waste to minimize attraction of wildlife. ➢ Conduct regular inspections and maintenance of all structures. ➢ Construct and operate all surface facilities and foundations in accordance with approved design specifications. ➢ In the event of a structural failure, remediate structures and associated effects. ➢ Where appropriate, ensure that all excavations are completely backfilled with appropriate materials.

Table A.4-8 Vegetation Clearing and Grubbing

If this physical work or activity applies to the project, check all of the applicable project phases:

☐ *Site Preparation / Construction / Modification* ☐ *Operation / Use / Maintenance* ☐ *Decommissioning/ Abandonment*

Environmental Component	Description of Effect	Mitigation Measures
Air Quality	➢ Decreased ambient air quality due to dust and other particulate matter.	➢ Minimize cutting of vegetation and maintain windbreaks. ➢ Restore disturbed areas as soon as possible to minimize duration of soil exposure.
Fauna	➢ Disruption to wildlife migration and movement patterns, breeding, nesting or hibernation.	➢ Avoid activities during sensitive periods of wildlife migration, staging, nesting, breeding, hibernation or nursing. ➢ Avoid clearing within wildlife movement corridors. ➢ Conduct any required clearing outside of the nesting season of migratory birds known to breed in the area. ➢ Survey the area for active nests, dens, burrows, etc., and avoid disturbing them.
Flora	➢ Introduction of non-native species, including opportunistic species.	➢ For revegetation purposes, use locally sourced seed mixes that contain native species and/or non-invasive agricultural species.
	➢ Loss of unique or otherwise valued vegetation features (e.g., hedgerows and medicinal plants).	➢ Identify and avoid sensitive, unique, or otherwise valued vegetation features (e.g., medicinal plants, specimen trees). ➢ Mark and fence project site edges and significant woodlots. ➢ Salvage and replant important species in areas designated for protection.
	➢ Loss of vegetated cover.	➢ Keep site clearing to a minimum. ➢ Minimize physical damage to vegetation by avoiding push-outs and avoiding the placement of slash onto living vegetation. ➢ Restore area with native species adapted to the project area to enhance the local plant community.
Soil Quality	➢ Reduced soil capability through compaction and rutting, and mixing of topsoil and layers below.	➢ Avoid working during wet conditions and/or confine operation to paved or gravel surfaces. ➢ Keep site clearing to a minimum. ➢ Whenever possible, strip and store topsoil separately from the layers below and return to excavation in sequence.
Species at Risk - Terrestrial	➢ Disturbance to terrestrial species at risk and/or their critical habitat.	➢ If any species at risk are known or expected to be present at any time within or adjacent to the project area, consult with Environment Canada specialists or the relevant provincial authority regarding measures to avoid harmful disturbance to these species.

Environmental Component	Description of Effect	Mitigation Measures
Surface Water Quality	➢ Reduced water quality and clarity due to increased erosion and sedimentation, and transport of debris.	➢ If necessary, install sediment and erosion controls prior to commencing the work and maintain them until the site has been stabilized. ➢ Keep site clearing to a minimum to maintain a sufficient vegetated buffer strip to help control runoff. ➢ Maintain vegetated buffer strips along shorelines and stream banks. If minimum buffers cannot be maintained, avoid grubbing of vegetation root mass in close proximity to shorelines and stream banks.
Terrain and Topography	➢ Increased soil exposure resulting in erosion, sedimentation, slope instability and risk of mudslides, slumping, rockfalls, etc.	➢ If a prolonged period of exposure is expected, stabilize surface using temporary cover (e.g., grass, mulch, gravel, erosion blanket, etc.), as appropriate. ➢ Keep site clearing to a minimum to maintain sufficient vegetated cover and windbreaks. ➢ On steep slopes that do not require grading, hand clear, without grubbing. ➢ Phase work to minimize duration of exposure of disturbed areas at risk. ➢ Stabilize slopes as appropriate for local site conditions. Possible methods include hard and soft designs or combinations of designs using crib walls, revetments, gabions, erosion control blankets, live fascines, or brush bundles.
Wildlife Habitat (terrestrial and aquatic)	➢ Physical damage and loss of habitat (terrestrial, riparian and/or wetland).	➢ Keep site clearing to a minimum to maintain sufficient vegetated cover and windbreaks. ➢ Minimize physical damage to vegetation by avoiding push-outs and avoiding the placement of slash onto living vegetation. ➢ Restore area with native species adapted to the project area to enhance the local plant community.
	➢ Reduced terrestrial habitat quality (i.e., diversity, area, function) and/or increased fragmentation of habitat.	➢ Avoid habitat fragmentation in sensitive areas. ➢ Plant any newly exposed areas with light-tolerant species. ➢ Plant species of native trees, shrubs and grasses that are well adapted to the project area to reconnect fragmented habitat and enhance the local plant community.

Table A.4-8s Related Socio-economic Effects

Socio-economic Component	Description of Effect	Mitigation Measures
Terrain and Topography		
Land and Resource Use	➢ Disruption to resource uses (e.g., hunting, fishing and medicinal plant harvesting).	➢ Restore and revegetate temporary access roads, and staging and storage areas.
	➢ Increased public access to remote or undeveloped areas, and areas used by Aboriginal persons for traditional purposes.	➢ Avoid creating new access to sensitive natural areas, and remove temporary bridges and access roads as soon as their intended function is no longer required.

A.4.1 Additional Environmental Effects

Taking into consideration the ecological context of the environmental components affected by the project activities assessed in the applicable Tables A.4-1 to A.4-8, identify and describe any **site specific** adverse environmental effect(s) **not described in those tables** that are likely to occur as a result of the project, or any effects that are uncertain. Include the recommended mitigation measures and the significance of the residual adverse effects.

1. *Project Component (Physical Work or Associated Activity):*

_____

2. *Project Phase (check all that apply):*

☐ *Site Preparation / Construction / Modification*

☐ *Operation / Use / Maintenance*

☐ *Decommissioning/ Abandonment*

3. *Environmental Component(s) Affected:*

_____

4. *Adverse Effect(s):*

_____

5. *Proposed Mitigation(s):*

_____

6. *Significance of Residual Adverse Effect(s) following Mitigation (Check one):*
Refer to Section 5.7 of the MCSR for instructions on determining significance.

☐ *Negligible Effect (i.e., not likely to be measurable or noticeable)*

☐ *Minor Adverse Effect (not significant)*

☐ *Significant Adverse Effect*
DO NOT proceed*

*** Any residual adverse environmental effects that are deemed to be significant will result in a determination of "Significant Adverse Effects" in Section A.10 of the CSPR, or will require changes to the project.**

A.4.2 Effects of the Environment on the Project

Describe any effect(s) of the environment on the project that are **not included in Tables A.4-1 to A.4-8** and that are likely to occur as a result of the specific project location. Describe the proposed measures (e.g., design, operating procedures, monitoring and contingency plans) to prevent or manage these effects, and the significance of any anticipated residual effects. For assistance in determining the environmental effects most relevant to the project being assessed, refer to Section 5.5 of the MCSR.

1. *Environmental Condition(s) Affecting the Project:*

_____

2. *Project Component(s) (Physical Work or Activity) Affected:*

_____

3. *Effect(s) of the Environment on the Project:*

_____

4. *Proposed Mitigation(s):*

_____

5. *Significance of Residual Adverse Effect following Mitigation (Check one):*
Refer to Section 5.7 of the MCSR for instructions on determining significance.

☐ *Negligible Effect (i.e., not likely to be measurable or noticeable)*

☐ *Minor Adverse Effect (not significant)*

☐ *Significant Adverse Effect*
DO NOT proceed*

*** Any residual adverse environmental effects that are deemed to be significant will result in a determination of "Significant Adverse Effects" in Section A.10 of the CSPR, or will require changes to the project.**

A.5 Cumulative Effects Assessment

Identify and describe other past, existing or future (certain or reasonably foreseeable) projects or activities that *also* affect or *may also* affect any environmental components of concern or special interest (based on consultation or other sources of information relevant to the project) listed in the applicable Tables A.4-1 to A.4-8 and that *also* affect or *may also* affect any additional site specific features or attributes noted in Table A.3-1 of this CSPR.. If no other projects are identified, specify "Not Applicable" in column 2 of Table A.5-1 below. For assistance in completing a cumulative effects assessment, refer to Section 7.1 of the MCSR: Instructions for Completing a Class Screening Project Report.

Table A.5-1. Other Projects and Activities

Environmental Component(s) experiencing residual adverse environmental effects**	Past, Existing, Planned or Likely Projects/Activities that can affect the Environmental Component	Description of Cumulative Effect(s)	Proposed Mitigation for Cumulative Adverse Effect(s)	Significance of Cumulative Adverse Effect(s)

*** Any adverse cumulative environmental effects that are deemed to be significant <u>will</u> result in a determination of "Significant Adverse Effects" in Section A.10 of the CSPR, or will require changes to the project.**

A.6 Any Other Matter

Identify any other matter relevant to the class screening (as required). Identify any potential beneficial effects that are anticipated.

A.7 Referrals and Consultations

A.7.1 Within Environment Canada (Canadian Wildlife Service, Environmental Protection Service, other)

- Under s.79(1) of the *Species at Risk Act* (SARA), Environment Canada must be consulted if the project is likely to have an effect (beneficial or adverse) on species at risk, or their critical habitat, for which the Minister of Environment is the competent minister.

*Is consultation with **Canadian Wildlife Service** required regarding species at risk issues?* ☐ ***Yes*** ☐ ***No***

If consultation was undertaken, identify the parties involved, when and where consultation took place and identify issues raised and how they were addressed. (Describe any additional mitigation measures prescribed through this consultation in Section A.8 of the CSPR). Retain records of all consultations.

- Consultation with other branches or divisions of Environment Canada may also be warranted regarding aspects unrelated to species at risk.

Was consultation undertaken? ☐ ***Yes*** ☐ ***No***

If consultation was undertaken, identify the parties involved, when and where consultation took place and identify issues raised and how they were addressed. (Describe any additional mitigation measures prescribed through this consultation in Section A.8 of the CSPR). Retain records of all consultations.

A.7.2 Referral and Consultation with Fisheries and Oceans Canada

Under section 79(1) of the *Species at Risk Act* (SARA), Fisheries and Oceans Canada must be notified if the project is likely to have an effect (beneficial or adverse) on aquatic species at risk or their critical habitat.

Is notification to Fisheries and Oceans Canada required regarding aquatic species at risk issues? ☐ ***Yes*** ☐ ***No***

If consultation was undertaken, identify the parties involved, when and where consultation took place and identify issues raised and how they were addressed. Describe any additional mitigation measures prescribed through this consultation in Section A.8 of the CSPR. Retain records of all consultations.

Referral to Fisheries and Oceans Canada is required when works or undertakings may result in the harmful alteration, disruption or destruction of fish habitat and require a regulatory approval under the *Fisheries Act*. For the purpose of this MCSR, Fisheries and Ocean Canada has identified the following works or undertakings that are likely to require a referral:

- construction, modification, decommissioning or abandonment of stream control structures, such as weirs, flumes, gabion baskets, or other, that result in a change in operation, a barrier to fish movement or alteration of flows; and
- construction, modification or decommissioning or abandonment of hydrometric stations that involve the use of explosives in or near water where the mitigation measures outlined in the *Guideline for the use of Explosives in or near Canadian Fisheries Waters* (DFO 1998) cannot be met. (This document can be found at: http://www.dfo-mpo.gc.ca/canwaters-eauxcan/infocentre/guidelines-conseils/guides/explosguide/index_e.asp.)

Referral to Fisheries and Oceans Canada is required if there is a requirement to issue an authorization under Sections 35(2) or 32 of the *Fisheries Act.* Also, consultation with Fisheries and Oceans Canada is desirable to obtain expert advice and whenever there are questions as to whether project or site specific conditions warrant project specific mitigation measures in addition to those identified in the MCSR.

Is a consultation or referral to Fisheries and Oceans Canada required regarding fish habitat issues? ☐ ***Yes*** ☐ ***No***

If a consultation or referral to Fisheries and Oceans Canada was undertaken, identify the parties involved, when and where consultation took place and identify issues raised and how they were addressed. Describe any additional mitigation measures in Section A.8 of the CSPR. Retain records of all consultations.

A.7.3 Referral and Consultation with Transport Canada

The *Navigable Waters Protection Act* (NWPA) provides for the protection of the public's right to navigation in Canada. With the exception of those works described under the NWPA *Minor Works and*

Waters Order, no work shall be built or placed in, on, over, under, through or across any navigable water without prior NWPA approval.

This CSPR does not exempt a proponent from the requirement to obtain approval in accordance with Federal laws such as the NWPA. The NWPA still requires that the proponent apply for approval of any work located in, on, over, under, through or across any navigable water.

Is a referral to Transport Canada to determine the applicability of the Navigable Waters Protection Act required? ☐ ***Yes*** ☐ ***No***

If the project was referred to Transport Canada, identify the parties involved, when and where consultation took place and identify issues raised and how they were addressed. Describe any additional mitigation measures prescribed through this consultation in Section A.8 of this CSPR. Retain records of all consultations.

Consultation with Transport Canada is also desirable whenever there are questions as to whether project or site specific conditions warrant project specific mitigation measures in addition to those identified in the MCSR or if there is any doubt that the project may interfere with navigation.

Was consultation undertaken? ☐ ***Yes*** ☐ ***No***

If consultation was undertaken, identify the parties involved, when and where consultation took place and identify issues raised and how they were addressed. Describe any additional mitigation measures prescribed through this consultation in Section A.8 of this CSPR. Retain records of all consultations.

A.7.4 Consultation with Other Federal Departments/Agencies

Was consultation undertaken? ☐ ***Yes*** ☐ ***No***

If consultation was undertaken, identify the parties involved, when and where consultation took place and identify issues raised and how they were addressed. Describe any additional mitigation measures in Section A.8 of the CSPR. Retain records of all consultations.

A.7.5 Consultation with Other Governments Ministries or Agencies, Co-Management Bodies (e.g. game councils, hunter and trapper committees) or Conservation Authorities

Was consultation undertaken? ☐ ***Yes*** ☐ ***No***

If consultation was undertaken, identify the parties involved, when and where consultation took place and identify issues raised and how they were addressed. Describe any additional mitigation measures in Section A.8 of the CSPR. Retain records of all consultations.

A.7.6 Consultation with Aboriginal Groups

Was consultation undertaken? ☐ ***Yes*** ☐ ***No***

If consultation was undertaken, identify the parties involved, when and where consultation took place and identify issues raised and how they were addressed. Describe any additional mitigation measures in Section A.8 of the CSPR. Retain records of all consultations.

A.7.7 Consultation with Public and Non-government Organizations

Was consultation undertaken? ☐ ***Yes*** ☐ ***No***

If consultation was undertaken, identify the parties involved, when and where consultation took place and identify issues raised and how they were addressed. Describe any additional mitigation measures in Section A.8 of the CSPR. Retain records of all consultations.

A.8 Additional Mitigation Measures

Select one of the following options.

☐ Project falls within the scope of the MCSR. No additional mitigation measures are recommended as a result of consultation.
Standard mitigation measures described in this CSPR apply. PROCEED

☐ Project falls within the scope of the MCSR. Project specific mitigation measures are recommended by federal authorities or other stakeholders consulted to address the following issues: (C*heck all that apply*). Project can proceed with additional mitigation measures.

☐ *Migratory Birds, Migratory Bird Habitat*
☐ *Fish and Fish Habitat*
☐ *Wetlands*
☐ *Navigable Waters*
☐ *Species at Risk*
☐ *Other* _____

The following additional mitigation measures apply.

_____

DO NOT PROCEED with filing this CSPR if the additional mitigation measures above change the project's function such that it is no longer described by the MCSR. In such circumstances, an individual screening is required for the project.

A.9 Follow-Up Program

Is a follow-up program required for this project? ☐ ***Yes*** ☐ ***No***

If **YES**, describe any project specific follow-up activities that are warranted to verify the environmental effects or the effectiveness of mitigation measures. Describe responsibilities for follow-up activities.

_____

If **NO**, explain why follow-up activities are not warranted.

A.10 Determination

Environment Canada has determined, in accordance with subsection 20(1) of *the Act*, that ***(check only one (1) of the two boxes below):***

☐ *The project is not likely to cause significant adverse environmental effects: the project can proceed with application of the mitigation measures specified in this report.*

☐ *The project is likely to cause significant adverse environmental effects that cannot be justified. The project does not proceed.*

A.11 Sign-Off

Pursuant to the *Canadian Environmental Assessment Act* (*the Act*), we certify on behalf of the Minister of Environment that an environmental assessment of this project has been completed in accordance with the requirements of *the Act* and is duly signed by the Responsible Authority who exercises a power or performs a duty or function referred to in paragraph 5(1)(c) of *the Act*.

- ***Class Screening Project Report Prepared By:***

Name: _____ *Date:* _____
Title: _____

- ***Class Screening Project Report Reviewed and Approved By:***

Name: _____ *Date:* _____
Title: _____

Name: _____ *Date:* _____
Title: _____

- ***If Fisheries and Oceans Canada is a Responsible Authority:***

Name: _____ *Date:* _____
Title: _____

Name: *Date:* _____

Title: _____

- ***If Transport Canada is a Responsible Authority:***

Name: _____ *Date:* _____
Title: _____

Name: _____ *Date:* _____
Title: _____

Name: _____ *Date:* _____
Title: _____

The above has (have) reviewed the report and agree(s) that it meets the requirements of the *Canadian Environmental Assessment Act* and accept(s) responsibility for ensuring the implementation of all applicable mitigation measures and follow-up programs, if any, identified in this report.

Appendix B

Field Protocol for Mercury Assessment and Cleanup of Hydrometric Stations in Ontario

Field Protocol for the Mercury Assessment and Cleanup of Hydrometric Stations

The following is the recommended step-by-step procedure for the assessment and cleanup of hydrometric stations. This protocol was designed for fieldwork conducted when soil temperatures range from 10°C to 25°C.

STEP 1: IMPLEMENT HEALTH AND SAFETY PLAN

Prior to entering the site all assessment and cleanup personnel will have received health and safety training specific to the health risks associated with mercury contaminated sites. In brief, the following tasks need to be implemented on-site:

1. Hazard Assessment and Establishing Control Measures

   a) *Physical Hazards* - use of tools, heavy materials, noise
   Control Measures - steel toe boots, hard hats, ear plugs/defenders, gloves

   b) *Chemical Hazards* - exposure to elemental mercury, mercury vapour, batteries
   Control Measures - chemical resistant disposable coveralls, full face air purifying respirator with mercury vapour cartridges, chemical resistant boots and gloves (note: if mercury vapour levels in the shelter are below the action level of 0.025 mg/m^3, then use of respirator is not required)

2. Establish Site Zones and Decontamination Areas

   The following zones need to be established
   a) *Support Zone* - for eating and resting
   b) *Work Zone* - shelter and immediate surrounding area
   c) *Decontamination Zone* - for decontamination and is within 20m of shelter

   Review equipment and practices for decontamination, as outlined in the Health and Safety Plan.

3. Review General Work Guidelines

   a) 2 person work crew
   b) No eating/drinking/smoking/chewing gum/alcohol
   c) Remove/secure loose clothing
   d) No contact lenses
   e) No facial hair when wearing respirator
   f) Wash hands/face after work
   g) Report all injuries

4. Establish Emergency Response Procedures

Follow the procedures detailed in HASP. Project personnel will familiarize themselves with the HASP, nearest communication, and medical facilities.

STEP 2: RECONNAISSANCE OF THE SITE

The following information is to be recorded in the Clean-up Checklist:

1. Topography
2. Drainage to nearest surface water
3. Nearest surface water body
4. Any stressed vegetation/contaminants
5. Proximity to sensitive areas
6. Soils types
7. Immediate groundwater concerns
8. Structure type and materials
9. Public access and land use
10. Services, utilities, storage tanks, wells
11. Other relevant information

STEP 3: CONDUCT INITIAL MERCURY VAPOUR SURVEY

An initial vapour survey must be conducted prior to entering the shelter according to the following procedure:

1. Ensure the Jerome 431-X is fully regenerated. Read operational manual.
2. Take background reading at least 20 m upwind of site. Reading should be 0.000 mg/m^3.
3. Wear full-face respirator according to HASP.
4. Open door and take reading at breathing level in the middle of the shelter.
5. Continue taking readings as per the Clean-up Checklist - on the four corners at floor level and at any other location where mercury may be present, such as, on the table, behind flashings, etc.
6. Record all readings on Clean-up Checklist.

If all readings are less than 0.005 mg/m^3 proceed to step 6, otherwise continue with step 4.

STEP 4: CLEANUP OF SHELTER AND CONDUCT VISUAL INSPECTION FOR MERCURY DROPLETS

Conduct the following inspection and cleanup procedures:

1. Wear full face respirator according to HASP.
2. Using a flashlight and magnifying glass and being sure not to disturb the mercury inspect for droplets on surfaces, in cracks, in corners, and at edges.
3. Using a Nilfisk GS90 ACAF Mercury Collection Vacuum Cleaner, equipped with a HEPA filter and an activated carbon filter which adsorbs mercury vapour in the vacuum exhaust (or equivalent) plugged into a 3000 W generator, vacuum the shelter paying special attention to cleaning areas in nearest proximity and moving outward to not further spread out contamination. Work is best accomplished with the thin plastic and round rubber attachments.
4. Top layers of flooring should be removed if present. Pry bars and power screwdrivers are useful for this purpose. Lower layer of flooring should not be destroyed.
5. Apply Mercsorb® (or equivalent) liberally on floor and table surfaces. Sweep these powders into the cracks and into corners. Re-vacuum the shelter. Residual powders are to be swept following completion of site work and disposed of as hazardous materials.
6. Apply mercury vapour suppressant liberally to the floor and table surfaces. Sweep the suppressant into cracks and corners.

STEP 5: FINAL MERCURY VAPOUR SURVEY

A final mercury vapour survey is performed to verify success of cleanup activities, according to the following steps:

1. Repeat step 3 to verify air quality in shelter is less than 0.005 mg/m^3. Allow shelter to aerate sufficiently prior to taking readings.
2. Should readings be greater than 0.025 mg/m^3 allow further aeration.
3. If high readings persist, repeat step 4.
4. If after repeating step 4 high readings persist, repeat step 4, spraying water over the Mercsorb amalgamate powder after spreading it throughout the shelter.
5. If high readings still persist, cease shelter cleanup activities and proceed to step 6. Shelters with persistent high readings may need to be decommissioned.

STEP 6: SCREENING FOR MERCURY CONTAMINATED SOILS

As a screening step for determining the presence and extent of mercury contamination in soil the following steps are conducted:

1. Using a sterile disposable plastic trowel, take a background sample from soil off-site and in an undisturbed location. Ensure soil composition is similar to on-site soil. Background samples must be taken a minimum of 20 m upstream of the site. Do not obtain the background sample from the pathway leading to/from the station.
2. Samples should be taken from the top 20 cm of soil.
3. Soil samples are to be placed in medium sized heavy-duty sealable plastic bags and labelled. Fill sample bags half full. Labelling is to follow the following nomenclature: station number - sample number - repetition letter. e.g. 07PA001-3-b, which is the second sample taken at the third sample location at hydrometric station 07PA001.
4. Mix sample in bag by lightly shaking contents while ensuring an air tight seal. Set aside in the shade for 5 minutes. Record the length of time between sample collections and vapour concentration reading. (A hot water bath can also be used to warm-up the samples.)
5. Open one small section of the seal and place the tip of the Jerome 431-X mercury vapour analyzer in the bag and take reading. Make sure not to contaminate the tip of the instrument by coming into contact with soil. Record reading onto site inspection sheet.
6. Take two additional replicates for each sample. Record the sample weight and sample temperature.
7. Take randomized samples from targeted locations surrounding the shelter (see figure
   a) Typical locations are:
      i) Immediately in front of door
      ii) One meter in front of door
      iii) Right and left corner of shelter
      iv) One meter in front of right and left corner
      v) Under floor of shelter, and in particular under orifice line leading from shelter
      vi) Likely depressions where mercury may collect if swept from shelter door
8. A field screening criteria of non-detect (i.e. reading of 0.000 mg/m^3) mercury vapours is recommended for the soils as the Jerome has been proven not to be a reliable field screening device to meet the 10 ppm criteria. Alternative field screening methods have been considered, however are not suitable for this type of work.
9. Samples are to be sent for confirmation to a CAEAL certified laboratory for Mercury Analysis using cold vapour atomic adsorption spectrophotometry (EPA Method 7471).

STEP 7: EXCAVATION OF MERCURY CONTAMINATED SOILS

1. Soil screened as contaminated is to be excavated using a hand shovel and placed in 5 gallon plastic pails with liquid and vapour tight lids. Pails are to be sealed with a mallet/hammer. For vehicle access sites, contaminated soils may be stored in clean plastic lined sealed barrels. Prior to sealing the pails or drum, one composite soil sample, consisting of soil from each of the pails or drums should be collected. This sample should be identified by the station number - "composite waste soil", # of pails, e.g. "07PA001-composite waste soil, 4 pails" would be the composite sample from the 4 pails of soil collected at station 07PA001.
2. For remote sites and considering the unreliability of the Jerome readings, make sure that the upper 5 – 10 cm (2” – 4”) of the soil surface is scraped and removed in pails from within the

footprint of a structure that is moved or removed. More will have to be removed if the Jerome readings indicate contamination at deeper levels. After removal the surficial soils only or to the depth of contamination, as the case may be, take cleanup confirmatory samples from the excavation walls and floor. Composite samples may be taken for verification that cleanup has been successful.

3. Analyze the confirmatory samples with the mercury vapour analyzer. If measurement exceeds the appropriate soil screening criteria (based on land use). Further excavation is required.
4. All confirmatory samples satisfying criteria are to be properly stored and sent to the laboratory for analysis.
5. Mark on each filled pail/barrel the location of the contaminated soil using the sample number.
6. Pails/barrels containing mercury contaminated soils are to be labelled for transport according to the Transportation of Dangerous Goods Act as follows (pre-printed labels are available in most safety stores):

For example, in the Northwest Territories and Nunavut, the following TDG Classification was used:

"Class 8, 9.2,
Solids containing corrosive liquids,
N.O.S. (mercury), UN3244"

STEP 8: REGRADING OF SITE

If contaminated soil has been removed from the site, excavations are to be re-graded to prevent physical safety hazards to unsuspecting WSC staff, site visitors, and wildlife. Re-grading can be accomplished with hand-shovels by levelling excavation corners and backfilling holes with surrounding soils.

Appendix C

Letters of Endorsement

Transport Canada
Fisheries and Oceans Canada

Fisheries and Oceans Canada | Pêches et Océans Canada

Your file / Votre référence

Our file / Notre référence

Mr. Wayne Johnson
Manager, Operational Policy
Canadian Environmental Assessment Agency
Place Bell Canada
160 Elgin Street, 22nd Floor
Ottawa, ON K1A 0H3

Re: Model Class Screening Report for Hydrometric Station Projects in Ontario

Dear Mr. Johnson:

Environment Canada (EC) engaged Fisheries and Oceans Canada (DFO) in the development of its *Model Class Screening Report (MCSR) for Hydrometric Station Projects in Ontario Region* and, on December 9, 2003, submitted the attached letter to the Canadian Environmental Assessment Agency endorsing the use of this class screening process when DFO is also a Responsible Authority for a project covered by the MCSR. This letter is to re-confirm DFO's endorsement of this shared use, in support of the proposed re-declaration of the MCSR for another five years.

As a potential Responsible Authority for some of the projects subject to this MCSR, DFO was consulted in its preparation and we are satisfied that our interests in terms of fish and fish habitat continue to be addressed. This MCSR also details our regulatory interests in these projects. Further, the Class Screening Project Report to be prepared for each project subject to the MCSR makes provisions for referral to DFO of any projects that may require expert advice or approvals under the *Fisheries Act*.

Upon re-declaration, class screenings completed by EC using this MCSR to meet its obligations under the *Canadian Environmental Assessment Act* will continue to satisfy DFO's environmental assessment requirements for projects subject to this MCSR.

Sincerely,

Christine Stoneman
Senior Director

c.c. Michael Wilson, EC

Encl.

Ottawa, Canada
K1A 0E6

Canada

Transport Canada / Transports Canada

Place de Ville
Ottawa, ON
K1A 0N5

Fax (613) 957-4260 Télécopieur (613) 957-4260

April 27, 2011

Mr. Wayne Johnson
Manager, Operational Policy
Canadian Environmental Assessment Agency
Place Bell Canada
160 Elgin Street, 22nd Floor
Ottawa, ON K1A 0H3

Dear Mr. Johnson:

As you know, Environment Canada, Meteorological Services of Canada has revised the Model Class Screening Report (MCSR) for Hydrometric Station Projects in Ontario Region.

Transport Canada may be a potential Responsible Authority (RA) under the *Canadian Environmental Assessment Act* for some of the hydrometric stations subject to an approval under the *Navigable Waters Protection Act* (*NWPA*). We were consulted during the revision of the MCSR as a potential RA, and we are satisfied that our interest in terms of protecting the right of public navigation under the *NWPA* have been addressed.

Once the updated MCSR is declared, the process outlined in the MCSR will satisfy Transport Canada's environmental assessment requirements. Transport Canada will use this MCSR to satisfy its environmental assessment requirements whenever possible.

Sincerely,

Alec Simpson
Senior Director, Environmental Management
Transport Canada

c.c.: Harold Leadlay (Environment Canada)
Sheila Allan (Environment Canada)
David Obaldeston (Transport Canada)
Luc-Alexandre Chayer (Transport Canada)
Marty Risen (Transport Canada)